DIFFERENTIAL DIAGNOSIS OF ORAL METASTASES

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Supplementary Table 1- Search strategy

Data Base	**Search: 25/07/2022**
PubMed/Medline	(((((Mouth [Mesh] OR (Oral Cavity) OR (Cavity, Oral) OR (Cavitas Oris) OR (Vestibule of the Mouth) OR (Vestibule Oris) OR (Oral Cavity Proper) OR (Mouth Cavity Proper) OR (Cavitas oris propria)) OR (Maxilla [Mesh] OR (Maxillas) OR (Maxillary Bone) OR (Bone, Maxillary) OR (Bones, Maxillary) OR (Maxillary Bones) OR (Maxillae))) OR (Jaw [Mesh] OR (Jaws))) OR (Mouth Mucosa [Mesh] OR (Mucosa, Mouth) OR (Oral Mucosa) OR (Mucosa, Oral) OR (Buccal Mucosa))) AND (Neoplasm Metastasis [Mesh] OR (Metastases, Neoplasm) OR (Neoplasm Metastases) OR (Metastasis) OR (Metastases) OR (Metastasis, Neoplasm))) NOT ((cervical metastases) OR (cervical metastasis) OR (lymph node metastases) OR (lymph node metastasis) OR (regional metastases) OR (regional metastasis) OR (node metastases) OR (node metastasis))
Scopus	(TITLE-ABS-KEY (mouth OR "oral cavity" OR "cavity, oral" OR "cavitas oris" OR "vestibule of the mouth" OR "vestibule oris" OR "oral cavity proper" OR "mouth cavity proper" OR "cavitas oris propria" OR jaw OR jaws OR "mouth mucosa" OR "mucosa, mouth" OR "oral mucosa" OR "mucosa, oral" OR "buccal mucosa" OR maxilla OR maxillas OR "maxillary bone" OR "bone, maxillary" OR "bones, maxillary" OR "maxillary bones" OR maxillae) AND TITLE-ABS-KEY ("neoplasm metastasis" OR "metastases, neoplasm" OR "neoplasm metastases" OR metastasis OR metastases OR "metastasis, neoplasm") AND NOT TITLE-ABS-KEY ("cervical metastases" OR "cervical metastasis" OR "lymph node metastases" OR "lymph node metastasis" OR "regional metastases" OR "regional metastasis" OR "node metastases" OR "node metastasis"))
Embase	'mouth'/exp AND ('metastasis'/exp OR 'cancer cell dissemination' OR 'cancer cell metastasis' OR 'cancer cell spread' OR 'cancer dissemination' OR 'cancer metastasis' OR 'cancer spread' OR 'carcinoma metastasis' OR 'disseminated tumor cell' OR 'disseminated tumour cell' OR 'metastases' OR 'metastasic type' OR 'metastasis' OR 'metastasis formation' OR 'metastatic cancer' OR 'metastatic cancers' OR 'metastatic carcinoma' OR 'metastatic carcinomas' OR 'metastatic disease' OR 'metastatic tumor' OR 'metastatic tumors' OR 'metastatic tumour' OR 'metastatic tumours' OR 'neoplasm metastasis' OR 'neoplastic cell dissemination' OR 'sarcoma metastasis' OR 'secondary cancer' OR 'secondary carcinoma' OR 'tumor dissemination' OR 'tumor metastasis' OR 'tumor migration' OR 'tumor spread' OR 'tumour dissemination' OR 'tumour metastasis' OR 'tumour migration' OR 'tumour spread') NOT ('cervical lymph node metastasis'/exp OR 'cervical lymph node metastases' OR 'cervical lymph node metastasis') AND [embase]/lim NOT ([embase]/lim AND [medline]/lim) AND 'metastasis'/dm
	(tw:(oral metastasis)) OR (tw:(oral metastases)) OR (tw:(maxillary metastasis)) OR (tw:(maxillary metastases)) OR (tw:(mouth metastasis)) OR (tw:(mouth metastases))

Virtual Health Library	AND NOT (tw:(cervical metastasis)) AND NOT (tw:(cervical metastases)) AND NOT (tw:(lymph node metastasis)) AND NOT (tw:(lymph node metastases)) AND NOT (tw:(node metastasis)) AND NOT (tw:(node metastases))
Cochrane Library	Mouth [MeSH-explode all trees] AND Neoplasm Metastasis [MeSH-explode all trees]
Web of Science	mouth OR "oral cavity" OR "cavity, oral" OR "cavitas oris" OR "vestibule of the mouth" OR "vestibule oris" OR "oral cavity proper" OR "mouth cavity proper" OR "cavitas oris propria" OR jaw OR jaws OR "mouth mucosa" OR "mucosa, mouth" OR "oral mucosa" OR "mucosa, oral" OR "buccal mucosa" OR maxilla OR maxillas OR "maxillary bone" OR "bone, maxillary" OR "bones, maxillary" OR "maxillary bones" OR maxillae AND "neoplasm metastasis" OR "metastases, neoplasm" OR "neoplasm metastases" OR metastasis OR metastases OR "metastasis, neoplasm"
Gray literature (Google Scholar, Open Grey and BDTD)	Oral metastasis
Manual Research	Manual search of selected article references

Supplementary Table 2- Excluded articles and reasons for exclusion (*n*=960)

Author and year	Reasons for exclusion
Abe et al., 2019; Abemayor et al., 1988; Abramson, 1971; Abro et al., 2019; Adekeye et al., 1987; Adewale et al., 2018; Adnot et al., 2018 Aerden et al., 2017; Afroze et al., 1998; Agarwal et al., 2011; Agrawal and Nair, 2017; Agrawal et al., 2014; Agarwal et al., 2019; Ahmad et al., 2002; Ahmadnia et al., 2013; Airoldi et al., 1995; Aiyer et al., 2019; Ajaiyeoba and Olusanya, 2005; Akdas et al., 1987; Akhtar et al., 2007; Al-wattar et al., 2009; Alath et al. 2014; Aledavood et al., 2022; Algahtani et al., 2009; Alhoulaiby et al., 2020; Allen et al., 1993; Almangush et al., 2014; Alrumaih et al., 2015; Altinel et al., 2010; Altuntas et al., 2015; Álvarez et al., 2006; Alves et al., 2003; Alves et al., 2014; Alzaraa et al., 2008; Amadeu et al., 2016; Amagasa et al., 1990; Ambre et al., 2022; Anajar et al.,2017; Anderson et al., 1990; Ando et al., 2011; Andrade et al., 2015; Angiero et al., 2011; Angiero et al., 2008; Aoun et al., 2020; Apaydin et al., 2018; Arslan et al., 2016; Assaf et al., 2014; Astacio and Alfaro, 1969; Aydogan et al., 1996; Azadeh et al., 2016; Azam et al., 2008; Azevedo et al., 2012; Babu et al., 1996; Bair et al., 2010; Balestreri et al., 1997; Balliram et al., 2012; Baranovic et al., 2015; Baranovic and Milenovic, 2022; Barrera-Franco et al., 1993; Barton et al., 1980; Basely et al., 2009; Bayar et al., 2010; Been et al., 2011; Bhansali et al., 2003; Bhaskaran et al., 2011; Bhatia et al., 2007; Bhattacharyya et al., 1999; Bhutani et al., 1992; Bingol et al., 2015; Birkholz et al., 1979; Birkholz et al., 1982; Blinder et al., 1992; Bluestone, 1953; Bochnia et al., 1997; Bodner et al., 2006; Bogart et al., 1990; Bonan et al., 2008; Borle et al., 1991; Boulanger et al., 2019; Brodsky and Robson, 1984; Brunetti et al., 2013; Bucin et al., 1982; Buddula, 2009; Burket, 1941; Bychkov et al., 1984; Calverley and Mohnac, 1963; Cantero et al., 1998; Cao et al., 2018; Capodiferro et al., 2020; Cardona et al., 2000; Carl et al., 1971; Carmichael et al.,1996; Carnelio et al., 2002; Carpenter et al., 1978; Carroll et al., 1993; Cartrite et al., 2019; Cassarino et al., 2003; Castigliano and Rominger, 1954; Cavalcanti and Vannier, 1998; Celenk et al., 2012; Celli et al., 1992; Cervenka et al., 2017; Chan et al., 2011; Chang et al., 2002; Chang and Huang, 2020; Chee et al., 2015; Chen et al., 2006; Chen et al., 2008; Chen et al., 2009; Chen et al., 2020; Cherrick et al., 1973; Chin et al., 1998; Choo and Somasundaram, 2014; Choukas et al., 1993; Ciola, 1981; Cizmarevic et al., 2019; Clark, 1990; Clausen and Poulsen, 1963; Cmrecak et al., 2018; Cochrane et al., 2006; Cohen et al., 1989; Compilato et al., 2012; Contreras et al., 2016; Cooney et al., 1988; Cortés-Vázquez et al., 2020; Cotton and Fairris, 1985; Cristofaro et al., 2011; Cruz-Benítez et al., 2017; Curra et al., 2014; D'Antonio et al., 2016; Dababneh et al., 2017; et al., 2018; Daley e Darling, 2011; Dalirsani et al., 2020; Damodaran et al., 2008; Daneshbod et al., 2007; Danic et al., 2018; Daskalaki et al., 2015; Davidson and Wilson, 1989; Davidson et al., 1991; DeBoom et al., 1985; Deeb et al., 2020; Dehal et al., 2015; Del Carmen and Korbitz, 1970; Di Stasio et al., 2018; Dick et al., 1957; Dirican et al., 2014; Dmytriw et al., 2013; Dodo et al., 2017; Deng et al., 2021; Donnez et al., 2011; Dosoretz et al., 1999; Doval et al., 1992; Doyle e Goldman, 1996; Dumpala et al., 2012; Ebata et al., 1991; Eckardt et al., 2011; Eivazi et al., 2011; El Khatib et al., 2007; Elzouki et al., 2014; English et al., 2000; Enokiya et al., 2008; Epker et al., 1969; Epstein et al., 1987; Fatahzadeh et al., 2015; Favia et al., 2010; Fay and Weir, 1983; Fehri et al., 2020; Fejsa-Levakov et al., 2019; Fenech et al., 2020; Fenton et al., 2007; Fernandes et al., 2013; Ficarra et al., 1996; Fields et al., 1998; Fitzgerald et al., 1982; Fitzwilliams, 1938; Florine et al., 1988; Florio and Hurd, 1995; Fooroghi et al., 2019; Freire et al., 2019; Friedlander Singer, 1978; Friedmann and Osborn, 1964; Friedrich and Abadi, 2010; Fruiedrich and Zustin, 2010; Frydenlund et al., 2018; Fukuda et al., 2002; Galen, 1998; Ganesh et al., 2014; Gangwani et al., 2022 Ganini et al., 2012; García-Reija et al., 2002; Gargouri et al., 2018; Gatti et al., 2020; Gentile et al., 2013; George et al., 2019; Gerlach et al., 1982; Ghazali et al., 2012; Giles and Mcdonald, 1982; Gill and Frattali, 2015; Giovannacci et al., 2022; Gobbo et al., 2015; Godby et al., 1967; Goel et al., 2003; Goldaracena et al., 2012; Gomes et al., 2009; Gondim et al., 2017; Gorsky et al., 1983; Gowda et al., 2017; Goyal et al., 2013; Granado et al., 2007; Greenstein et al., 2013; Grillo et al., 2021; Guarda-Nardini et al., 2017; Guimarães et al., 2016; Guvenç et al., 2006; Hadhri et al., 2020; Hagglund, 1959; Halachmi et al., 2000; Hammond and Calderwood, 1969; Han et al., 2007; Harding-Kaba et al., 2008; Hardt and Lucerne, 1976; Harisson et al., 1987; Hassan et al., 2011; Hatziotis et al., 1973; He et al., 2014; Hefer et al., 1998; Herrera et al., 2003; Hicks et al., 1995; Higginson et al., 2007; Hofer et al., 1991; Hong et al., 2021; Horie et al., 1985; Hou et al., 20019; Hrebinko et al., 1993; Hsu et al., 2002; Huang and Yang 2021; Huang et al., 2005; Huang et al., 2007; Huang et al., 2009; Hunter and Poyton, 1963; Ide et al., 1997; Iida et al., 2009; Iplikci et al., 2022; Irani et al., 2004; Ishikawa et al., 1991; Ito et al., 2017; Jacobs et al., 1966; Jain et al., 2013; Jallu et al., 2013; Jarrosson et al., 2005; Jayasooriya et al., 2004; Jeba et al., 2016; Jeon et al., 2019; Jham et al., 2011; Jia and Li, 2014; Jia et al., 2006; Jiang et al., 2016; Jiménez et al., 2005; Jiménez, 2004; Johal et al., 1994; Jorquera et al., 2018; Joshi et al., 2012; Junquera et al., 2004; Kaleva et al., 2015; Kamatani et al., 2008; Kameta et al., 2017; Kammerer et al., 2011; Kanazawa e Sato, 1989; Kao et al., 2004; Kaplan et al., 2008; Kaplan et al., 2017; Kattappagari et al., 2013; Kaugars and Svirsky, 1981; Kaveri et al., 2007; Kawaharada et al., 2022; Kawai et al., 1997; Keerthi and Dutta, 2016; Keller and Gunderson, 1987; Kennedy et al., 2016; Kerpel and Freedman, 1993; Kesting et al., 2006; Khade and Devarakonda, 2018; Khalid et al., 2022; Khanna and Sengupta, 2020; Khazzaka et al., 2016; Khirwadkar et al., 2022; Khoozestani et al., 2019; Khurram et al., 2016; Kim et al., 1979; Kim et al., 2009; Kim et al., 2015; Kim et al., 2016; Kimura et al., 2022; Kirke et al., 2010; Kitadai et al., 2019; Kitchen et al., 2013; Klasser et al., 2014; Kohoo and Cheong, 2020; Kohli and Schaefer, 2006; Kolarevic et al., 2011; Koper et al., 1975; Koraitim et al., 2016; Kraft et al., 2008; Kranz, 1966; Kreutz et al., 1987; Krishnamurthy et al., 2009; Krishnamurthy, 2020; Kudva et al., 2016; Kulamarva et al., 2007; Kumar et al., 2013; Kunzel et al., 2013; Kup et al., 2016; Kurian et al., 2014; Kusunoki et al., 2015; Kwon et al., 2006; Kwon et al., 2016; Laban et al., 2016; Lagha et al., 2012; Lainson et al., 1975; Lakshmi et al., 2014; Lalikos et al., 1992; Laperyrolerie and Manhold, 1964; Landeyro et al., 2010; Lee et al., 1995; Lee et al., 1998; Lee et al., 2012; Lee et al., 2014; Lee et al., 2017; Leoncini et al., 2014; Lenouvel et al., 2016; Levy and Smith, 1974; Lewis et al., 2008; Li et al., 2017; Linkous and Welch, 1974; Liu et al., 2019; Liu et al., 2007; Livolsi, 1979; Lombardo et al., 2020; Lund et al., 1968; Lopez and Lobos, 1976; López-Jornet et al., 2011; Lourenço et al., 2022; Lutcavage et al., 1984; Lutz	**1- Cases with hypothesis o benign lesion not consider**

et al., 2008; M'Rabet et al., 2017; Mace, 1978; Mackenzie and Waugh, 1927; Madabhavi et al., 2021; Madison and Frierson, 1988; Magat et al., 2019; Magliocca et al., 2009; Makos et al., 2009; Malhotra et al., 2006; Mallikarjun et al., 2015; Mankapure et al., 2015; Manor et al., 2012; Marchioni et al., 2004; Maria et al., 2022; Marioni et al., 2004; Markitziu et al., 1986; Markman et al., 2018; Maschino et al., 2013; Masmoudi et al., 2006; Matamala et al., 2008; Mathis et al., 2010; Matsumoto et al., 2013; Matt and McGee, 2012; Maxymiw and Wood, 1991; Mazeron et al., 2013; McCarty et al., 1994; McDaniel et al., 1871; McGlumphy et al., 1987; McKernon et al., 2013; Melloni et al., 2015; Meneghini et al., 2002; Meyer and Shklar, 1958; Miller et al., 2009; Miller and Pullon,, 1971; Mintz and Radecki, 1988; Misra et al., 2015; Mittal et al., 2015; Miyamoto and Helmus, 1973; Miyazaki et al., 2022; Mochizuki et al., 2019; Mohamed and Suleiman, 2016; Mojica-Manosa et al., 2006; Moreira and Corrales, 2021; Morimoto et al., 2013; Morishita et al., 1984; Morita et al., 2018; Morvan et al., 2011; Mosby et al., 1973; Moser et al., 2011; Moss, 1983; Mostaan et al., 2013; Moure et al., 2008; Mrena et al., 2008; Mucitelli et al., 1988; Mui et al., 1999; Muldoon, 1974; Munakata et al., 2009; Nagao et al., 2008; Nagata et al., 2015; Nagayama et al., 1979; Nakamura et al., 2001; Nakanishi et al., 2014; Nakano et al., 2021; Nardi and Ficarra, 1988; Narendra and Ray, 2009; Navarro et al., 2000; Naylor et al., 1989; Netto et al., 2019; Neumann et al., 2021; Nichetti et al., 2018; Nicolaides et al., 1989; Nifosi et al., 2017; Nikitakis et al., 2012; Nishide and Nakamura, 2006; Nisi et al., 2020; Nishii et al., 2020; Nishikawa et al., 2010; Nitzan et al., 1990; Noriega et al., 2016; Nortjé et al., 1996; Nusrath et al., 2006; Nuyens et al., 2006; O'Brien et al., 2018; Ocampo-Acosta et al., 2009; Ogunyemi et al., 2010; Ogutcen-Toller et al., 2002; Oh and Hong, 2022; Ohba et al., 2016; Ohnishi et al., 2014; Okabe et al., 1992; Okada et al., 2003; Olsen et al., 2014; Olvera et al., 2018; Ord et al., 1990; Orlandi et al., 2011; Osguthorpe and Bratton, 1982; Ou et al., 2022; Owosho et al., 2016; Ozdemir et al., 2004; Páez-Valencia et al., 1999; Parkins and Klufio, 2009; Parodi and Errichetti, 2020; Pasupula et al., 2012; Patrocinio et al., 2008; Patton et al., 1994; Peacok and Fleet, 1982; Peña and Smith Jr, 1984; Perchick and Kim, 1986; Percival and Curt, 1982; Pereira et al., 2005; Perez-Fidalgo et al., 2007; Peris et al., 1994; Perriman and Figures, 1978; Persson and Wallenius, 1961; Peters et al., 2017; Pezzuto and Morrone, 2017; Piattelli et al., 1999; Pick et al., 1986; Picot et al., 2019; Pigatti et al., 2019; Pires et al., 2004; Pires et al., 2010; Pittoni et al., 2014; Pontes et al., 2014; Poon and Hasim, 2007; Porter et al., 1988; Poulopoulos et al., 2005; Praderio et al., 2016; Pritchyk et al., 2002; Pullon and Cohen, 1974; Puranik et al., 2013; Radzi et al., 2018; Rahpeyma and Khajehahmadi, 2020; Rai et al., 2009; Raiss et al., 2017; Rakul Nambiar et al., 2018; Ram et al., 2013; Ram et al., 2015; Ramanathan et al., 1968; Rasheed et al., 2012; Ray et al., 2013; Razmara et al., 2020; Ren et al., 2017; Rentschler et al., 1982; Richardson et al., 1989; Rintala, 1987; Ríos et al., 2010; Rizq et al., 2020; Roa et al., 2007; Robinson et al., 1962; Robinson, 1947; Rocca et al., 2017; Rocha et al., 2020; Rodrigues et al., 2016; Roh et al., 2008; Romanas et al., 2004; Romanet et al., 2018; Rosbottom et al., 2009; Rovira-Wilde et al., 2020; Rovira-Wilde et al., 2022; Rushthoven et al., 1984; Sadat et al., 2007; Sahin et al., 2018; Sahoo et al., 2007; Salama et al., 2009; Saleen et al., 2014; Salman and Langel, 1954; Salvador et al., 2018; Sánchez et al., 2002; Sands et al., 2004; Santana et al., 2020; Santaolalla et al., 2009; Santos et al., 2016; Sari et al., 2006; Sasaki et al., 2008; Satchi et al., 2015; Sato et al., 1978; Sauerborn et al., 2011; Sawicki et al., 2014; Schaffner et al., 1982; Schlabe et al., 2018; Schneider et al., 2015; Schrag and Jordan, 1945; Schulz et al., 2021; Scipio et al., 2001; Scolozzi et al., 2006; Sellinger et al., 2011; Sera et al., 2017; Shah et al., 2010; Shah et al., 2016; Shah et al., 2017; Shapiro et al., 1967; Sharma et al., 2013; Shama et al., 2017; Shehab et al., 1994; Shen et al., 2009; Sherr et al., 1985; Shetty et al., 2017; Shimoyama et al., 2004; Shiraishi et al., 1999; Shuibat et al., 2012; Siddique et al., 2015; Sikka et al., 2013; Silva et al., 2012; Singh et al., 1978; Singh, 1992; Singh et al., 2011; Singh et al., 2015; Singh et al., 2019; Sinon et al., 2013; Siriwardena et al., 2005; Sist et al., 1982; Smits and Slootweg, 1984; Smolka et al., 2004; Snyder et al., 1975; Soda et al., 2010; Song et al., 2013; Song et al., 2022; Soni et al., 1978; Sonia et al., 2015; Sorbera and Taylor, 1966; Souron et al., 2016; Souza et al., 2016; Soyuer et al., 2004; Spinelli et al., 2006; Spott, 1985; Sproat et al., 1993; Srinivas et al., 2009; Saalsen et al., 1992; Staton et al., 2003; Stern et al., 1974; Sternbach et al., 2022; Storey and McGowan, 1986; Stroncek et al., 1981; Su et al., 2017; Sugimoto et al., 2022; Sukpanichyingyong et al., 2019; Suojanen et al., 2014; Suzuki et al., 1999; Svirskky et al., 1989; Synder and Marks, 1986; Sweet et al., 1985; Taguchi et al., 2005; Takahashi et al., 2014; Takinami et al., 1995; Tamiolakis et al., 2007; Tanabe et al., 2008; Tanaka et al., 2010; Tanaka et al., 2020; Tas et al., 2015; Tasaki et al., 2022; Tatsis et al., 2020; Tchan et al., 2008; Tenzer et al., 1988; Teshigawara et al., 2006; Thatcher et al., 1986; Tho and O'Rourke, 2005; Thottian et al., 2017; Tomita et al., 1998; Torregrossa et al., 2016; Torres-Carranza et al., 2006; Toth et al., 1981; Tovi et al., 1984; Tsai et al., 2019; Tsianos et al., 1985; Tsianos et al., 1987; Tsuji et al., 2022; Tunio et al., 2014; Udager et al., 2014; Uhler et al., 1972; Umashankar et al., 2013; Umbach et al., 2020; Ungor et al., 2014; Uppal and Shetty, 2011; Usman et al., 2014; Van der Kwast and Van der Wall, 1974; Varadarajan et al., 2017; Vassilliou et al., 2014; Vessecchia et al., 1995; Vigneul et al., 1982; Villa et al., 2012; Vitale et al., 2007; Vivas et al., 2014; Vo et al., 2020; Vora et al., 2003; Vormittag et al., 2008; Vural and Hanna, 1998; Wadasadawala et al., 2011; Wade et al., 2017; Wahyono et al., 2022; Wakasa et al., 1989; Wakasugi et al., 2001; Walia et al., 2014; Wallace et al., 2022; Wang et al., 1991; Wang et al., 2004; Wang et al., 2020; Watanabe et al., 2016; Wedgwood and Balk, 1979; Weitzner and Hentel, 1968; Wen et al., 2008; Weng et al., 2011; Whitaker et al., 1993; Wiesel et al., 1982; Will et al., 2008; Will et al., 2008; Willard et al., 2002; Winter et al., 2002; Woolf et al., 1984; Won et al., 2015; Xue et al., 2017; Yahyaoui et al., 2020; Yamaguchi et al., 2010; Yamori and Kurosawa, 2020; Yanagi et al., 2002; Yang et al., 2014; Yanlan et al., 2013; Yoshimura et al., 1991; Yoshimura et al., 1997; Yoshioka et al.,s 2009; Yosra et al., 2020; You et al., 2012; You et al., 2015; Yu et al., 2016; Zachariades and Papanicolaou, 2010; Zanconati et al., 2003; Zandi et al., 2014; Zegarelli et al., 1973; Zeidan et al., 2010; Zhang et al., 2010; Zhang et al., 2011; Zhang et al., 2014; Zhao et al., 2018; Zichi et al., 2018; Ziyada et al., 1994; Zohar et al., 1985; Zubovi´c et al., 2021;

Alami et al., 2015; Alández et al., 1995; Allon et al., 2013; Antunes and Antunes, 2008; Ball et al., 1990; Bandetti et al., 2017; Baum et al., 2018; Bersani et al., 1994; Billé et al., 2014; Billings et al., 1995; Braimah et al., 2018; Carr et al., 1968; Conley and Arena, 1963; D'Silva et al., 2006; Daley et al., 2011; Dehner, 1973; Dreizen et al., 1980; Drelzen et al., 1985; Emanuelli et al., 2018; Epivatianos et al., 2008; Fanburg-Smith et al., 2003; Fortunato et al., 2018; Friedrich et al., 2010; Glaser et al., 1997; Guibor, 1942; Helal et al., 2015; Henderson et al., 1986; Ho et al., 2022; Hoing, 2000; Horton et al., 1973; Jecker and Hartwein, 1996; Kaplan et al., 2019; Kim et al., 2014; Kollias e Gill, 1997; Lengana et al., 2018; Lieder et al., 2017; Lim et al., 2006; Lim et al., 2014; Liu et al., 2018; Mavec et al., 1964; McClure et al., 2013; Meyer and Shklar, 1965; Muttagi et al., 2001; Naik et al., 2019;	**2- Lack of clinical and/or demographic information**

Nawale et al., 2016; Nishioka et al., 1983; Pisani et al., 1998; Prasad et al., 2001; Rafla et al., 1970; Rahman et al., 2017; Raut et al., 2004; Saiz et al., 1998; Seoane et al., 2009; Servato et al., 2013; Shin et al., 2012; Stanley et al., 1997; Terenzi et al., 2015; Thiele et al., 2011; Throdahl et al., 1970; Van der Wall et al., 2003; Weithman et al., 1928; Wheelock et al., 1992; Yarigton, 1981; Zauladek et al., 2015; Zhang et al., 2000.	
Agaimy et al., 2012; Al-Hadad et al., 2010; Al-Kassab and Foster, 1995; Álvarez-Mpugica et al., 2010; Ates et al., 2015; Baeskloglu et al., 2006; Bentley and Worrall, 1997; Bernstein et al., 1966; Brucoli et al., 2010; Carruth, 1972; Dessinoti et al., 2011; Domínguez-Duran et al., 2013; Hamdoon et al., 2010; Har-El, 1987; Kawai et al., 1989; Khayat and Gupta, 2019; Khoo et al., 2020; Kourelis et al., 2012; Krishnaraj et al., 2003; Lei et al., 2019; Leone et al., 2014; McNattin and Dean, 1930; Miah et al., 2010; Moffa et al., 2019; Morgenstein, 1968; Nam et al., 2020; Namad et al., 2014; Neff et al., 2002; O'Conneli, 1958; Ogawa et al., 2000; Oliver et al., 2001; Pandey et al., 2007; Pedraza et al., 2015; Prittchyk et al., 2002; Rahman et al., 2017; Robinson, 1973; Sasikumar et al., 2017; Satake et al., 2005; Scott et al., 1998; Sesenna et al., 1995; Shimizu et al., 2002; Temmerman et al., 2017; Tomanovic et al., 2013; Tracy et al., 2017; Vo et al., 2020; Wong et al., 2017; Worgan, 1967; Yamamoto et al., 2003; Yamashita et al., 2020.	**3- Metastasis to other regic of the face**
Albayram et al., 2004; Cook, 1949; Della Chiesa et al., 2014; Divya et al., 2010; Hustin and Delire, 1981; Laurencet et al., 2000; Lombardi et al., 1995; Lu et al., 2017; Murillo e al., 2013; Orhan et al., 2011; Requena et al., 2008; Schmidt-Westhausen et al., 1996; Siverino et al., 2016; Tabib et al., 2011.	**4- No histological confirmation**
Blackwood et al., 1956; Hashimoto et al., 1987; Manrique et al., 1978; Synder e Cawson, 1975.	**5- Metastasis discovered a the time of autopsy**
Almeida et al., 2010; Altinel et al., 2009; Andabak et al., 2019; Araya et al., 2015; Benites et al., 2018; Binboga et al., 2020; Borda et al., 2009; Bronus et al., 2019 Carvalho et al., 2017; Cho et al., 2001; Costa et al.,2015; Doshi et al., 2020; Facey et al., 2012; Freire et al., 2017; Freitas Filho et al., 2014; Gavaldá et al., 2019; Gerardo et al., 2020; Ghazali and Jelon, 2015; Gunel et al., 2020; Hirsch et al., 2011; Hussain et al., 2019; Katikaridis et al., 2020; Kimiloglu et al., 2017; Kuracinova et al., 2020; Kyles et al., 2017; Lawrence et al., 2013; Liyanaarachchi et al., 2020; Malik et al., 2019; Marinho et al., 2010; Marques et al., 2018; McKernon et al., 2017; Monteiro et al., 2011; Montezuma et al., 2018; Nakamatsu et al., 2015; Perez et al., 2005; Peterson et al., 2011; Preda et al., 2009; Raczkowska-Siostrzonek et al., 2009; Romanach et al., 2017; Romero et al., 2011; Roth et al., 2019; Siqueira et al., 2018; Urban et al., 2015; Yildirim et al., 2017; Zhu et al., 2017; Zikos et al., 2013;	**6- Congress abstracts**
Akiba et al., 2013; Alexander and Maleki, 2018; Allen and Duckworth, 1985; Bernabe et al., 2008; Demir et al., 2022; Goodisson et al., 1999; Lee et al., 1990; Lee et al., 2022; Marioni et al., 2003; Naidu et al., 2012; Olsen et al., 2009; Schwender et al., 2002; Silvester and Speight, 1991; Taketomi et al., 2017; Umeda et al., 2002; Vaidya et al., 1999; Zachariades et al., 1989.	**7- Head and neck cancer w local metastasis**
Anacak et al., 2002; Deyhimi et al., 2012	**8- Metastasis of blood or hematopoietic cell cancer**

Supplementary Table 3- Extracted data from each study

Author	N. of cases	Sex	Age	Lesion location	E.T	Symptomatology	Microscopic appearance and metastasis.	Clinical appearance	Image exams	Treatment	Prognosis
Abbaszadeh-Bidokhty et al., 2014	1	M	80	Tongue	5	**LS:** Painless, bleeding **SS:** N.I	Renal cell carcinoma	Swelling of 1 x 1 cm, reddish, oval-shaped, slightly indurated, sessile **Dh:** Reactive lesion	N.I	Surgical excision, and chemotherapy (Sunitinib and Sorafenib)	Alive after 6 month of treatment
Adams, 2016	1	M	67	Mandible	4	**LS:** Mild discomfort and unable to open his mouth fully **SS:** N.I	Unknown primary site until the time of oral metastasis diagnosis Hepatocellular carcinoma	Mass of 3 cm expanded and destructive soft tissue **Dh:** Myeloma, metastasis, osteosarcoma, infection, bisphosphonate induced and radiation induced osteonecrosis	**Rad-** Pathological fracture secondary to an osteolytic, ill-defined lesion **CT-** 3 cm expanded and destructive soft tissue mass	N.I	N.I

Agarwal and Gupta, 2015	1	F	60	Gingiva	2	**LS:** Painless **SS:** Fever, generalized body ache	Unknown primary site until the time of oral metastasis diagnosis Ovarian carcinoma	Proliferative growth of 3 cm, with irregular borders, soft in consistency, sessile and ulcerated. Submandibular lymphadenopathy **Dh:** Pleomorphic adenoma, chronic non-healing ulcer, malignant ulcer and metastatic carcinoma **Obs:** Past history of extraction and fine needle aspiration cytology, with the diagnosis of pleomorphic adenoma	**Rad-** No bone involvement	Death before starting treatment	Death
Agerberg and Soderstrom, 1974	1	F	46	Mandible	N.I	**LS:** Pain and trismus **SS:** N.I	Ductal carcinoma of the breast. Later, developed metastasis to the forehead, neck and skull. Autopsy revealed metastasis to mediastinal lymph nodes, lungs, pericardium, liver and bone marrow	Tenderness to palpation over the left TMJ and impaired mobility of the mandible with mouth opening of 17 mm **Dh:** Arthritis of the TMJ and dysfunction of the masticatory system **Obs:** Tooth extraction which led to trismus and persistent pain. After 14 days there was a swelling in the TMJ	**Rad-** Lesions in the lateral part of the left mandibular condyle **TC-** Severely destructive changes in ramus, bead and neck of mandibular condyle	Radiotherapy	Death after 9 montl
Agrawal et al., 2014	1	F	46	Mandible	0.75	**LS:** Reduced mouth opening and pain on opening the mouth **SS:** N.I	Adenocarcinoma of the breast	Slight tenderness in the left mandibular angle and cheek region and the muscles of mastication were stiff on palpation. Mouth opening was reduced (9 mm) with slight deviation towards left side while opening. No cervical lymphadenopathy **Dh:** Neoplastic lesion or osteomyelitis	**Rad-** No bone involvement **CT-** Slightly expanded mandibular ramus with marginal irregularities, edematous and bulky adjacent soft tissue **3D CT-** Bony irregularities more prominently with an osteolytic lesion	N.I	N.I
Aguirre et al., 1996	1	F	82	Tongue	0,75	**LS:** Asymptomatic, profuse hemorrhage **SS**: N.I	Unknown primary site until the time of oral metastasis diagnosis Renal cell carcinoma. Metastasis to brain	Lesion of 2 x 2 cm, reddish-blue pedunculated and the surface was lobulated **Dh:** Pyogenic granuloma, primary malignancy of the tongue, and metastatic disease	**Rad-** No bone involvement	Surgical excision	N.I
Ahuja et al., 2021	1	M	70	Mandible	2	**LS:** Numbness in the chin **SS:** Difficult in micturition	Unknown primary site until the time of oral metastasis diagnosis. Adenocarcinoma of the prostate	Swelling, 4.2 x 3.4 cm, non-tender, hard. No cervical lymphadenopathy **DH**: Benign odontogenic tumor, benign odontogenic cyst, fibro-osseous lesion	**Rad-**Osteolytic bony lesion with irregular, ragged margins and multiple areas of trabecular rarefaction in a moth-eaten appearance **CT-** Peripheral bone reaction of bucco-lingual cortices and inferior border of the mandible	N.I	Lost follow-up afte 2 months
Aisenberg and Inman, 1956	1	F	62	Maxilla and mandible	N.I	**LS:** Pain (tooth 35) **SS**: N.I	Unknown primary site until the time of oral metastasis diagnosis. Malignant melanoma of the skin. Widespread metastasis	No intraoral alterations **Dh:** Dental granuloma, possibly cystic	**Rad-** Bone destruction	N.I	Death after 1 mont
Akheel et al., 2013	1	F	61	Gingiva	4	**LS**: N.I **SS:** N.I	Unknown primary site until the time of oral metastasis diagnosis. Squamous cell carcinoma of the uterus	Swelling of 3 × 2 cm, firm and non-tender. No cervical lymphadenopathy **Dh**: Peripheral giant cell granuloma	N.I	Referral to oncologist	N.I.
Akhtar et al., 1996	1	M	45	Gingiva and buccal mucosa	2	**LS:** Tooth mobility and difficulty in mastication **SS:** None	Unknown primary site until the time of oral metastasis diagnosis Hepatocellular carcinoma	Soft tissue swelling of 2x3 cm, non-tender, firm and fixed . No cervical lymphadenopathy **Dh:** Chronic inflammation **Obs:** Past history of antibiotic therapy and performance of a biopsy. This biopsy was suggestive of chronic inflammation	**Rad-** Lytic lesion without a cortical break	N.I	Death after 2 montl

Aksoy et al., 2014	1	M	78	Mandible	2	**LS:** Numbness and pain **SS:** N.I	Prostate carcinoma. Later, developed metastasis to femoral head, vertebra and shoulder head	No intraoral alterations **Dh:** Unspecified benign lesion (undefined term) **Obs:** Past history of root canal treatment followed by extraction due to calcification of the canal, pain and numbness. After extraction, the symptoms worsened	**Rad-** Mouth-eaten shaped radiolucence in the posterior mandible extending along the TMJ area **CT-** Moth-eaten shaped radiolucent lesion extending from the molar region and also involved the mandibular canal	None	Death after 6 montl
Albers, 1970	1	M	68	Mandible	0.25	**LS:** Pain **SS:** None	Adenocarcinoma of the prostate. Later, metastasis to the lung, vertebra and liver	Swelling with hard bony expansion of the buccal alveolus of tooth 36, that was slightly mobile and tender to percussion. No cervical lymphadenopathy **Dh:** Reactive alveolar hyperplasia secondary to chronic periodontal disease or metastatic lesion	**Rad-** Small lytic lesion of the left mandibular body	Radiotherapy	Death after 3 montl
Ali and Mohamed, 2016	1	M	60	Gingiva	5	**LS:** Painless, difficulty swallowing and speech and he also complained of drooling of saliva **SS**: None	Unknown primary site until the time of oral metastasis diagnosis Renal cell carcinoma. Metastasis to the lung	Mass of 6 x 7 cm, nodular fungating . No cervical lymphadenopathy **Dh:** Fibroma	**CT-** Soft tissue mass associated erosive bone changes	Radiotherapy, and chemotherapy (Alpha Interferon and Sorafenib)	Alive after 3 montl
Almazyad et al., 2019	1	F	59	Gingiva	6	**LS:** Pain, tooth mobility **SS:** None	Endometrial serous adenocarcinoma. Later, developed metastasis to the lungs	Mass of 1.5 x 1 cm, firm, erythematous, in the area of missing right mandibular second bicuspid and first molar with buccal and lingual expansion. The right first mandibular molar was grade 3 mobile **Dh:** Pyogenic granuloma, gingival/periodontal abscess, oral metastasis, squamous cell carcinoma **Obs:** Past history of antibiotic treatment and tooth extraction, but without improvement in symptoms	**Rad-** Radiolucency of 1.2 x 0.8 cm, diffuse, and poorly demarcated	Palliative radiotherapy, and chemotherapy (Pemetrexed)	Alive after 10 mont
Altintas et al., 1995	1	F	26	Gingiva	1	**LS:** Toothache **SS**: N.I	Unknown primary site until the time of oral metastasis diagnosis Choriocarcinoma of the uterus. Metastasis to the lung	Lesion of 2 x 5 cm **Dh:** Gingivitis **Obs:** Past history of gingivitis treatment because of mild pain in the molar teeth	**CT-** Normal. There were no noticeable metastases in the bone structure of the head	Chemotherapy (Methotrexate, Actinomycin D and Cyclophosphamide)	Alive after 2 years
Ambroggi et al., 2014	1	M	54	Submandibular salivary gland	N.I	**LS:** N.I **SS:** N.I	Pleural mesothelioma. Metastasis to lungs, pericardium and diaphragm. Later developed metastasis to abdominal wall and mediastinum lymph nodes	Tumefaction and hypertrophy of submandibular gland **Dh:** Sialadenitis **Obs:** Initially misdiagnosed and treated as inflammation of the gland with anti-inflammatory and antibiotic therapy but without improvement	**CT-** Confirm submandibular gland hypertrophy	Radiotherapy	N.I
Amin et al., 2011	1	M	75	Mandible	3	**LS:** Numbness of the lower lip and jaw **SS:** Increased frequency of loose stools with occasional blood spotting	Colorectal adenocarcinoma. Metastasis to the liver, and adrenal gland	Mildly tender, hard mass **Dh:** Odontogenic infection **Obs**: The patient was treated by the dentist as a dental infection with antibiotics, but the symptoms persisted	**CT-** Mass of 3.3 cm with destruction of the lingual and buccal cortex of the ascending ramus of mandible involving the inferior alveolar nerve	Palliative radiotherapy	N.I

Amro et al., 2014	1	M	66	Gingiva	N.I	**LS:** Tender to palpation **SS:** Chest pain, weight loss, effort dyspnea and fever	Unknown primary site until the time of oral metastasis diagnosis Adenocarcinoma of the lung	Tumor, tender to palpation without bleeding or tooth mobility **Dh:** Inflammatory granuloma	N.I	Simple excision of the lesion, and palliative chemotherapy	Death
Anil et al., 1999	1	F	61	Mandible	3	**LS:** Pain, tooth mobility **SS:** N.I	Follicular carcinoma of the thyroid	Swelling of 4 x 3 cm, firm and diffuse in the retromolar region. On palpation, bicortical expansion of the ramus of the mandible was noted. Intraorally there was an erythematous change over the retromolar region and adjacent buccal mucosa. Submandibular lymphadenopathy **Dh:** Periodontal disease **Obs:** Past history of tooth extraction. After that she noticed an increase in size of the swelling with pain radiating to the neck	**Rad-** Well-circumscribed radiolucent lesion extending from the lower border of the angle of the mandible to the coronoid and condylar processes	N.I	N.I
Araki et al., 2008	1	F	55	Mandible	0.25	**LS**: Painless **SS**: N.I	Unknown primary site until the time of oral metastasis diagnosis Follicular carcinoma of the thyroid. Later, developed metastasis to the rib and frontal bone	Swelling of approximately thumb size with normal overlying mucosa **Dh:** Unspecified benign lesion and malignant lesion **Obs**: The histopathological diagnosis was unclear	**Rad-** Cyst-like radiolucency with a minutely irregular margin **CT-** Destruction of the lingual cortical bone with soft tissue infiltration **MRI**- Intermediate signal intensity with a high spotty signal	Surgical excision, radiotherapy, and chemotherapy	Alive
Arroyo et al., 2013	1	M	64	Palatine tonsils	6	**LS:** Dysphagia and odynophagia **SS:** Dysphonia and dyspnea	Unknown primary site until the time of oral metastasis diagnosis Small cell carcinoma of the lung. Metastasis to mediastinal and bilateral supraclavicular lymph nodes	Lesion with 4 cm , ulcerated and covered with fibrin. Cervical lymphadenopathy **Dh**: Tonsillitis **Obs:** Previous clinical treatments for the lesion with antibiotics instituted by other services, without improvement of symptoms	**CT-** Tumor with heterogeneous contrast uptake	Did not undergo treatment (died before beginning)	Death
Ashar et al., 1997	1	M	82	Mandible	2	**LS**: None **SS:** None	Unknown primary site until the time of oral metastasis diagnosis Hepatocellular carcinoma of the liver	Swelling of 12 x 6 cm The overlying skin was not attached to the lesion. The oral mucosa covering the lesion showed hypervascularity. No cervical lymphadenopathy **Dh:** Hemangioma **Obs:** The swelling showed after a tooth extraction	**Rad-** Bony destruction **Arteriography-** Highly vascularized tumor	Radiotherapy	Alive after 7 month
Aswath et al., 2017	1	M	57	Gingiva	2	**LS:** Pain and mobility of teeth **SS:** Loss of weight, pain in the genital organ	Poor differentiated carcinoma of the penis. Possible metastasis to to liver, spleen and lymph node	Ulcer in the attached gingival region. Palpable submandibular lymph nodes **Dh:** Malignant tumor or granulomatous lesion **Obs:** The patient developed ulcers in the oral cavity following extraction 2 months ago	N.I	Palliative therapy	Death
Aydin et al., 2018	1	M	72	Gingiva	1	**LS:** Severe pain, bleeding **SS:** N.I	Papillary renal cell carcinoma. Later, developed metastasis to the mediastinum, right adrenal gland and L1, L2 and right iliac bone	Mass of 3-4 cm, hemorrhagic, erythematous and edematous **Dh:** Periodontal infection, odontogenic carcinoma and clear cell tumor of salivary gland **Obs:** Initially misdiagnosed and treated as a periodontal infection with antibiotic therapy, but without improvement	**MRI-** Destructive lesion on the right half of the mandibula **PET/CT-** Hypermetabolic soft tissue lesion which caused destruction of the right lateral side of the mandibula	Palliative radiotherapy, transarterial chemo-embolization (TACE), and microwave ablation (MA)	Alive after 12 mont

Ayranci et al., 2019	1	M	69	Mandible	N.I	**LS:** Pain, numbness in the left mental nerve region **SS**: None	Unknown primary site until the time of oral metastasis diagnosis Adenocarcinoma of the prostate	Swelling of hard consistency **Dh**: Unspecified benign lesion (undefined term) **Obs:** Past history of extraction because of pain	**CT**- Small radiolucency **Rad-** Radiolucent area	Chemotherapy	Alive
Baber et al., 2008	1	F	15	Mandible	7	**LS**: Pain and difficulty eating, occlusal changes **SS:** Weight loss and pain in the right shoulder, mid-thoracic back, and left lower quadrant of the abdomen	Unknown primary site until the time of oral metastasis diagnosis Neuroblastoma of the bone marrow. Metastasis to the chest, abdomen, pelvis, and bones	Swelling of 3 x 4 cm, slightly tender, firm and the mandibular dental midline was deviated. No cervical lymphadenopathy **Dh:** Abscess, benign or malignant primary tumor, metastasis **Obs:** Past history of antibiotic therapy for a questionable abscess, without improvement of the symptoms	**Rad-** Significant radiolucency with indistinct trabeculation, loss of cortical borders, and a mottled appearance **CT-** Large, soft-tissue mass, bony destruction and lytic lesion	Chemotherapy (Vincristine, Cyclophosphamide, Daunomycin and Pegfilgrastim)	Alive
Baez and Collazo, 2022	1	F	75	Gingiva	0.25	**LS:** Bleeding, painless, dysphagia, teeth mobility **SS:** Difficulty walking	Clear cell renal carcinoma of the kidney. Multiple metastasis throughout the body	Tumor of 3 cm, bright red with violet areas and other yellowish-white areas Well defined, oval shaped, bleeding texture, sessile, irregular and lobular surface. Facial asymmetry **Dh:**Reactive inflammatory lesion (Peripheral giant-cell granuloma) and metastasis **Obs:** Past history of antibiotic therapy **Obs2:** Partially edentulous	**CT-** Tooth 22 was missing, chronic periodontal disease, with no bone alterations associated with the lesion	Referred to oncologist for further treatmen	Death after 1.5 month
Bakeen et al., 1976	1	F	25	Gingiva	N.I	**LS:** Bleeding and painless **SS:** Bleeding from th vagina. Later, she developed severe abdominal pain and rigidity	Chorioepithelioma of the uterus discovered at the same time as gingival metastasis. Later, metastasis to the lung and pelvis	Mass, reddish brown and lobulated **Dh**: Pregnancy epulis or a hemangioma	N.I	Surgical excision, and immunologic therapy	Death after a few days
Baldi et al., 2017	1	F	67	Mandible	N.I	**LS:** Pain and lower lip paresthesia **SS:** N.I	Mixed carcinoma of the breast. Metastasis to vertebral bone	No notable alterations **Dh:** Bone metastasis and necrosis due to the use of bisphosphonate	**Rad-** Areas of changes in jaw bone density **CT-** Osteolytic lesions in the right anterior and posterior regions of the mandible, with loss of cortical bone in the anterior region and in the angle of the mandible	N.I	N.I
Barr et al., 1980	1	M	75	Gingiva	2.5	**LS:** N.I **SS:** Dry cough	Adenocarcinoma of the lung	Mass of 1 x 0,5 cm,enlarged, red, soft, pedunculated and smooth, attached to the alveolar mucosa **Dh:** Pyogenic granuloma, periodontal abscess, or peripheral giant cell granuloma **Obs:** Past history of root canal treatment	**Rad-** Generalized bone loss and a periapical area at the apex of the mandibular left lateral incisor	Surgical excision	Death after 4 montl
Bastian et al., 2001	1	M	63	Maxilla	2	**LS:** Local irritation by the use of the prosthesis, toothache **SS:** Exanthematous rash around the umbilicus and on the right shoulder, fever	SeminomaC and adenocarcinoma of the urachus. Metastasis to the liver, abdomen and brain	Hard tumor-like growth in the alveolar process **Dh:** Unspecified benign lesion (undefined term) **Obs:** Past history of teeth extraction and antibiotic therapy. The swelling persisted and there was delayed healing	**Rad-** Osteolytic and sclerosing areas in the lower part of the maxillary sinus	N.I	Death after 13 months

Bedogni et al., 2007	2	**C.1 :** F **C.2 :** M	**C.1:** 65 **C.2:** 57	**C.1:** Maxilla **C.2:** Mandible	**C.1 -2:** N.I	**C.1: LS:** Pain and halitosis **SS:** N.I **C.2: LS:** Pain and trismus **SS:** N.I	**C.1:** Breast carcinoma **Obs:** Final diagnosis of maxillary BON and early metastatic localization of breast cancer **C.2:** Thyroid medullary carcinoma	**C.1:** Large area of exposed necrotic bone of anterior maxilla **Dh:** Bisphosphonate-associated osteonecrosis **Obs:** No history of dental extractions or oral surgery during bisphosphonate treatment **C.2:** Small area of exposed mandibular bone at the lingual aspect of the left molar region associated with facial swelling **Dh:** Bisphosphonate-associated osteonecrosis **Obs:** A very mobile second molar tooth was extracted	**C.1: CT-** Diffuse osteosclerotic patter and anterior bone sequestration **MRI-** Diffuse osteonecrotic-osteomyelitic process, with unspecific contrast media enhancement **C.2: CT-** Increased bone density of the left mandibular body with small lacunae, and extensive periosteal reaction **MRI-** Diffuse osteonecrotic-osteomyelitic changes of the left hemimandible and inflammation of the masseter and pterygoid muscles	**C.1:** Maxillectomy, referred to an oncologist for further treatment **C.2:** Hemimandibulectomy, referred to an oncologist for further treatment	**C.1:** Alive after 6 months **C.2:** Alive after 5 months
Beena et al., 2011	1	M	49	Maxilla and Mandible Gingiva	1	**LS:** Painless, tooth mobility **SS:** Weight loss and dull radiating pain in the left shoulder	Unknown primary site until the time of oral metastasis diagnosis Pancoast tumor of the lung (bronchoalveolar carcinoma). Metastasis to bilateral adrenal glands	Growth of 2 × 3 cm, soft to firm in consistency, sessile with no bleeding on probing. The overlying mucosa appeared blanched and the teeth involved had tooth mobility. Submandibular and sublingual lymphadenopathy **Dh:** Pyogenic granuloma **Obs:** Recurrent lesion at the same site, with two other similar looking lesions on palate **Obs 2**: Only four mandibular anterior teeth were present. Rest of the teeth were extracted due to chronic generalized periodontitis. Oral hygiene was poor	**Rad-** Extensive bone resorption with a floating tooth appearance **CT-** Bone destruction with enhancing soft tissue components	Referred to the Regional Cancer Center for treatment (chemotherapy)	Death after 9 montl
Bhadage et al., 2012	1	F	40	Mandible	3	**LS:** Bleeding **SS:** N.I	Unknown primary site until the time of oral metastasis diagnosis Follicular thyroid carcinoma	Extraoral examination revealed a swelling of 4.5 x 4.5 cm, oval shaped, tender, with bony hard consistency. Intraoral examination revealed sessile growth of 3.5 x 2 x 2.5 cm, with soft consistency and corrugated surface, arising from extraction socket of lower left molars. Bilateral submandibular lymphadenopathy **Dh:** Unspecified benign lesion (undefined term), malignant tumor of mandible **Obs:** The patient underwent teeth extraction, but the swelling persisted. Few days later, a small growth arising from extraction socket was noticed	**Rad-** Osteolytic lesion in the lower left first, second, and third molars, which was ill defined, uncorticated. A pathologic fracture of the inferior border of the mandible was also noticed **CT-** Destructive lesion involving posterior region of body and ramus of the left mandible	Referred for further treatment	N.I
Bisht et al., 2017	1	M	32	Maxilla	4	**LS**: N.I **SS:** N.I	Unknown primary site until the time of oral metastasis diagnosis Adenocarcinoma of the lung. Metastasis to liver and mediastinal lymph nodes	Growth of 4 cm × 4 cm, well-defined, firm in consistency and did not bleed on touch. No cervical lymphadenopathy **Dh**: Carcinoma or cystic lesion **Obs:** Extraction of 16, 2 months ago	**CT-** Bony destruction	Chemotherapy (Pemetrexed and Carboplatin), and radiotherapy	Alive
Bluestone L.I., 1953	1	M	51	Mandible	0,25	**LS:** Bilateral numbness of the mandible **SS:** Bedridden, pain and sore on the back	Malignant melanoma of the skin. Later developed metastasis to submucosal tissue, lung, liver, brain, spinal cord	Growth, about the size of a walnut, non-tender, bluish coloration of its distal surface, elliptical in shape, smooth and firm. It appeared to be attached to the crest of the alveolar ridge. Submaxillary and submental lymph nodes were only moderately palpable **Dh:** Unspecified benign lesion (undefined term), nevocarcinoma **Obs:** The lesion was first observed about one day following the removal of the tooth **Obs 2:** There was some suppuration from the free margin of the gingiva, at the anterior extremity of the lesion	**Rad-** Area of diminished density along the gingival margin and interruption of the cortex at this point	Surgical excision	Death after 6 montl
Boniello et al., 2008	1	M	60	TMJ	N.I	**LS**: Right TMJ pain, limitation of mandibular movements, with	Unknown primary site until the time of oral metastasis diagnosis Adenocarcinoma of the lung	Class III malocclusion and left mandibular deviation. On palpation the glenoid cavity was found to be empty **Dh**: Dislocation of the condyle	**CT-** Dislocation of the right condyle	Radiotherapy	Death after 6 montl

						reduced mouth opening, inability to perform lateral movements, right crossbite and edge-to-edge occlusion **SS**: N.I		**Obs:** Extraction of the lower first right molar. From that moment he suffered from right TMJ pain			
Branch and Norton, 1928	1	F	64	Buccal mucosa	6	**LS:** Inability to swallow. **SS**: N.I	Unknown primary site until the time of oral metastasis diagnosis Autopsy concluded: Renal cell carcinoma. Metastasis to the liver and lungs	Growth **Dh**: Epulis **Obs:** The growth returned after a few months	**Rad-** No bone involvement	N.I	Death after 6 montl
Brook and Martin, 1980	1	M	61	Gingiva	N.I	**LS:** Bleeding. **SS:** Jaundice, morning haemoptysis, sputum production, shortness of breath, loss of weight, backache, painless haematuria, melaena and slight pyrexia	Unknown primary site until the time of oral metastasis diagnosis Angiosarcoma of the omentum. Autopsy confirmed primary site and metastasis to viscera and central nervous system	Mass of 3.5 x 2.5 x 2 cm and red. Another three masses were present. They were red, rubbery in consistency with sessile base, shiny surface and resembled haematomas **Dh:** Tuberculosis or metastatic lesion **Obs:** Poorly preserved dentition with advanced periodontal disease	N.I	None	Death after 2 days
Brown and O'Keefe, 1928	1	F	16	Gingiva	1.50	**LS:** Painful teeth, unable to bite, tooth mobility. **SS:** Weakness, pain in both flanks	Unknown primary site until the time of oral metastasis diagnosis Lymphosarcoma of the ovary. Metastasis to the breast	Mass of 2 cm, dirty red granulations and in some areas the mucous membrane appeared to be growing over the granular mass **Dh:** Low-grade infection of unknown origin **Obs:** Due to dental pain and tooth mobility, several teeth went through extraction. The breath was foul	**Rad-** Some bone destruction	Radiotherapy	Death after 1 mont
Buchner e Begleiter, 1980	1	M	46	Gingiva	0.5	**LS:** Difficulty in eating, bled easily **SS**: N.I	Renal cell carcinoma. Later, developed metastasis to the forehead	Mass of 1 x 1,5 cm, red, firm and pedunculated, beneath a maxillary fixed prosthesis . The tumoral mass bulged out labially and palatally. In certain areas the tumor was covered with a hyperemic mucosa, but in most areas it appeared completely ulcerated. No cervical lymphadenopathy **Dh:** Pyogenic granuloma, central giant cell granuloma and metastatic lesion **Obs:** Patient use maxillary fixed prosthesis	**Rad-** No bone involvement	Surgical excision	Death after severa weeks
Butler, 1975	1	F	49	TMJ	2	**LS:** Pain, bruxism and jaw fatigue **SS:** Headache	Malignant melanoma of the skin	Deviation of the mandible to the right with crepitation in the TMJ with was tender to palpation **Dh:** Myofascial pain dysfunction syndrome and metastatic lesion	**Rad-** Radiolucency in the right TMJ	Symptomatic treatment for Myofascial pain dysfunction syndrome	Death after 3 montl
Butt et al., 2016	1	F	53	Mandible	2	**LS:** Pain, limited mouth opening and numbness over the left intraoral region **SS**: N.I	Unknown primary site until the time of oral metastasis diagnosis Adenocarcinoma of the lung. Fibroids, had a hysterectomy 5 years ago	Swelling of 4 x 5 cm, tender and firm in consistency. Submental lymphadenitis **Dh:** Tuberculous infection, osteosarcoma or metastatic disease **Obs**: Referred by the dentist who was managing her for painful TMJ arthritis with non-steroidal anti-inflammatory medications with no relief	**OPT and CT-** Osteolytic mass invading the adjacent tissues. Suggestive of metastatic disease	Palliative chemotherapy (Carboplatin and Taxol), and radiotherapy	N.I

Cai et al., 2016	2	**C. 1-2:** F	**C.1:** 71 **C.2:** 59	**C.1-2:** Mandible	N.I	**C.1-2: LS:** Pain **SS:** N.I	**C.1:** Unknown primary site until the time of oral metastasis diagnosis. Adenocarcinoma of the lung **C.2:** Unknown primary site until the time of oral metastasis diagnosis. Adenocarcinoma of the thyroid	**C.1-2:** Swelling **Dh:** Ameloblastoma	**C.1-2: Rad-**Radiolucent fibro-osseous lesion	**C.1-2:** Surgical excision, and chemotherapy	**C.1:** Death after 8 months **C.2:** Death after 2 months
Carroll et al., 1993	2	**C.1 :** F **C. 2:** M	**C.1:** 24 **C.2:** 18	**C.1-2:** Mandible	**C. 1:** 0,75 **C.2 :** A couple of weeks	**C.1: LS:** Toothache, paresthesia of the right lower lip for the previous 6 months and spontaneous hemorrhage **SS:** N.I **C.2: LS:** Slight paresthesia of the right labial commissure **SS:** Progressive hearing loss	**C.1:** Unknown primary site until the time of oral metastasis diagnosis. Adenocarcinoma of the kidney. Metastasis to right shoulder, abdomen, left kidney, lung and lymph nodes **C.2:** Unknown primary site until the time of oral metastasis diagnosis. Renal carcinoma. Metastasis to skull, humerus, ribs, sacroiliac joint, femur and lymph nodes	**C.1:** Mass of 2,5 x 2 cm, exophytic and friable. The mass also protruded above the occlusal plane resulting in traumatization by the opposing maxillary teeth **Dh**: Malignant disease and Pericoronitis **Obs:** The mass appeared six weeks after the extraction of the right mandibular third molar because of a clinical impression of pericoronitis **C.2:** Soft tissue swelling of 1.2 x 3.5 cm, slightly tender and firm.. No cervical lymphadenopathy **Dh:** Osteosarcoma, Ewing's sarcoma, metastatic carcinoma, reticulum cell sarcoma, and central squamous cell carcinoma, odontogenic infection infection **Obs:** The swelling was thought to be an odontogenic infection and antibiotic therapy was done **Obs 2:** There was decreased response to electric pulp testing of the cusp tips of the premolars and the mesial half of the first molar	**C.1: Rad-** Well-defined, irregularly shaped, radiolucent area with multiple, small, more radiolucent areas. The zone of transition between the lesion and normal bone was very narrow, with evidence of a slight endosteal resorption and a thinly radiopaque superior margin suggestive of cortical expansion. Poorly defined radiolucent changes were seen mesially and distally beyond the margins of the lesion **C.2: Rad-** Resorption of the apices of the second premolar and first and second molar teeth with loss of lamina dura and widening of periodontal ligament spaces. Osteolytic and osteoblastic responses were noted and a poorly defined radiolucent area of 0.5 cm at the apex of the mandibular right first premolar. This was surrounded by a poorly defined, irregularly shaped radiopaque area of 2.0 x 1.5 cm. The lamina dura was not seen at the apex of the first premolar The second premolar and the first and second molars exhibited widened periodontal ligament spaces at their apices. A large, irregularly shaped area of radiolucency extended from the second molar region almost to the first premolar. The zone of transition was poorly demarcated. Contained within the large radiolucent area was a moth-eaten pattern of bone destruction. The cortical margins of the inferior alveolar canal appeared absent in the area of the lesion	**C.1:** Radiotherapy, and chemotherapy (Cisplatin) **C.2:** Chemotherapy (Adriamycin and ifosfamide), and palliative radiotherapy	**C.1:** Death **C.2:** Death after 1 months
Carvalho et al., 2012	1	F	72	Soft palate	4	**LS:** Pain, severe limitation of month opening and trismus **SS:** Return of menstrual cycle	Unknown primary site until the time of oral metastasis diagnosis Uterine cervix carcinoma. Metastasis to the rectum and bladder	Submucosal nodule of 2,5 x 2 cm, fibro-elastic with normal mucosal covering **Dh:** Inflammatory nodule of infectious origin or neoplasm	**CT** -Mass with extension to the parapharyngeal space	Radiotherapy	Death after 24 months
Cash et al., 1961	1	F	18	Gingiva	2.5	**LS:** Painless **SS:** Fever	Adenocarcinoma of the kidney. Metastasis to lungs. Later, metastasis to skin and central nervous system	Deep-red, soft, hypertrophic interdental papilla, covered by a whitish membrane **Dh:** Vascular epulis or peripheral fibroma **Obs:** Past history of infection process treatment	**Rad-** Radiolucent zone adjacent to the lateral incisor and cuspid teeth	Surgical excision	Death after few weeks

Cassoni et al., 2014	1	F	63	Gingiva	N.I	**LS:** Pain **SS:** N.I	Uterine leiomyosarcoma. Metastasis to the lungs. Later, developed metastasis to the right femur	Ulcerated swelling **Dh:** Hemorrhagic epulis	**CT-** Osteolytic lesion of 3 x 3.5 cm of the upper maxilla	Maxillectomy, chemotherapy (Ifosfamide-epidoxorubicin), and radiotherapy	Alive after 5 month
Cataldo et al., 1965	1	M	9	Mandible	N.I	**LS:** Severe toothache **SS:** Pain in the knee	Osteosarcoma of the femur. Metastasis to the lung	Tooth with extensive carious lesion and involvement of pulpal tissue. The gingival tissue was enlarged and inflamed, but no purulent discharge was evident **Dh:** Alveolar abscess **Obs:** A dental extraction of the two molars was performed. From the radiography and the remarkable resorption of the dental roots, a biopsy was performed. Subsequently, the patient developed a mass at the extraction site	**Rad-** Radiolucent areas around the roots of the permanent second molar and many radiolucent areas in the right mandible	Radiotherapy, and chemotherapy	Death
Chatterjee et al., 2006	1	F	44	Mandible	12	**LS:** Tingling sensation over her right lower lip, chin and gums **SS:** N.I	Adenocarcinoma of the breast. Metastasis to bones **Obs:** The conclusion was a metastatic adenocarcinoma arising in the wall of a dentigerous cyst	Tenderness of the right submandibular lymph nodes **Dh:** Dentigerous cyst	**Rad-** Unerupted horizontally impacted lower right wisdom tooth closely related to the inferior dental nerve canal. A unilocular radiolucent area associated with the crown of the tooth was noted	Surgical excision	N.I
Chebil et al., 2020	1	M	57	Mandible	1	**LS:** Painless, trismus and hypoesthesia **SS:** N.I	Unknown primary site until the time of oral metastasis diagnosis. Adenocarcinoma of the lung. Multiple metastasis to the bones	Swelling measuring 3 x 3 cm, overlying skin was normal. Cervical lymphadenopathy **Dh**: Malignant process, osteossarcoma, cellulitis of dental origin **Obs**. Treated with antibiotic and extraction after the diagnosis of cellulitis of dental origin	**Rad-** Radiolucent lesion with ill-defined margins **CT-** Hypodense lesion with infiltration of soft tissues	Palliative treatment	Death after 5 month
Chen et al., 2020	12	M (11) F (1)	57,83 (mean age)	Gingiva (8) Alveolar mucosa (2) Soft palatal mucosa (1) Buccal mucosa (1)	N.I (12)	**LS:** Bleeding (12) **SS:** N.I (12)	Hepatocellular carcinoma (9) Adenocarcinoma of the pancreas (1) Adenocarcinoma of the colon (1) Clear cell renal cell carcinoma (1)	Ulcerated lesions, easy-bleeding (12) **Dh:** Pyogenic granuloma (12)	**Rad-** No bone destruction (1) N.I (11)	N.I (12)	N.I (12)
Chiarelli et al., 2012	1	F	74	Gingiva	1	**LS:** Painless, halitosis, bleeding **SS:** N.I	Angiosarcoma of the breast. Metastasis to sentinel lymph node	Gingival outgrowth larger than 3 cm, red-brownish, covered by a yellow-grayish secretion **Dh:** Peripheral giant cell granuloma **Obs:** Oral rinses with chlorhexidine solution without improvement	**CT-** Tumor of 3 cm enhanced to the soft tissue attached to the right mandible	Chemotherapy (Paclitaxel)	Alive after 12 mont
Coad et al., 2013	1	M	70	Mandible	0.75	**LS:** Pain, numbness, difficulty swallowing, bleeding **SS:** Reduced	Unknown primary site until the time of oral metastasis diagnosis Adenocarcinoma of the rectum. Metastasis to the liver, bone and rib	Swelling and mass of 5.6 cm, non-tender with protrusion into the gingiva. No cervical lymphadenopathy **Dh:** Abscess **Obs:** The suspected abscess lead to an aspiration which found only solid matter	**OPT-** Extensive permeative lucency **CT-** Soft tissue mass of 56-72 mm with lytic destruction representative of extraosseous extension of bony metastatic deposit	Trans-oral laser debulking, and palliative care	Death after 3 month

						appetite, weight loss, shortness of breath, a reduced exercise tolerance and mild epigastric pain					
Colombo et al., 2005	1	F	61	Hard palate mucosa	N.I	**LS:** Painless **SS:** Left supraclavicular adenopathy, left exophthalmos	Breast cancer 20 years before. Unknown primary site until the time of oral metastasis diagnosis. Undifferentiated gastric carcinoma with signet-ring cells. Metastasis to visceral lymph nodes. Post-mortem examination demonstrated bilateral ovarian metastasis	Mass of 4 cm, erythematous on the left hard palate, with no evidence of bleeding at palpation **Dh:** Periodontal disease **Obs:** Her dentist had originally diagnosed periodontal disease, and she was unsuccessfully treated with antibiotics and non-steroidal anti-inflammatory drugs	**MRI-** Enhanced lesion of 2.7 x 2.3 cm on the left hard palate with thickening of the genal mucosa and no bone involvement	Chemotherapy, and radiotherapy	Death after 6 montl
Corsi et al., 2017	1	F	54	Mandible	N.I	**LS:** Pain **SS:** N.I	Carcinoma of the breast. Metastasis to lymph nodes and vertebral bone	The patient refused surgical treatment. Later, presented with a fracture of the left mandibular body, facial swelling and a chronic oro-cutaneous fistula associated with purulent exudate **Dh:** Bisphosphonate osteonecrosis of the mandible **Obs:** Past history of extraction due to pain. The extraction was followed by development of an area of exposed necrotic bone complicated by an abscess which was drained and treated with antibiotic therapy, but without improvement	**CT-** Abnormal bone structure from the second premolar to the mandibular angle in which a full thickness fracture was detected	Referred to oncologist for further treatment	Death after 6 montl
Court et al., 2007	1	M	68	Mandible	3	**LS:** Trismus, pain,difficulty in opening his mouth and anesthesia sensation **SS:** N.I	Adenocarcinoma of the prostate	Exposed osseous lesion in the mandible in relation to tooth 47 extending to tooth 45 which presented with grade 2 mobility. Vertically, the lesion went from the alveolar ridge, buccally, all the way down to the vestibule. Lingually, the highest part of the ridge was exposed, without compromising the floor of the mouth. The surrounding soft tissues, gingiva, mucosa and buccal segments were hyperplastic and fibrous. Extraoral physical examination revealed a right perimandibular soft swelling. Presented with limitation of mandibular opening and a soft end feel at 8mm. No cervical lymphadenopathy **Dh:** Unspecified benign lesion (undefined term) **Obs:** The symptoms started after extraction of tooth 47. The patient received treatment for post extraction socket inflammation. A few days afterwards the patient's condition worsened and did not respond to pharmacological therapy **Obs 2:** Partially edentulous in both arches **Obs 3:** After radiotherapy, the patient developed osteoradionecrosis resulting in a pathologic fracture of his mandible	**Rad-** Irregular ridge with recent osteolytic areas in relation to tooth 47 **CT-** Small irregular areas of osteoblastic calcification **Scintigram-** Intensively accumulated trace marker in right ramus of the mandible	Radiotherapy	N.I
Curi et al., 2017	1	M	58	Gingiva	N.I	**LS:** Pain, difficult chewing, tooth mobility **SS:** N.I	Hepatocellular Carcinoma. Metastasis to the lungs	Nodular lesion of 2 cm, vegetative, pedunculated. One part of the lesion presented an ulcerated surface, covered by necrotic tissue and, another part, was being traumatized during occlusion **Dh:** Metastasis or non-neoplastic proliferative lesion	**CT-** Well-circumscribed lesion in the premolar and molar region on the left side, juxtaposition of the lesion to the teeth and mandible	Surgical excision	N.I
Curien et al., 2007	1	Male	64	Gingiva	0.25	**LS:** Painless, bleeding of the lesion during brushing and chewing **SS:** N.I	Bronchial adenocarcinoma. Metastasis to left iliac bone	Gingival swelling. Soft, sessile, exophytic, erythematous and hemorrhagic tumefaction in the vestibular gingiva of the maxillary right first molar **Dh:** Pyogenic granuloma, metastasis of the bronchial tumor **Obs:** Sulcular probing did not show any local suppuration but did have generalized moderate to locally severe periodontitis. Calculus and bacterial plaque were prominent	**Rad-** Subgengival tartar and generalized alveolysis that was not more marked on the level of tooth	Surgical excision, and palliative chemotherapy	N.I
Curtine Raddeen,	1	F	44	Mandible	2	**LS:** Numb feeling in the right lower lip **SS:** Pain in the	Adenocarcinoma of the Fallopian tube. Metastasis to the liver, thyroid gland and multiple bone metastasis	Soft tissue mass of 3x2 cm, bluish, in the lower first molar area that appeared to arise from the site of the recent extraction. The superior surface was ulcerated as a result of occlusal trauma. No cervical lymphadenopathy	**Rad-** Decreased radiodensity area of 2x1 cm in the lower right first molar area that had an ill-defined ragged margin **Bone scan-** Increase in radionuclide uptake	Chemotherapy (Adriamycin, Cyclophosph	Alive after 9 montl

1985						right hip		**Dh:** Central giant cell lesion of the jaw, and metastatic tumor **Obs:** Another dentist extracted the lower right first molar and prescribed oral penicillin. There was no resolution of the mental nerve anesthesia and a soft tissue mass grew from the extraction socket	in the right mandible anteriorly	amide. and Fluorouracil)	
Dashow et al., 2011	1	M	67	Hard palate	12	**LS:** N.I **SS:** N.I	Renal cell carcinoma	Mass of 2 x 2 cm, pulsatile, nonhealing, exophytic **Dh:** Noninvoluting congenital hemangioma or vascular mass	**CT-** A 1.6 x 1.4 cm hyperattenuating lesion along the right posterior palate **MRI-** Well-defined, soft tissue mass **Angiography-** Hypervascular mass with some early venous opacification within the right soft-hard palate	Surgical excision	Alive after 6 montl
Deeming et al., 2003	1	F	58	TMJ	1.5	**LS:** Pain associated with clicking and worsened during mastication **SS:** Right-sided hearing difficulty and unexplained falls over	Cystosarcoma phyllodes of the breast	Tenderness in the area of the right temporomandibular joint, temporalis and masseter muscles. After 1 month, swelling of 5 x 3 cm, firm, diffuse, involving the temporalis and masseter muscles as well as the pre-auricular region **Dh:** Temporomandibular joint pain-dysfunction syndrome	**Rad-** No abnormality **Bone scan-** Intense uptake in the right temporomandibular joint region and adjacent cranial base **CT-** Bulky lesion in the right infratemporal fossa with extensive destruction of the squamous temporal bone extending to the middle cranial fossa, orbit and antrum on the right	Palliative radiotherapy	Death after 6 montl
Delfino et al., 1982	1	M	65	Mandible	N.I	**LS:** Pain (tooth 35) **SS**: Jaundice	Adenocarcinoma of the colon. Metastasis to the lung and liver	Exophytic growth at the extraction site **Dh:** Necrotic pulp **Obs:** Tooth 35 pulp was diagnosed as being necrotic, extirpation was performed and in the next day extracted **Obs 2:** During the next three days the lesion doubled in size	**Rad-** Radiolucency indicating osteolytic activity in the symptomatic area	N.I	Death after severa weeks
Derakhshan et al., 2018	1	M	54	Maxilla	1	**LS:** Pain, pus discharge and teeth mobility **SS:** N.I	Unknown primary site until the time of oral metastasis diagnosis. Renal cell carcinoma. Metastasis to the nasal cavity, lungs, hilar regions, left kidney and left retroperitoneal soft tissue	Swelling. No cervical lymphadenopathy **Dh:** Odontogenic infection **Obs:** Past history of root canal therapy for both central incisors but no pus discharge and pain improvement	**CT-** Intraosseous ill-defined radiolucency with ragged borders. The lesion perforated the nasal floor and also invaded anteromedial walls of the maxillary sinus. **PET imaging-** Hypermetabolic soft-tissue mass	Chemotherapy, and radiotherapy	Death after 11 months
Dhawad and Nimonkar, 2011	1	M	46	Gingiva	1	**LS:** Spontaneous bleeding and tooth mobility **SS:** Convulsions	Unknown primary site until the time of oral metastasis diagnosis Adenocarcinoma of the lung. Metastasis to the brain and mediastinum	Exophytic mass of 4 x 2 x 2 cm, firm in consistency, pedunculated, irregular surfaces, arising from interdental papilla in between the lower left second and third molar. No cervical lymphadenopathy **Dh:** Pyogenic granuloma and malignant tumor	**Rad-** Alveolar bone loss in left mandibular molar region	Surgical excision	Death after one an half month
Dhupar et al., 2014	1	F	51	Mandible	2	**LS:** Pain, altered sensation on the right side of the lower lip and limitation of mouth opening **SS:** Loss of appetite, weight loss and persistent	Unknown primary site until the time of oral metastasis diagnosis Squamous cell carcinoma of the lung	Swelling, non-tender and fluctuant, with the overlying skin taut and shiny appearance. No cervical lymphadenopathy **Dh**: Masseteric space infection, salivary gland tumor, primary carcinoma of oral cavity, chronic non-suppurative osteomyelitis **Obs:** Poor oral hygiene and carious teeth **Obs 2:** Past history of incision and drainage suspecting the swelling to be a masseteric space infection and extraction but it kept the non-resolving nature	**OPT-** Multiple carious teeth suspected to be the possible cause of infection **CT-** Osteolytic lesion of 8 × 4 cm, oval shaped, with thinning out of the posterior border of the ramus. There was perforation of buccal and lingual cortices of ramus of the mandible with minimal expansion	Palliative chemotherapy (Cisplatin)	Lost to follow-up after 6 months

						non-productive cough					
Dib et al., 2007	1	F	67	Gingiva	N.I	**LS:** Pain, irritation, halitosis, numbness in the lower lip **SS:** N.I	Simultaneously occurring breast cancer (primary site) and an amelanotic tumor in the left eye. Metastasis to lungs, bone, liver, and brain	Ulcers and inflammation around the implants, showing evidence of a high vascular activity. The four maxillary implants had a grade III mobility **Dh:** Pyogenic granuloma, peripheral giant cell granuloma, inflammatory reaction, osteomyelitis, and metastatic lesion **Obs:** The patient reported two oral surgeries in the last year. The bone grafting procedure was performed, unfortunately, healing was compromised by the development of osteomyelitis, for which she required antibiotic therapy. After 5 months, eight intraosseous dental implants were placed **Obs 2:** 8 days after the biopsy, an increase of the lesions was noted **Obs 3:**Poor hygiene, halitosis and totally edentulous	**Rad-** Horizontal and vertical bone loss in the maxilla, including around the implants. The image of the mandible showed recent tooth extractions but no significant bone loss	Referred to an oncologist to continue palliative treatment with radiotherapy, and chemotherapy	Death after 3 montl
Dikhaye et al., 2017	1	F	40	Mandible	12	**LS:** N.I **SS:** None	Unknown primary site until the time of oral metastasis diagnosis Vesicular carcinoma of the thyroid	Tumor with gingival ulceration of 4 cm. No cervical lymphadenopathy **Dh:** Ameloblastoma	**Rad-** Radiolucent image on the branch and right mandibular body **CT-** Lytic tumor of aggressive look, breaking bone cortical	Surgical excision	Lost to follow-up
Doykos, 1969	1	F	9	Mandible	N.I	**LS**: Toothache **SS**: Gross hematuria	Unknown primary site until the time of oral metastasis diagnosis Wilms' tumor of the kidney Possible lung metastasis	Soft mass, covered by an intact mucosa. Dislocated mandibular arch and the teeth were covered by the mass. No cervical lymphadenopathy **Dh:** Osteomyelitis **Obs:** Past history of extraction and medication because of toothache, but the swelling persisted	**Rad-** Progressive destruction of the mandible	Radiotherapy, and chemotherapy (Actinomycin B)	Death after a few weeks
Eichhorn et al., 2010	1	F	67	Mandible	N.I	**LS:** Numbness of the left lower lip, chin, and gums and pain **SS:** N.I	Ductal breast carcinoma. Metastasis to the pelvis, vertebrae, and lungs **Obs:** Ductal breast carcinoma with infiltrating growth in the wall of the periapical cyst	Bone lesion **Dh:** Periapical cyst **Obs:** The tooth had an incomplete root canal filling and was positive to percussion. Antibiotic therapy was applied and the pain resolved almost at once, as well as the numbness in most parts but not completely	**Rad-** Poorly circumscribed radiolucent lesion involving the distal apex of the second lower molar in close proximity to the inferior alveolar nerve. The tooth had an incomplete root canal filling	Chemotherapy (Bisphosphonates)	N.I
Eisenberg et al., 2007	1	M	49	Maxilla	0.5	**LS:** N.I **SS:** N.I	Cardiac sarcoma of the left atrium. Metastasis to the brain	Rapidly growing mass of 3.5 x 3.5 cm, tender, large, ulcerated, firm, bled readily, involving the buccal and palatal gingiva in the upper right premolar-molar area. Abundant friable necrotic debris was present on the buccal and interdental surfaces of the swelling **Dh:** Osteomyelitis or malignant neoplasm (primary or metastatic)	**Rad-** Ill-defined radiolucency in the alveolar bone between the maxillary right second premolar and first molar. The bone destruction extended superiorly to involve the floor of the right maxillary antrum. Loss of lamina dura was evident on both the mesiobuccal root of the first molar and on the distal aspect of the second premolar root	Radiotherapy	Death after 2 week
El Dibany et al., 1984	1	F	42	Gingiva	N.I	**LS:** Pain, bled on sligh trauma **SS:** N.I	Lobular carcinoma of the breast. Metastasis to the axillary lymph nodes	Mass of 3 x 1,5 cm, tender, reddish-pink, oval soft and its surface was irregular but not ulcerated **Dh:** Pyogenic granuloma **Obs:** Past history of teeth (17 and 18) extraction	**Rad-** No bone involvement	N.I	N.I

Elkhoury et al., 2004	1	F	44	Gingiva	3	**LS:** Painless and occasional bleeding **SS:** Weight loss and fatigue	Unknown primary site until the time of oral metastasis diagnosis Carcinoma of unknown origin	Multiple lesions, size ranged from 5 to 15 mm, erythematous, soft and smooth in consistency and pedunculated. No cervical lymphadenopathy **Dh**: Pyogenic granulomas or inflammatory hyperplastic gingivitis	**Rad-** No bone involvement	Palliative care	Death after few weeks
Elledge et al., 2014	1	M	65	Hard palate	N.I	**LS:** Painless, mobility of adjacent teeth **SS:** Nasal obstruction, epistaxes, unilateral hearing loss and an uncomfortable sensation around the right eye	Renal cell carcinoma	Swelling of 2 x 2.5 cm, firm on palpation, pulsatile, with normal overlying oral mucosa and teeth mobility **Dh:** Intraosseous haemangioma, nasopharyngeal angiofibroma, hemangiopericytoma, hemangioendothelioma, angiosarcoma and secondary metastasis	**Rad-** Uniform enlargement of the right maxillary sinus with evidence of significant alveolar resorption and root resorption of the adjacent teeth **CT-** Large soft tissue mass in the right maxillary sinus	Hemimaxillectomy, chemotherapy (Interferon, Sorafenib and Sunitinib), and radiotherapy	Alive after 18 mont
Ellis et al., 1977	1	M	58	Gingiva	N.I	**LS:** Painless **SS:** Weakness	Adenocarcinoma of the lung. Autopsy revealed metastasis to the brain, stomach, intestine, liver, kidney, splenium, skin, heart and lymph nodes	Nodule of 1,5 cm, reddish pink, hemispherical, firm, broad-based and nonulcerated **Dh:** Pyogenic granuloma **Obs:** Two recurrences after excision	**Rad-** No bone involvement	Surgical excision	Death after 5 montl
Elo et al., 2016	1	M	60	Mandible	0.5	**LS:** Pain, right mandibular nerve anesthesia, limited mouth opening **SS:** Difficulty sleeping if lying on the right side of the face	Hepatocellular carcinoma	Swelling over the right mandibular angle, tender, firm, no overlying erythema and gross facial asymmetry. Limited 30 mm maximum interincisal opening, and end-to-end anterior malocclusion. Regional lymphadenopathy (ipsilateral submandibular and cervical lymph nodes) **Dh:** Multiple myeloma, non-Hodgkin lymphoma (NHL), osteosarcoma, ameloblastoma, and metastatic disease	**Rad-** Expansile, lytic lesion, resorbing the roots of the adjacent mandibular third molar **CT-** Right mandibular osteolytic, expansile lesion of the angle/ramus, pathologic fracture, and significant facial soft tissue swelling. Erosion of the medial cortex of the ramus, with poor visualization of the mandibular canal, raising the possibility of inferior alveolar nerve involvement	Right segmental mandibulectomy, chemotherapy, and radiotherapy	Alive after 26 mont
Elsherif et al., 2021	1	M	68	Alveolar mucosa	2	**LS:** Painless, bleeding and no tooth mobility **SS:** No symptoms	Unknown primary site until the time of oral metastasis diagnosis. Carcinoma of the lung. Multiple metastasis	Ulcerated mass with 1 x 1 cm and 3x1 cm with bleeding. No cervical lymphadenopathy **Dh**: Peri-implantitis, granulomatous disease and malignancy	**Rad-** No bone involvement	Chemotherapy and radiotherapy palliative	N.I
Enokiya et al., 2008	1	F	74	Mandible	1	**LS:** Painless, paralysis of the lower lip **SS:** N.I	Unknown primary site until the time of oral metastasis diagnosis Hepatocellular carcinoma of the liver. Autopsy revealed metastasis to spleen, lymph nodes, ribs	Swelling of 3 x 2.7 cm, relatively well-defined and it was covered with normal epithelium **Dh:** Infection and malignant tumor **Obs:** 1 month ago, she visited the internist, where she was prescribed an antibiotic. However, her symptoms had not improved and she was poorly fitted with a denture	**Rad-** Indicated a highly dense mass **Bone scintigram-** Accumulation in the right ramus of the mandible **CT-**High density, large, round expansive buccolingual osteolytic mass	No treatment was done	Death after 6 montl
Erickson e Hamao-Sakamoto, 2014	1	F	58	Gingiva	2	**LS:** Numbness of the lip and chin **SS:** N.I	Ductal cell carcinoma of breast. Later, developed metastasis to femurs, pelvis, spine, ribs, and skull	An extraction socket, tender to palpation, erythematous and filled with what appeared to be granulation tissue. Facial asymmetry, swelling and fullness in the buccal vestibule. No lymphadenopathy **Dh:** Odontogenic infection **Obs:** 2 months prior, the patient had swelling and the onset of numbness to the mandible that was thought to be associated with an odontogenic infection. The tooth was extracted but	**Rad-** Mixed radiopaque/radiolucent lesion of 15 x 8 mm, generalized horizontal bone loss and bony defects consistent with the findings of severe periodontal disease. There were no obvious radiographic signs of malignancy **MRI-** Right-sided mandibular signal enhancement, and the normal signal was replaced from the condyle to the symphysis	Radiotherapy, palliative hormonal, and chemotherapy	N.I

								the extraction socket failed to heal and the symptoms **Obs2:** Poor oral condition	with one associated with a soft tissue enhancing mass surrounding the mandible in the masticator space		
Erkilic et al., 2017	1	M	54	Gingiva	N.I	**LS:** N.I **SS:** Hematuria	Unknown primary site until the time of oral metastasis diagnosis Adenocarcinoma of the kidney. Metastasis to the neighboring organs	Lesion with erythema and swelling of the left mandible. The lesion developed after a second molar extraction and the lesion was similar to a pyogenic granuloma **Dh**: Pyogenic granuloma	N.I	Chemotherapy	N.I
Eversole et al., 1972	1	F	11	Mandible	1	**LS:** Pain **SS:** Loss of appetite, weight loss, bilateral headache, muscle pain in the thighs and arms	Medulloblastoma of the central nervous system. Metastasis to the pelvis	Mass of 3 cm, hard and fixed. The maxillary left second molar was noted to impinge upon the mass when the patient occluded **Dh:** Metastasis, dentigerous cyst and ameloblastoma	**Rad-** Large radiolucent area which had displaced the left mandibular third molar distally. Radiolucent area apical to the 37 tooth	Chemotherapy (Vincristine and Methotrexate)	N.I
Fantasia and Chen, 1979	1	M	21	Gingiva	N.I	**LS:** N.I **SS:** N.I	Embryonal carcinoma of the testicle. Metastasis to the supraclavicular lymph node, pancreas and trachea	Mass of 1,3 x 1 x 1 cm, pedunculated and ulcerative **Dh:** Metastatic testicular tumor or pyogenic granuloma **Obs:** Patient informed that he had traumatized the area recently **Obs 2:** Within 3 weeks after excision the lesion recurred	N.I	Surgical excision	Death after 5 week
Farahmandfar et al., 2020	1	M	70	Parotid gland	N.I	**LS:** N.I **SS:** N.I	Unknown primary site until the time of oral metastasis diagnosis. Papillary carcinoma of the thyroid. Metastasis to lymph nodes	Firm mass, of 4 x 4 cm, without tenderness and erythema **Dh**: Tuberculosis	**Ultrasonography**- Hypoechoic mass with foci of calcification **CT**- Large calcified lesion	Surgical excision, chemotherapy and radiotherapy	Death after 8 montl
Fernández-Barriales et al., 2013	1	F	49	Mandible	9	**LS:** Hypoesthesia in the right inferior alveolar nerve. Later, developed trismus **SS:** N.I	Uterine leiomyosarcoma. Metastasis to abdomen and inguinal lymph nodes. Later, developed metastasis to the lungs and dorsolumbar bone. Autopsy examination disclosed lung, liver, vertebral body, and lymph node metastasis	No significant findings. 9 months later, mass of 4 cm, ulcerated, in the ipsilateral right posterior mandible **Dh:** Neuropathic herpetic origin **Obs:** Neurologist considered a neuropathic herpetic origin and prescribed multivitamin treatment, resulting in mild improvement, but persistent symptomatology after 9 months	**Rad-** No evidence of bone lesion. After 9 months, poorly circumscribed, osteolytic, right mandibular ramus lesion **CT-** Hypointense heterogeneous mass in the right pterygomaxillary space. Cortical bone maxillary and mandibular erosion and masseter and pterygoid muscle infiltration	Chemotherapy (Adriamycin, Ifosfamide), and radiotherapy	Death after 18 months
Flores et al., 2014	1	F	60	Maxilla	14	**LS:** Sensitivity and tooth mobility **SS:** N.I	Adenocarcinoma of the breast. Metastasis to the lungs Obs: Maxillary metastasis was simultaneously with ARONJ	Exposed necrotic bone associated with significant sensitivity and tooth mobility, and signs of inflammation in the adjacent oral mucosa **Dh:** Antiresorptive osteonecrosis of the jaws (ARONJ) **Obs:** Patient had a nonhealing socket and exposed necrotic bone after extraction 14 months before	**CT-** Rarefaction of bone and thickening of the periodontal ligament space surrounding the upper second left premolar and the upper first left molar. Extensive maxillary bone loss, clouding of the left maxillary sinus suggested soft tissue density and disruption of lingual cortical bone	Curettage of the necrotic bone, chemotherapy (Vinorelbine and Zoledronic acid)	Alive after 12 mont
Frei et al., 2010	1	M	60	Mandible	1	**LS:** Pain **SS:** N.I	Adenocarcinoma of the prostate. Multiple bone metastasis	Extraction socket in the region of the second left mandibular molar with exposed bone and severe inflammation of the surrounding tissues. The area was slightly swollen **Dh:** Bisphosphonate-related osteonecrosis **Obs:** The second left molar in the mandible had been extracted 4 months earlier, and the patient presented with a nonhealing	**Rad-** Bony defect in the region of the second left mandibular molar, similar to a fresh extraction socket but without any pathologic signs in the neighboring bone. Generalized sclerosis of the lamina dura of the maxillary and mandibulary teeth with widening of the periodontal ligament spaces of molars and	Chemotherapy (Zoledronic acid)	Alive after 12 mont

								extraction socket afterward. 3 months later, the wound was treated with debridement and primary wound closure. During the following 4 weeks, a swelling of the left side of the mandible developed, and the wound reopened with exposure of bone Obs 2: The patient received treatment for Bisphosphonate-related osteonecrosis	premolars		
Freudlsperger et al., 2012	1	M	75	TMJ	1.5	**LS:** Pain in the TMJ and limitation of opening **SS:** N.I	Adenocarcinoma of the prostate	Swelling of 2 cm, firm, in the left mandibular ramus and preauricular region. Maximum incisal opening of 20 mm **Dh:** TMD, prostatic metastasis **Obs:** Initially misdiagnosed and treated as TMD	**MRI-** Soft-tissue mass surrounding the left condyle and the ascending ramus of the mandible. The mass was strongly enhancing the intravenous contrast agent and was inseparable from the surrounding muscle tissue. The mandibular bone was discontinuous on the medial plane, where the tumor seems to burst out from the medullary space. The mandibular condyle was disjoined from the medial plane compacta by destructive tumor growth **CT-** Osseous destruction of the left condyle and, partially, of the ascending ramus as well as the surrounding soft-tissue mass was confirmed	Radiotherapy, and chemotherapy (Docetaxel)	N.I
Fujihara et al., 2010	1	M	62	Mandible	1	**LS:** Discomfort **SS:** N.I	Hepatocellular carcinoma. Metastasis to pancreatic lymph node	Slight swelling of the buccal side of the tooth 18, which responded negatively to electric pulp vitality test **Dh:** Radicular cyst **Obs:** Root canal treatment was performed	**Rad-** Radiolucent, well-defined lesion of 2 cm at the apex of tooth 18 **CT-** Smooth circular lesion in the same region, and slight resorption of the buccal cortical bone. There were also small circular radiolucent lesions in the right mandibular body in the tooth 29 and 30 regions	Chemotherapy (Fluorouracil), and radiotherapy	Alive after 6 month
Fukuda et al., 2002	2	**C.1:** M **C.2:** F	**C.1:** 64 **C.2:** 60	**C.1:** Mandible **C.2:** Zygomatic region	N.I	**C.1: LS:** Paralysis of the submental area **SS:** N.I **C.2:** N.I	**C.1:** Adenocarcinoma of the lung **C.2:** Adenocarcinoma of the stomach. Metastasis to frontal and temporal regions of the head. Later, metastasis to the lung	**C.1:** N.I **Dh:** Osteomyelitis **C.2:** Swelling of 2.5 x 2.5 cm in the zygomatic region **Dh:** Benign tumor	**C.1: Rad-** Bone destruction (moth-eaten) **C.2: Rad-** Osteolytic appearance	**C.1:** No treatment **C.2:** Chemotherapy	**C.1:** Death after 2 months **C.2:** Death after 4 months
Gallego et al., 2013	1	F	53	Maxilla	2	**LS:** Pain and pain on the endodontically treated tooth **SS:** N.I	Unknown primary site until the time of oral metastasis diagnosis Inflammatory myofibroblastic tumor of the lung	Diffuse swelling, non-tender, with increased local surface temperature and redness. Intraorally, no lesions were observed **Dh**: Radicular cyst, lymphoproliferative or malignant tumor **Obs:** The symptoms were noticed after root canal treatment of upper left canine	**Rad-** Root canal filling extending 1 mm beyond the canine root apex and imprecise periapical radiolucency with a diameter of about 2 cm **CT**-Infiltrative lesion in the left maxillary sinus with destruction of the maxillary bone anteriorly and minimal destruction of the infraorbital wall, invading skin	Surgical excision	Alive after 20 mont
Gallo et al., 2010	1	M	56	Gingiva	N.I	**LS:** Asymptomatic, difficulty eating **SS:** N.I	Bronchogenic adenocarcinoma. Generalized metastasis (bones, lymph nodes, adrenal gland)	Mass of 1.8 x 1.5 cm, exophytic and nodular, with shiny and hyperemic surface, located in the buccal gingiva at the level of the right lower canine **Dh:** Oral metastasis, epulis or pyogenic granuloma **Obs:** Poor oral hygiene	**Rad-** Retracted alveolar bone edges and absence of gross maxillary and mandibular dysostosis	Surgical excision	Death

Gandhiraj and Subalakshmi, 2013	1	F	24	Mandible	3	**LS:** Pain **SS:** None	Unknown primary site until the time of oral metastasis diagnosis Choriocarcinoma of the pancreas. Lung and liver metastasis	Swelling of 3 × 2 cm **Dh:** Inflammatory, hyperplastic, granulomatous, or fibrotic lesion **Obs:** The patient was referred to the relevant specialists where necessary investigations were performed	**Rad-** Bone resorption below the teeth 34, 35 and 36	Radiotherapy, and chemotherapy	Death
Gaver et al., 2002	1	M	73	Mandible	N.I	**LS:** Pain, toothache and numbness of the chin and of the right side of the lower lip **SS:** Constipation	Unknown primary site until the time of oral metastasis diagnosis Adenocarcinoma of prostate	Intraoral examination was normal **Dh:** Unspecified benign lesion (undefined term) **Obs:** Past history of treatment with anti-inflammatories showing improvement of the pain	**CT**-Lytic lesions with partial destruction of the cortex	Hormonal treatment (Flutamide and Goserelin)	N.I
Georgy et al., 2017	1	M	63	Gingiva	2	**LS:** Painless and bleed spontaneously **SS:** Mildly disoriented	Unknown primary site until the time of oral metastasis diagnosis Renal cell carcinoma. Metastasis to liver, lung, vertebrae, right scapula, ribs, sternum, scalp, left femur and nose	Nodules, ranging in size from 1 × 2cm to 4 ×3 cm , non-pulsatile, reddish in color and firm **Dh:** Multiple myeloma, pyogenic granuloma, amelanotic melanoma or a metastatic malignancy	**Rad-** No bone involvement	Chemotherapy (Multitargeted tyrosine kinase inhibitor pazopanib)	Death after 1 mont
Gholami et al., 2020	1	F	56	Mandible	0.75	**LS**: Pain, bleeding and numb chin syndrome **SS:** N.I	Unknown primary site until the time of oral metastasis diagnosis Papillary carcinoma. of the thyroid Metastasis to the left scapula, rib, right iliac and right hip	Diffuse swelling measuring 3×3 cm and soft to firm consistency. The overlying mucosa was erythematous, ulcerated, and necrotic. No cervical lymphadenopathy **Dh:** Aggressive central giant cell granuloma, lymphoma, odontogenic carcinoma, and metastatic neoplasms **Obs:** The patient reported traumatic luxation of her lower left central and lateral incisors due to a fall and their subsequent extractions by a general dentist. The extraction site had not healed properly and had been expanding **Obs 2:** After the biopsy the size of the lesion had nearly doubled	**Rad-** Unilocular radiolucency with ill-defined borders **CT-**Large destructive lesion with irregular borders associated with a soft tissue mass with extensive perforation of the buccal cortical plate. Thinning and erosion of the lingual cortical plate and root resorption of teeth	Palliative surgical excision	Death after 1 mont
Giuglianо et al., 2013	1	M	61	Mandible	2	**LS:** Pain **SS:** N.I	Unknown primary site until the time of oral metastasis diagnosis Squamous cell carcinoma in the lung. Metastasis to the mediastinum	Swelling **Dh:** Dental infection or malignancy	**CT**-Bone lesion	Radiotherapy, and chemotherapy	Alive after 3 month
Gobbo et al., 2013	1	N.I	69	Gingiva	N.I	**LS:** Pain **SS:** N.I	Unknown primary site until the time of oral metastasis diagnosis Adenocarcinoma of the colon	Swelling, redness and purulent exudate coming from a large, exophytic and thick mass located in the post-extractive site **Dh:** Periodontal desease **Obs:** Tooth 17 mobility and fistula. Because of pain of unknown origin and non-responsive to 2-week antibiotic therapy, a tooth extraction was done, but no improvement was obtained	N.I	Palliative hemicolectomy	Death after 1 mont
González-Pérez et al., 2012	1	M	73	Mandible	N.I	**LS**: Pain **SS**: N.I	Unknown primary site until the time of oral metastasis diagnosis Adenocarcinoma of the breast. Metastasis to axillary lymph node	Very slight elevation of the crest of the ridge, but the mucosa appeared normal in color. No cervical lymphadenopathy **Dh:** TMJ dysfunction syndrome **Obs:** The pain in the left preauricular region, was initially diagnosed as TMJ dysfunction syndrome **Obs 2:** The patient reported that the left mandibular first molar had been extracted 2 years earlier, but the area had been slow to heal	**Rad-** Poorly defined radiolucent area with basal mandibular erosion **MRI-**Osteolytic lesion **Skeletal scintigraphy**-Increased uptake	Hormonal therapy, and chemotherapy (Cyclophosphamide, Epirubicin and Fluorouracil)	Alive after 36 mont

Goora n et al., 2017	1	M	74	Mandible	48	**LS:** Tooth mobility **SS:** Fever, nausea, vomiting and difficult breathing (in the past few months)	Unknown primary site until the time of oral metastasis diagnosis. Renal clear cell carcinoma of the kidney	Swelling of mandible **Dh:** Inflammation and infections **Obs:** Because of the pain and swelling of the mandible, the patient was diagnosed with inflammation and infections resulting from the dentures and received antibiotic therapy. However, the symptoms did not improve **Obs 2:** The patient had been using dentures for almost 10 years	**CT-**Large hypervascular mass with thinning of the lateral wall of the right maxillary sinus and also destruction of mandible ramus and trunk	Chemo-radiotherapy	Alive
Gorris et al., 2021	1	M	59	Submandi bular gland	N.I	**LS:** N.I **SS:** N.I	Unknown primary site until the time of oral metastasis diagnosis. Malignant melanoma of unknown primary	Swelling **Dh**: Cystic nodule	**Ultrasound-** Nodule with 1.7 cm, regular borders, and was homogeneously hypo reflective **MRI-** Mostly vascular, with low-density of calcifications and diffusion restrictions	Surgical excision and immunothera py	Alive after 12 mont
Govei a and Bahn, 1978	1	M	82	Mandible	1 day	**LS:** Asymptomatic **SS:** Jaundice, an enlarged abdomen, pain in the left upper quadrant, anorexia, weight loss, nausea, vomiting and dark brown urine	Unknown primary site until the time of oral metastasis diagnosis Hepatocellular carcinoma of the liver	Swelling of 2 x 4 cm, rubbery consistency when palpated, and a fluid-like wave **Dh**: Calcifying epithelial odontogenic tumor, residual cyst, ameloblastoma, hemangioma, aneurysmal bone cyst, metastasis, or primary malignant tumor	**Rad-** Radiolucency 2.5 by 4.0 cm. which was well circumscribed but showed opaque specks toward the inferior border and angle of the mandible	N.I	N.I
Grace et al., 1984	1	M	88	Tongue and submandi bular gland	0.75	**LS**: Sore throat, dysphagia to solids **SS:** Change in voice quality, hemoptysis, weight loss, cachexia and dehydration	Unknown primary site until the time of oral metastasis diagnosis Necropsy showed a neoplastic lesion in the right upper lobe bronchus with secondary deposits in the right lobe in the lateral wall of the right atrium and in the first lumbar vertebra.	The left submandibular salivary gland was enlarged but not tender, and a firm swelling overlying the duct could be palpated intraorally **Dh:** Ludwig's Angina **Obs:** Within twenty-four hours of admission the patient's tongue and floor of mouth swelled visibly, becoming pushed upwards and backwards, accompanied by a commensurate swelling of the submandibular area **Necropsy:** A mass of tumor, 7 cm in diameter, in the body of the tongue. Neoplasm was also present in the left submandibular salivary gland and in bilateral cervical lymph nodes	N.I	N.I	Death after a few days
Guard a-Nardi ni et al., 2017	1	F	59	TMJ	2	**LS:** Pain and joint sounds in the right TMJ area **SS:** N.I	Unknown primary site until the time of oral metastasis diagnosis Lung carcinoma	A limited condylar translation during mouth opening was detected. No cervical lymphadenopathy **Dh:** TMJ arthralgia and degenerative joint disease **Obs:** Because of the symptoms in the TMJ, an orofacial pain practitioner diagnosed that she had TMJ arthritis, and a combined approach based on counseling, anti-inflammatory drugs, and an oral appliance was adopted. But the symptoms got progressively worse	**MRI**- Signs of disc degeneration and a solid-signal lesion **CT**- Solid osteolytic neoformation with an interruption of the cortical profile of the right condylar head. surface. It was about 1.4 × 1.2 × 1.4 cm in size	Chemotherap y, and radiotherapy	Death after 13 months
Guim arães et al., 2003	1	F	45	Mandible	2	**LS:** Pain and trismus **SS:** N.I	Lobular carcinoma of the breast	Swelling at the inferior left fornix **Dh:** Cellulitis, osteomyelitis, dental infection, actinomycosis, metastatic lesion **Obs:** Presence of caries and periodontal pockets	**Rad-** Ill-defined, destructive area in the posterior left mandible	Refused further treatment	Death after 6 montl
Gulte kin et al., 2016	1	M	72	Gingiva	2	**LS:** Pain, paresthesia **SS:** N.I	Non-small cell carcinoma of the lung. Later developed metastasis to vertebrae and lymph nodes	Mass of 3 cm, lobulated, fragile, arising from the extraction socket of the second molar tooth. Submandibular and cervical lymphadenopathy **Dh:** Dental infection or metastatic tumor **Obs:** Initially misdiagnosed and treated as dental infection with antibiotics due to related	**Rad and CT-** Extensive lytic lesion in the posterior right mandible	Chemotherap y, and palliative radiotherapy	Death after 6 montl

								teeth (second and third molars), but without relief from pain			
Gumusay et al., 2016	1	M	68	Gingiva	5	**LS:** Toothache, paresthesia in the right cheek **SS:** Hemoptysis	Adenocarcinoma of the lung. Metastasis to lymph nodes, bilateral iliac bones, vertebra and rib	Mass of 6 x 6 cm, red-purple, hemorrhagic and swollen in the tooth extraction site. Submandibular and cervical lymphadenopathy **Dh:** Unspecified benign lesion (undefined term) **Obs:** Initially misdiagnosed and treated with extraction due to toothache, but without relief	**CT-** Multiple enlarged lymph nodes and a heterogeneous soft tissue mass of 40 45 35 mm in size. Semi-solid density of the mass was consistent with cystic or necrotic region in the central section, exhibiting regions of contrast uptake within the right mandibular bone structure	Palliative radiotherapy, denied chemotherapy	Death after 7 montl
Gupta et al., 2005	1	F	86	Tongue	Few days	**LS:** N.I **SS:** Vulval pain, pain in the right hip and lymphoedema of the right lower limb	Invasive squamous cell carcinoma of the vulva. Metastasis to right inguinal lymph nodes and pelvic wall	Swelling of 2.5 cm, firm, tender, fixed to the tongue, in the anterior two-thirds, and covered by normal mucosa **Dh:** Abscess or a secondary metastasis	**CT-** Could not differentiate between an abscess or a secondary metastasis	N.I	Death after 10 day
Hasheminasab et al., 2020	1	M	64	Mandible	N.I	**LS:** Paresthesia of the right side of lower lip **SS:** N.I	Unknown primary site until the time of oral metastasis diagnosis Adenocarcinoma of the prostate	Little expansion of 5 cm, with bony hard consistency, which caused facial asymmetry **Dh:** Osteosarcoma, Ewing's sarcoma, chondroblastoma, eosinophilic granuloma, osteoid osteoma, leukemia, and lymphoma	**CT-** Lesion with periosteal reaction along with bone destruction and bone formation in the ramus of right mandible without perforation of cortical table and mandibular canal destruction	Palliative management	N.I
Hashmi et al., 2011	1	M	50	Mandible	3	**LS:** Pain, numbness of the lower lip and tooth mobility **SS:** N.I	Unknown primary site until the time of oral metastasis diagnosis Adenocarcinoma of the lung or liver	Swelling of 4.5 x 2.5 cm, tender, hard, with a smooth surface. The cortical plates were expanded. Submandibular lymph nodes on the affected side were just palpable **Dh:** Chronic osteomyelitis, primary intraosseous malignant tumor or metastatic lesion	**OPT**-Ill-defined radiolucent lesion with small areas of radio-opacity	N.I	N.I
Hecker et al., 1985	1	F	63	Mandible	1.25	**LS:** Trismus, inability to open the mouth and pain **SS**: N.I	Unknown primary site until the time of oral metastasis diagnosis Adenocarcinoma of an unknown site. Bone metastasis	Mild edema in the preauricular area. Mouth opening was 15 mm with right TMJ pain during hinge movement. There was a closing click on the right side. The right temporalis muscle at the coronoid insertion and the medial and lateral pterygoid muscles were tender to palpation. **Dh:** Periodontal abscess **Obs:** Dentist was treating for a dental abscess on the lower third molar. After that, the symptoms started (treated with cortisone and penicillin)	**Rad-** Bone destruction **CT-**Osteolytic lesion	Radiotherapy	Death after 8 montl
Heera et al., 2018	2	**C.1** : M **C.2** : F	**C.1:** 50 **C.2:** 57	**C.1:** Gingiva **C.2:** Mandible	**C.1** : 2 **C.2** : 3	**C.1: LS:** Painless and tooth mobility **SS:** Dyspnea and weakness **C.2: LS**: N.I **SS:** N.I	**Case 1:** Unknown primary site until the time of oral metastasis diagnosis. Squamous cell carcinoma of the lung. Metastasis to vertebrae, ribs, pelvis **Case 2:** Unknown primary site until the time of oral metastasis diagnosis. Thyroid carcinoma	**C.1:** Mass of 4 x 2 x 2 cm, firm, pedunculated and the overlying mucosa was normal **Dh:** Fibroma **C.2:** Swelling of 4 x 4 cm, non-tender, firm with the normal overlying skin **Dh:** Central giant cell granuloma and ameloblastoma	**C.1: Rad-** Vertical bone loss in respect to 24, 25 regions **C.2: OPT**-Well-defined multilocular radiolucent lesion with ill-defined borders. There was thinning of the lower cortical border in association with the lesion	**C.1:** Palliative care **C. 2:** N.I	N.I (2)

Heslop, 1964	1	F	51	Mandible	N.I	**LS:** Numb of the right lower lip **SS:** N.I	Spheroidal cell carcinoma of the breast. Metastasis to lungs	Mass of 2 cm, red, firm and dusky. Cervical lymphadenopathy **Dh:** Periodontal abscess **Obs:** Tooth extraction, 2 weeks before, because of a periodontal abscess	**Rad-** Bone destruction area adjacent to and below the intra-oral swelling	Surgical excision, and radiotherapy	Death after 6 montl
Hisa and Tatemoto, 1998	1	M	61	Parotid gland	Recent	**LS:** Painless **SS:** Middle-lobe syndrome	Small cell carcinoma of the lung. Later, developed brain metastasis	Swelling of the left parotid gland **Dh:** Warthin's tumor **Obs:** Clinically, the swelling was visible only in the left parotid gland, but the right side was also affected	**CT-** Enhanced tumors	Surgical excision, radiotherapy, and chemotherapy (Cisplatin, Mitomycin C and Vindesine)	Death after 17 months
Holland D.J., 1953	1	F	61	Mandible	2	**LS:** Pain and numbness of the left lip and chin **SS:** Back pain	Epidermoid carcinoma of the cervix. Metastasis to the vagina. Later, developed metastasis to the ribs, left shoulder, and both legs	No intraoral alterations. No cervical lymphadenopathy **Dh:** Cyst **Obs:** Past history of teeth extraction with supposed relief, but later the patient noticed increased numbness	**Rad-** Central diffuse, poorly mcated area of radiolucency and smaller independent areas of bone destruction on the left molar area (intraoral). Irregular decalcified lesion in the left molar area (extraoral)	Radiotherapy	Death after 8 montl
Hope et al., 2017	1	F	53	Mandible	6	**LS:** Numbness of the left lower lip and chin, pain, difficulty in opening the jaw **SS:** Heavy menstrual bleeding	Leiomyosarcoma of the uterus. Later, developed metastasis to masseter, lungs, pelvic wall, humerus, duodenum and ribs	Swelling in the left cheek. The left lower third molar was removed, and while extracting the tooth, a biopsy of abnormal 'moth eaten' looking soft tissue was also taken. No cervical lymphadenopathy **Dh:** Apical infection **Obs:** Initially misdiagnosed and treated as apical infection affecting the mental nerve with antibiotic therapy and root canal filling, but without improvement	**CT-** Initially, no bony abnormality. After 6 months, extensive mass lesion affecting the left jaw and soft tissue mass on both sides **Rad-** Lobulated tumor within the angle of the mandible	Surgical excision, radiotherapy, and chemotherapy	Death after 42 months
Hussain et al., 2020	1	F	66	Mandible	N.I	**LS:** Numbness in the right chin and lower right lip and tongue weakness **SS:** Recurrent chest infections and progressive back pain	Unknown primary site until the time of oral metastasis diagnosis Neuroendocrine carcinoma of the lung. Spine metastasis	Sensorial alterations. No cervical lymphadenopathy **Dh**: Metastatic disease or osteomyelitis **Obs:** Previously, the patient presented to a general dental practitioner approximately 2 weeks prior with similar paresthesia, and underwent extraction of the lower right premolar tooth with no improvement of symptoms	**Rad-** Multiple, small, lytic lesions **CT**- Area of concern **MRI-** Abnormal signal changes within the bone marrow	Palliative care	Death after 1 mont
Hwang et al., 2007	1	M	58	Gingiva	2	**LS:** Pain, foul odor, bleeding **SS:** N.I	Adenocarcinoma of the stomach. Metastasis to lungs, liver, rib, pelvis and femoral bone	Soft tissue mass of 3 x 2 cm, exophytic, located on the buccal gingiva and vestibule in the first and second molar region, associated with necrotic tag. No cervical of lymphadenopathy **Dh:** Periodontal abscess, pyogenic granuloma, inflammatory hyperplastic lesion	**Rad-** Horizontal bone loss in the first and second molar region **CT-** Soft tissue mass of 2 x 1,5 cm on the lateral right maxilla near the second molar. The bony defect was found on the inferior-lateral wall of the right maxillary sinus. There was no change on the sinus mucosa	N.I	N.I
Ismail et al., 2009	1	F	70	Mandible	3	**LS**: Pain **SS:** Nausea, vomiting and loss of appetite	Unknown primary site until the time of oral metastasis diagnosis Follicular carcinoma of the thyroid. Metastasis to hilar lymph node	Swelling of 3 x 4 cm, erythematous change and firm consistency. On palpation, bicortical expansion of the body of the mandible was noted. No cervical lymphadenopathy **Dh**: Periodontal abscess **Obs**: Three months earlier the patient had undergone extraction of the left mandibular second premolar for complaints of mobility and pain	**CT-** Lesion with diffuse margin leaving lower border intact	N.I	N.I

Jaffa et al., 2014	1	M	45	Mandible	1.25	**LS**: Pain, contact bleeding and right lower lip paresthesia **SS:** Shortness breath, weight loss	Unknown primary site until the time of oral metastasis diagnosis Adenocarcinoma of the pancreas and multiple organ metastasis	Mass of 3 x 4 cm, lobulated, indurated arising from the socket **Dh**: Unspecified benign lesion (undefined term) **Obs:** Painful symptoms started after tooth extraction, 5 weeks ago	**Rad-**Soft tissue irregular opacity, with moth-eaten bone margins, suggestive of a malignant process **MRI**- 3 x 2.1-cm mass	Palliative care	Death after a short time
Jaguar et al., 2006	1	M	52	Gingiva	0.13	**LS:** Asymptomatic **SS:** Chronic pain in column	Non-small cell undifferentiated carcinoma of the lung. Metastasis to vertebra and left adrenal	Nodular mass of 1 cm in its maximum dimension, exophytic, with ulcerated surface in the vestibular gingiva of the right lateral upper incisor **Dh:** Pyogenic granuloma and metastasis	N.I	Surgical excision	Death after 2 week
Jakharia-Shah et al., 2019	1	F	59	Parotid gland	2	**LS:** Painless **SS:** None	Ductal carcinoma of the breast	Lump of 1.5 x 2 cm behind the angle of the mandible **Dh:** Pleomorphic adenoma	N.I	Surgical excision, and hormone therapy	Alive after 1 month
Jatti et al., 2015	1	M	60	Lip	3	**LS:** Asymptomatic, painless, bled with provocation **SS:** Weight loss, hematuria	Renal clear cell carcinoma. Later developed metastasis to the lungs and liver	Nodule of 2 x 1.5 cm, nontender, reddish pink, dome-shaped, rubbery in consistency, exophytic, ulcerated, well-defined, raised margins. The surrounding skin was erythematous. Two bilateral submandibular lymph nodes were palpable **Dh:** Keratoacanthoma, papilloma, nodular hyperplasia, SCC, basal cell carcinoma and metastatic renal carcinoma **Obs:** Initially, the patient was treated with an antiseptic cotton dressing with no improvement	**Rad-** No bone alterations	Palliative radiotherapy	Alive after 7 month
Jawanda et al., 2022	1	M	55	Mandible	5	**LS:** Painless **SS:** N.I	Unknown primary site until the time of oral metastasis. Follicular thyroid carcinoma	Swelling in the right mandibular region. No cervical lymphadenopathy **Dh:** Ameloblastoma and Central Giant Cell Granuloma	**Rad-** Osteolytic lesion, round to oval and uncorticated **CT-** Expansile destructive bony lesion. The tumor caused expansion and perforation of both buccal and lingual cortical plates	Referred to oncologist for further treatment	Alive

Johnson and Read-Fuller, 2020	1	M	66	Mandible	2	**LS:** Pain and numbness of the lower lip **SS:** N.I	Unknown primary site until the time of oral metastasis diagnosis. Adenocarcinoma of the lung. Multiple metastasis	Only symptoms **Dh**: Osteomyelitis **Obs**. Patient underwent extraction of all mandibular teeth	**CT-** Focal area of moth-eaten bony architecture	Chemotherapy and radiotherapy	N.I
Jones et al., 1990	1	F	62	Mandible	0,75	**LS:** Bleeding **SS:** Pain in the right thigh	Unknown primary site until the time of oral metastasis diagnosis. Clear cell carcinoma of the kidney. Metastasis to brain, choroid plexus and femur	Swelling of 2.5 x 2 cm, red, firm, and pulsatile **Dh:** Hemangioma	**Rad-**Large bony defect **Arteriogram-** 'hemangioma'	Palliative radiotherapy	Alive, under close follow-up
Kadokura et al., 1999	1	M	54	Gingiva	N.I	**LS:** Bleeding and bad taste **SS:** Hemoptysis	Adenocarcinoma of the lung. Metastasis to adrenal gland, inguinal lymph node and multiple organs	Mass of 1.2 cm, pedunculated on the mandibular gingiva and the interdental papillae (lower right premolar area). No lymphadenopathy **Dh:** Pyogenic granuloma	**Rad and MRI-** No abnormality of the underlying bone	Palliative radiotherapy	Death after 2 month
Kahn and McCord, 1989	1	F	82	Mandible	N.I	**LS:** Pain and mobile tooth (22) **SS:** N.I	Follicular thyroid carcinoma. Metastasis to the tibia, lungs and pelvis	Swelling on the vestibular mandible, liver-colored, and adjacent to a mobile tooth (22) **Dh:** Inflammatory dental condition (dental abscess), vascular entity or metastatic thyroid carcinoma	**Rad-** Pararadicular alveolar destruction without a definite inferior border **CT-** Large lesion of the anterior mandible with extensive involvement of soft and hard tissues	Radiotherapy, and surgical excision	Death after 18 months
Kalaitsidou et al., 2015	1	M	71	Gingiva	N.I	**LS:** N.I **SS:** N.I	Gastric adenocarcinoma. Vascular, lymphatic and perineural metastasis	Swelling of 2 x 2 cm with pinkish white color, soft, attached to the alveolar mucosa and exophytic, presenting a necrotic area of the distal margin and irregular surface. No cervical lymphadenopathy **Dh:** Periodontal lesion **Obs:** The lesion was treated as a periodontal lesion by his dentist and the tooth was extracted **Obs 2:** Poor oral hygiene	**Rad-** Radiolucent lesion of the mandible in the left anterior teeth space	Marginal mandibulectomy	Alive after 2 month
Kalburge et al., 2012	1	F	65	Mandible	3	**LS:** Loss of sensation in the lower lip and chin, difficulty in opening mouth and swallowing **SS**: N.I	Unknown primary site until the time of oral metastasis diagnosis Follicular carcinoma of the thyroid	Swelling of 3 x 2 cm, soft to firm in consistency, slightly tender. The skin over the swelling appeared to be normal but fixed to the underlying tissues. **Dh:** Primary intraosseous carcinoma, central giant cell granuloma, central salivary gland neoplasm, and osteomyelitis **Obs:** Patient gave history of exfoliation of teeth in the same region because of mobility. Maxillary arch was edentulous	**Rad-**Large radiolucent, destructive lesion. At places there were some radiopaque foci	Referred to oncology, surgical excision and, radiotherapy	Death
Karr et al., 1991	1	F	41	Mandible	1.5	**LS:** Numbness and then pain in the left mandible **SS:** N.I	Synovial sarcoma of the calf. Metastasis to the lungs. Autopsy showed metastasis to the vertebrae, ribs, skull, and pleura	Swelling in the mandibular left buccal vestibule in the premolar area, slightly tender, firm, and intraorally there was a suggestion of cortical expansion. This was contiguous with a 3 x 3 cm submandibular mass. The mandibular left canine and premolars did not respond to electric pulp testing **Dh:** Metastatic tumor, primary bone cancer, odontogenic infection, chronic sialadenitis, subperiosteal hematoma, and osteoid osteoma **Obs:** Recently extracted a maxillary left molar. apparently in the belief that it was a source of referred pain; however, no relief was obtained **Obs 2:** All the mandibular left molars were missing. There were no caries, restorations,	**Rad-** Small, poorly circumscribed area of sclerosis in the previous location of the mandibular left first molar. Lytic lesion projected around the mandibular left second premolar root. One month later, the patient had a fracture of the left mandible in the area of the previous extraction and metastatic tumor site	Palliative radiotherapy, and chemotherapy (5-fluorouracil and Alpha interferon)	Death

								acute periodontal infection, or history of trauma associated with the remaining teeth			
Katsnelson et al., 2010	1	M	51	Mandible	7	**LS:** Pain and difficulty opening the jaw **SS:** Chronic lower back pain	Small cell carcinoma of the lung. Metastasis to the rib, and to the right perihilar region	Mass of soft consistency, fluctuant, and tender to palpation. The patient's maximum opening was 25 mm with a deviation to the left. No cervical lymphadenopathy. **Dh:** Unspecified benign lesion (undefined term) **Obs:** The patient reported that the problem began a month after extraction of the left upper first premolar 8 months previously	N.I	Radiotherapy, and palliative chemotherapy (Docetaxel-carbo)	N.I
Kaugars and Svirsky, 1981	1	M	59	Maxilla	0.50	**LS:** Asymptomatic **SS:** "Weakness" in his right leg, weight loss, early morning cough and occasional episodes of blood-tinged sputum	Unknown primary site until the time of oral metastasis diagnosis Squamous cell carcinoma of the lung. Metastasis to pelvis and lymph nodes	Swelling slightly tender to palpation. Cervical, supraclavicular, and axillary lymphadenopathy. **Dh:** Periodontal abscess **Obs**: Recent extraction (2 weeks previously) sites from the maxillary right first molar to the maxillary right canine region were evident, because of a non-healing extraction site. Grossly decayed dentition with severe periodontal disease	**Rad-** Destructive lesion	Palliative radiation	Death in 3 weeks
Kawakami et al., 1998	1	M	67	Gingiva	0.5	**LS:** Painless **SS:** N.I	Hepatocellular carcinoma	Soft tumor of 2,5 x 2,7 cm in the gingiva of his left mandible **Dh:** Epulis granulomatosa **Obs:** Periodontitis	**Rad-** No evidence of tumor resorption, but there were signs of resorption due to a chronic marginal periodontitis	N.I	Death after 2 montl
Kawamura et al., 2008	1	F	51	Gingiva	N.I	**LS:** N.I **SS:** Dyspnea (2 months later)	Adenocarcinoma of the rectum	Swelling of 1 x 1.5 cm, tender, dark red, firm, in the right fifth to sixth interdental gingiva **Dh:** Epulis	N.I	N.I	Death after 2 montl
Kechagias et al., 2012	1	F	52	Gingiva and teeth	N.I	**LS:** Trismus, teeth mobility **SS:** N.I	Ductal breast carcinoma. Metastasis to the liver **Obs:** Both teeth were invaded from the same neoplasm	Swelling of 1.5 x 1 cm. The two left molars presented with a significant mobility **Dh:** Abscess of dental origin **Obs:** Misdiagnosis and treated as dental abscess (antibiotics)	N.I	Radiotherapy, and chemotherapy (Endoxan, Caclyx, Zoledronic acid)	Alive after 13 mont
Khalili et al., 2010	1	F	40	Mandible	2	**LS:** Pain, lip paresthesia **SS:** None	Ductal carcinoma of the breast. Later, developed widespread bone metastasis and pulmonary metastasis	Bone lesion. The tooth 45 was non vital without any cavity or restoration **Dh:** Pulpal/periapical inflammatory process, malignancy	**Rad-** Unilocular well-circumscribed radiolucency with ill-defined border in periapical region of the tooth 45 and slight widening of the periodontal ligament	Chemotherapy	Alive after 20 mont
Khodayari and Khojasteh, 2005	1	F	56	Mandible	N.I	**LS:** Paresthesia in the left side of the lower jaw and pain **SS:** General malaise associated with mild mood depression	Unknown primary site until the time of oral metastasis diagnosis Angiosarcoma of an unknown primary site. Metastasis to other regions of the body	Exophytic lesion of 3 x 3 cm., tenderness, hard ahd with an erythematous surface **Dh:** Unspecified benign lesion (undefined term) **Obs:** She had first noticed pain and tenderness on her mandibular teeth and decided to extract all of her teeth. After extraction of her teeth, she felt continuous pain and noticed swelling both intraorally and extraorally on the left side of the mandible	**Rad-**Ill-defined radiolucent lesions. A solitary radiolucent lesion was also seen associated with pathologic fracture with the displacement of inferior mandibular cortex	Neoadjuvant chemotherapy	Death after 4 montl

Kim et al., 2012	1	M	78	Gingiva	6	**LS**: Pain **SS:** N.I	Unknown primary site until the time of oral metastasis diagnosis Adenocarcinoma of the lung	Mass with traumatic area, associated with inflamed gingival granuloma **Dh:** Granuloma **Obs:** Patient reports onset of the lesion after motorcycle accident six months ago	**Rad-**Tumor mass **CT-**Radiolucent. There was bony destruction in the lingual cortical bone	N.I	N.I
Kim et al., 2013	1	F	46	Mandible	60	**LS:** Bleeding and disturbing normal mastication **SS:** N.I	Unknown primary site until the time of oral metastasis diagnosis Follicular carcinoma of the thyroid. Metastasis to lumbar spine and femur	Bilateral huge masses **Dh:** Central giant cell granuloma **Obs:** The initial diagnosis was presumed to be central giant cell granuloma She was treated with intralesional triamcinolone injection into both mandibular tumors. The triamcinolone injections were not effective except transient size reduction	**CT and MRI**- Large bilateral masses with strongly enhanced solid tumors which resulted in expansile destruction and erosion	Surgical excision	Alive after 12 mont
Kishore et al, 2018	1	M	54	Lip and gingiva	N.I	**LS:** N.I **SS:** Weight loss	Renal cell carcinoma. Multiple skeletal metastasis. Later, developed multiple cutaneous metastasis	Exophytic lesion over upper lip of 2 x 1.8 cm,nontender, lobulated, firm, nonpulsatile, with focal hemorrhagic crusting with visible pulsation, and did not bleed on touch. Growth of 6 x 4.5 cm, large, firm, diffuse, with rich vascularity and bled on touch, in the right lower retromolar area involving the gums **Dh:** Metastasis from renal carcinoma, angiosarcoma, pyogenic granuloma, Kaposi sarcoma, and melanotic melanoma **Obs:** Poor oral hygiene	**CT-** Did not reveal any evidence of metastasis	Chemotherapy (Sorafenib) and radiotherapy	Alive
Kizaekka et al., 2019	1	M	77	Tongue	1.25	**LS:** N.I **SS:** N.I	Renal cell carcinoma. Later, developed metastasis to the lungs and liver	Growth of 6 x 5 x 4 cm, non-tender, pedunculated, soft and did not bleed on touch. No cervical lymphadenopathy **Dh:** Pyogenic granuloma **Obs:** The growth appeared after he traumatized his tongue with a thermal injury after eating hot food	N.I	Surgical excision, and chemotherapy	Alive after 10 mont
Kolokythas et al., 2014	1	F	66	Mandible	3	**LS**: TMJ pain **SS:** Shortness of breath	Unknown primary site until the time of oral metastasis diagnosis Adenocarcinoma of the pancreas. Lung and lymph node metastasis	Moderate firm facial edema. No cervicofacial lymphadenopathy. Maximum incisal opening was 1 to 1.5 cm. Normal intra-oral examination **Dh:** Right mandibular osteomyelitis and a right TMJ abscess **Obs:** After extraction, the pain in the area of the right maxilla and right preauricular region worsened. The origin of the patient's pain was thought at the time to be related to TMJ dysfunction and potential injury from the extraction procedure, and therefore nonsurgical TMJ treatment was offered, with no improvement	**Rad-** Osteolytic changes and suggestive of joint effusion **CT**- Osteolytic changes with reactive periosteal bone growth, with slight associated lytic destruction	Palliative radiotherapy	Death after 6 montl
Kostrubala et al., 1950	1	F	16	Gingiva	N.I	**LS:** Pain and numbness in the right lower jaw **SS**: Pain in the right eye. Pain in the pelvis with radiation down both legs, low back pain extending upward along the entire spine, substernal pain on respiration, fever, and night sweats	Unknown primary site until the time of oral metastasis diagnosis Autopsy revealed dysgerminoma of the ovary with metastasis to the mandible, ilium, vertebrae, and lungs	Mass of tissue, "spleen like" in color and consistency, located in the extraction socket. No cervical lymphadenopathy **Dh**: Neuroma, neurofibroma, sarcoma, carcinoma, adamantinoma, carcinoma of the breast, and carcinoma of the ovary. **Obs**: The last molar on the right side to be somewhat elevated and loosened. Because of these findings, the tooth was removed under local anesthesia	**Rad-** No bone involvement	Surgical excision, and radiotherapy	Death after 6 montl

Kovalski et al., 2020	1	M	63	Mandible	N.I	**LS:** N.I **SS:** N.I	Unknown primary site until the time of oral metastasis diagnosis. Clear cell carcinoma of the kidney. Metastasis to lungs, liver, and central nervous system	Double lobe nodule covering the gingiva. Measuring 5 x 3 cm, reddish coloration, covered by a purulent membrane, bled easily **Dh**: Pyogenic granuloma and malignant neoplasia	**Rad-** Radiolucent lesion with diffuse borders **CT-** Bone destruction	Chemotherapy and radiotherapy	Death after 6 montl
Koyama et al., 1997	1	M	54	Mandible	1	**LS:** Slight paresthesia of the left lip and chin **SS:** Pain in the upper right abdomen	Unknown primary site until the time of oral metastasis diagnosis Squamous cell carcinoma of the esophagus. Metastasis to the liver	Swelling, elastic and hard. The mucosa was smooth and showed no change in color. The teeth from the left lateral incisor to the left second premolar were nonvital on electrical testing **Dh:** Osteomyelitis, submandibular malignant tumor, and central mandibular malignant tumor	**Rad-** Ill-defined border and an osteolytic lesion **Bone scintigraphy**- Area of increased uptake **CT-** Osteolysis and a soft tissue of 4 cm in diameter **MRI-** Osteolytic mass	Surgical excision, chemotherapy (Pirarubicin hydrochloride, Cisplatin, and Peplomycin sulfate)	Death after 3 montl
Krishnamurthy et al., 2016	1	M	52	Mandible	5	**LS**: Pain, tooth mobility and occasional bleeding **SS**: N.I	Unknown primary site until the time of oral metastasis diagnosis Follicular carcinoma of the thyroid	Ulcero-proliferative growth. No cervical lymphadenopathy **Dh:** Primary odontogenic tumor	**CT**- Expansile lytic lesion There was intense enhancement with extensive neovascularity	Surgical excision, and Radioactive Iodine-131 ablation	Alive after 14 mont
Kruse et al., 2010	2	**C.1:** M **C.2:** F	**C.1:** 73 **C.2:** 75	**C.1-2:** TMJ	**C.1:** 2 **C.2:** 0,75	**C.1: LS**: Pain **SS:** Hemoptysis **C.2: LS:** Pain and difficulty opening the mouth **SS**: N.I	**C.1:** Unknown primary site until the time of oral metastasis diagnosis. Lung carcinoma. Metastasis to acetabulum, kidneys and mediastinal lymph nodes **C.2:** Unknown primary site until the time of oral metastasis diagnosis. Adenocarcinoma of the lung. Metastasis to lymph nodes, left scapula, liver and cerebellum	**C.1:** Hard swelling. The mouth opening was limited to 28 mm. No cervical lymphadenopathy **Dh:** Unspecified benign lesion (undefined term) **Obs**: Painful symptomatology started after trauma **C.2:** Slight swelling. The mouth opening was 30 mm with a deviation to the right side. No cervical lymphadenopathy **Dh:** Disc luxation without reposition **Obs**: The patient received diclofenac, soft food, and physiotherapy	**C.1: MRI-** Tumor mass and osteolysis **C.2: Rad-** Any suspicious lesions **MRI-**Tumor mass	**C.1:** Palliative chemotherapy **C.2:** N.I	**C.1:** Death after 1 month **C.2:** Death after 2 weeks
Kuçukguven et al., 2019	1	F	70	Gingiva	2	**LS:** Painless, bleed **SS:** N.I	Hepatocellular carcinoma. Later, developed lung metastasis	Nodular mass of 2 x 1.5 cm, mild tenderness, erythematous, haemorrhagic, and firm **Dh:** Pyogenic granuloma **Obs:** The patient had been using partial dentures and was observed poor oral hygiene	**Rad-** Widening of the periodontal ligament space around the left maxillary canine, with no remarkable alterations in the structure of the bone	Surgical excision, and chemotherapy (Sorafenib)	Alive after 8 montl
Kumar et al., 2010	1	F	58	Mandible	6	**LS:** Painless and tooth mobility **SS**: N.I	Unknown primary site until the time of oral metastasis diagnosis Follicular carcinoma of the thyroid	Swelling, non-tender and firm in consistency but was significantly warm and pulsatile, Intraorally, the left buccal and lingual vestibules were obliterated with overlying erythematous mucosa **Dh:** Vascular lesion or metastatic lesion	**Rad-** Poorly defined osteolytic lesion with ragged borders **CT**- Hypervascular osteolytic lesion	Surgical excision, and radiotherapy	Alive after 24 mont
Kuttan et al., 2006	1	F	62	Mandible	3	**LS:** TMJ pain, moderate dysphagia and numbness of lower lip **SS:** N.I	Unknown primary site until the time of oral metastasis diagnosis Adenocarcinoma of unknown primary site. Metastasis to lung and long bones	Mass of 1.5 x 0.5 cm, tender, ovoid and firm. No cervical lymphadenopathy **Dh:** Chronic blockage of submandibular salivary gland ducts, a sialolithiasis, a primary intraosseous carcinoma, a salivary adenocarcinoma, or a metastatic carcinoma	**CT**- Bone with decreased density. The erosive lesion was adjacent to an ill-defined area of increased density in the soft tissue	Palliative care	Death after 2 montl

Lansigan et al.,1973	1	F	74	Uvula	0,50	**LS:** Sore throat. **SS:** Asymptomatic	Unknown primary site until the time of oral metastasis diagnosis Clear cell adenocarcinoma of the kidney	Necrotic mass measuring 2.5 cm. **Dh:** Nonspecific inflammation **Obs**: Nonspecific inflammation of the uvula was treated with antibiotics. The patient came back two weeks later with a swollen necrotic	N.I	N.I	N.I
Lasiter et al., 2011	1	M	76	Mandible	4	**LS:** Painless and numbness of the left lower lip and chin **SS**: N.I	Unknown primary site until the time of oral metastasis diagnosis. Hepatocellular carcinoma. Metastasis to the left femur	Mass (slowly growing, left -sided parasymphyseal mandibular, 6 cm) **Dh**: Unspecified benign lesion (undefined term) **Obs:** He had failed to improve after taking two courses of antibiotics prescribed by his dentist **Obs 2:** A complete dental extraction was performed in preparation for radiation therapy	**CT-** Destructive lesion of the left mandible	Radiotherapy	Death
Lavanya et al., 2014	1	M	76	Mandible	Unknown	**LS:** Painless **SS**: N.I	Unknown primary site until the time of oral metastasis diagnosis Follicular carcinoma of the thyroid	Swelling, solitary, non-tender, soft to firm, sessile and with buccal cortical plate expansion **Dh:** Odontogenic tumor **Obs:** The patient was partially edentulous and underwent extraction of infected 36 and 37 due to dental caries 6 months earlier	**Rad-** Unilocular radiolucency with ill-defined border **CT-** Large radiolucent area with irregular borders. On further examination, an osteolytic expansile lesion with buccal cortical plate erosion	Referred to an oncologist	N.I
Lawes et al., 2013	1	M	69	Mandible	2	**LS:** Pain, inability to open the mouth (beyond 20 mm), numbness of the lip **SS:** N.I	Adenocarcinoma of the esophagus. Later, developed metastasis to the right humerus, pelvis and both proximal femora	Mass in the left angle and body of the mandible **Dh:** Primary or secondary neoplasm, or a purely infective process	**Rad-** 'Moth-eaten' appearance of the bone **CT-** 4 cm expansile destructive lesion arising from the left angle of the mandible	Palliative radiotherapy	N.I
Lechien et al., 2015	1	F	63	Lateral pharyngeal wall, submaxillary gland, pterygo-maxillary space and parotid	0.50	**LS:** Painless **SS:** Weight loss	Unknown primary site until the time of oral metastasis diagnosis Squamous cell carcinoma unknown site. Metastasis to lymph nodes, suspected both right iliopubic and ischiopubic	Giant indurated mass with two smelly necrotic skin fistulas in the center of the mass **Dh:** Neck abscess	**CT-** Giant mass measuring 13 x 10 x 10 cm	Rejected treatment, end-of-life care only	N.I
Li et al., 2013	1	M	55	Gingiva	6	**LS:** N.I **SS:** N.I	Merkel cell carcinoma on the upper left leg	Solitary mucosal mass with ill-defined borders on the edentulous ridge of the tooth extraction site. The surface of the mass was ulcerated and surrounded by rolled, white borders **Dh:** Granulation tissue secondary to trauma, HIV-associated conditions **Obs:** Tooth extraction 6 months before, a swollen at the site of extraction was noticed	**Rad-** No signs of lytic bone lesions except for a well defined radiolucency consistent with a healing extraction socket	Referred to the oncologist for further treatment	N.I
Lin et al., 2018	1	F	65	Maxilla	1	**LS:** Discomfort **SS**: N.I	Unknown primary site until the time of oral metastasis diagnosis Large cell carcinoma of the lung. Metastasis to cervical spine, iliac bone, lymph nodes and skull	Healed sockets **Dh**: Maxillary sinusitis **Obs:** Recent tooth extraction due to discomfort, but without improvement	**Rad-** Extracted tooth socket shadows and cloudiness of the right maxillary sinus	Chemotherapy (Pembrolizumab), and radiotherapy	Death after 24 months

Liuzzi et al., 2009	1	M	62	Gingiva	N.I	**LS:** Bleeding and tooth mobility **SS:** Low back pain radiating to lower limb	Unknown primary site until the time of oral metastasis diagnosis Adenocarcinoma of the stomach. Metastasis to liver and bones	Tumor of 2 cm, red with defined edges and irregular surface. No cervical lymphadenopathy **Dh:** Periodontal disease **Obs:** Dentist thought it was a periodontal disease, and was treated with antibiotic therapy and anti-inflammatory, but without improvement	**CT**- Enlargement area of the maxillary sinus mucosa **Bone scintigraphy**- Increased osteogenic activity	Palliative radiotherapy, and chemotherapy (Platinum, 5-fluorouracil and Docetaxel)	Death
Lombardo et al., 2020	1	M	78	Mandible	1	**LS:** Painless **SS:** N.I	Adenocarcinoma of the prostate. Later, developed metastasis to lumbar spine	Swelling in the posterior region of the alveolar ridge covered by a firm and erythematous mucosa, and facial asymmetry (extraorally) **Dh:** Metastatic lesion, osteomyelitis or fibro-osseous lesions **Obs:** The event started after a posterior tooth exodontia in the region of the referred complaint	**CT-** Diffuse radiolucent image of osteolytic aspect in the mandibular region of the left side	Radiotherapy	Death after 2 montl
Loncarevic et al., 2016	1	F	60	Mandible	6	**LS:** Bilateral numbness of the lower lip **SS:** N.I	Adenocarcinoma of the breast. Later, developed metastasis to the humerus, sternum, and iliac bones	No intra or extra oral alterations, except for paresthesia and anesthesia of both mandibular nerves. No cervical lymphadenopathy **Dh:** Odontogenic infection **Obs:** Initially misdiagnosed and treated as odontogenic infection with root canal treatment and antibiotic therapy, the symptoms remained	**Rad-** Bilateral ill-defined radiolucency in the mandibular body **CT-** Extensive bilateral osteolytic process in the mandibular body and ramus, with ill-defined margins and a ‘‘moth-eaten" appearance. The lesion affected the mandibular and mental nerve channels, became thinner and penetrated the buccal and lingual cortex of the mandible	Palliative radiotherapy, chemotherapy (Capecitabine), and hormonal therapy	Alive after 3 week
Maestre-Rodríguez et al., 2009	1	M	52	Gingiva	N.I	**LS:** Gingivorrhagia, difficulty chewing, dental mobility and swallowing **SS:** Finger pain and inflammation	Unknown primary site until the time of oral metastasis diagnosis Renal clear cell carcinoma of the kidney and multiple metastases	Tumor of 4 x 4 cm, polypoid and sessile **Dh**: Pyogenic granuloma or neoplasm **Obs**: Partial edentulism with advanced periodontal disease	No bone involvement	Surgical excision	Death
Maiorano et al., 2000	1	M	70	Gingiva	4	**SL:**N.I **SS**: N.I	Unknown primary site until the time of oral metastasis diagnosis Hepatocellular carcinoma of the liver. Later, developed lung and brain metastasis	Multiple polypoid masses. These were white-reddish with an irregular surface of soft consistency **Dh:** Angiomatous lesions	**Rad-** No alterations	Surgical excision	Death after 8 montl
Majumdar et al., 2016	1	F	60	Alveolar mucosa	1	**LS**: Painless **SS:** N.I	Unknown primary site until the time of oral metastasis diagnosis Mucous adenocarcinoma of the stomach	Growth of 2 x 1 cm, pink and soft, surrounding the extracted socket. Painful, fixed right submandibular lymph node **Dh:** Pyogenic granuloma **Obs:** Extraction of the first right molar was performed, which was mobile. Patient had alveolar healing failure	**Rad-** Insignificant findings	Referred to an oncologist	Death
Manjunath et al., 2013	1	M	50	Gingiva	5	**LS**: N.I **SS:** Abdominal pain, vomiting and haematemesis	Unknown primary site until the time of oral metastasis diagnosis Adenocarcinoma of the stomach. Metastasis to the liver	Ulceroproliferative growth of 4 x 4 cm **Dh:** Pyogenic granuloma	**CT**- Growth eroding the lateral nasal wall	N.I	N.I

Mariano et al., 2013	1	M	55	Labial mucosa	1	**LS:** N.I **SS:** N.I	Fibule giant cell-rich osteosarcoma. Later developed metastasis to scalp, finger, lungs, thigh, cervical nodes **Obs:** Initially diagnosed as benign giant cell tumor of the leg	Multilobulated lesion of 3 x 2 cm, with a necrotic and ulcerated central surface of fibrous consistency on the lower labial mucosa. Extraoral examination, swelling of the lower labial mucosa. No cervical lymphadenopathy **Dh:** Reactive lesions, infectious conditions, and neoplasia	N.I	Chemotherapy, surgical resection, radiotherapy	Death after 9 montl
Marker and Clausen, 1991	1	M	70	Mandible	0,50	**LS**: Pain and difficulty in swallowing **SS:** Weight loss and anemic	Unknown primary site until the time of oral metastasis diagnosis Post mortem examination showed a primary hepatocellular carcinoma of the liver with metastases to the pleural cavity and lumbal spine	Exophytic tumor, of 2.5 x 2.5 cm, red and ulcerated. Palpable lymph node in the left retromandibular area. He was unable to open his mouth more than 35 mm **Dh**: Occlusal trauma **Obs:** The dental surgeon extracted the wisdom tooth of the left upper jaw to eliminate the possibility of occlusal trauma. However, the ulceration did not disappear	**Rad-** Ill-defined large radiolucency	Referred to the Department of Oncology	Death after 1 mont
Markman et al., 2018	2	F (2)	62 (2)	**C.1:** Tongue (lateral border) **C.2:** Tongue (dorsum)	**C.1**: N.I **C.2** : 3	**C.1-2: LS:** Painless **SS:** N.I	**C.1:** Cutaneous melanoma of the left dorsum. Metastasis to the luns, skin and bones **C.2:** Acral lentiginous melanoma of the right heel. Metastasis to the lungs. Later, developed metastasis to the subclavicular region, retroperitoneal region and central nervous system	**C.1:** Nodule of 1 cm, ulcerated surface and areas of telangiectasia **Dh:** Metastatic melanoma, squamous cell carcinoma and fibrous hyperplasia **C.2:** Submucosal nodule of 2 cm, firm on palpation **Dh:** Metastatic melanoma and benign mesenchymal neoplasm	N.I (2)	**C.1:** Chemotherapy (Cisplatin, dacarbazine and vinblastine) **C.2:** Palliative care	**C.1:** Death after 4. months **C.2:** Death after 2 months
Martín-Moro et al., 2005	1	F	86	Gingiva	N.I	**LS:** Asymptomatic **SS**: N.I	Unknown primary site until the time of oral metastasis diagnosis Adenocarcinoma of unknown primary site **Obs.** A mass was found in the adrenal gland	Mass of 2 x 2 cm, erythematous and pedunculated. No cervical lymphadenopathy **Dh:** Inflammatory or reactive lesions **Obs:** Several days later, the patient returned with an even bigger mass in the same location, which kept her from eating or even shutting her mouth	**Rad-** Lytic lesion	Surgical excision, and palliative treatment	Alive
Masamatti et al., 2013	1	M	60	Gingiva	N.I	**LS:** N.I **SS:** Dysphagia	Adenocarcinoma of gastroesophageal junction	Swelling of 3 x 2 cm, soft, covered by necrotic tag. No cervical lymphadenopathy **Dh:** Periodontal pyogenic abscess or granuloma like hyperplastic lesion	N.I	Radiotherapy	Death after 3 montl
Mason et al., 2005	1	M	73	Mandible	2	**LS:** Pain **SS:** N.I	Unknown primary site until the time of oral metastasis diagnosis Adenocarcinoma of the colon. Liver metastasis	Mass of 7 x 6 cm, hard and fixed. No cervical lymphadenopathy **Dh:** Parotid gland infection **Obs:** There had been no improvement despite treatment with antibiotics by his primary care physician	**CT**- 6.1 x 5.7 cm destructive tumor	Denied treatments	Death after a few days
Mast and Nissenblatt, 1987	1	F	85	Gingiva	N.I	**LS:** Teeth mobility, pain and difficult eating solid food **SS:** N.I	Adenocarcinoma of the colon. Metastasis to lymph nodes. Later, developed metastasis to the adrenal gland, lung and retroperitoneum	Mass of 2.5 cm, large and fungating. Submandibular lymphadenopathy **Dh:** Periodontal disease **Obs:** Four lower teeth were loose. After extraction, there was poor healing and increased swelling	**Rad-** Destructive lesion involving the bone of the mandible on the right side, anterior portion **CT-** Solid mass of 8 cm with extensive bony destruction of the anterior mandible	Chemotherapy (5-FU), and radiotherapy	Alive after 3 week
Matsuda et al., 2017	1	F	85	Mandible	3	**LS:** Trismus, mandibular deviation to the left side and pain	Unknown primary site until the time of oral metastasis diagnosis Pancreatic cancer. Multiple metastases	Trismus and facial asymmetry due to mandibular deviation toward the left side and right preauricular depression **Dh:** Right temporomandibular dislocation	**Rad-** Anterior displacement **MRI-**Tumorous lesion, right temporomandibular dislocation and anterior displacement of the right articular disc **CT-** Tumorous lesion **Scintigraphy-**	Palliative treatment	Death after 2 montl

						SS: N.I			Abnormally increased uptake		
Mavili et al., 2010	1	F	58	Tongue	3	**LS**: Pain **SS:** Difficulty in breathing	Unknown primary site until the time of oral metastasis diagnosis Adenocarcinoma of the lung	Diffusely swollen and indurated. The overlying mucosa was intact and of normal color **Dh:** Abscess	**CT**-Hypodense lesion **MRI -** The lesion was hypointense on T1W and hyperintense on T2W images. After contrast administration, the lesion showed marked peripheral contrast enhancement, but the central part did not enhance	Referred to oncologist	Death after 2 montl
McGoldrick et al., 2016	1	M	58	Gingiva	N.I	**LS:** Tenderness on palpation, trismus and reduced sensation in the right mental nerve **SS:** N.I	Adenocarcinoma of the sigmoid colon. Metastasis to the liver	Soft tissue swelling that was also beginning to ulcerate secondary to trauma **Dh:** Infection **Obs:** Socket of a recently extracted lower right molar	**Rad-** Fracture of the right body of the mandible	Palliative care	Alive
Medina et al., 2001	1	F	67	Gingiva	2	**LS:** Bleeding **SS:** Weight loss, general malaise and abdominal distension	Unknown primary site until the time of oral metastasis diagnosis Uterine leiomyoma and uterine angiosarcoma. Metastasis to pleura and brain	Mass of 3 X 2 cm, violaceous, sessile, lobulated and nonulcerated **Dh:** Hyperplastic or reactive lesion, such as a pyogenic granuloma or epulis	**Rad-** No bone involvement	Patient denied treatment	Death after 15 months
Mehra et al., 1998	1	M	79	Masseter and pterygoid muscles	0.75	**LS:** Numbness of the left lower lip, paresthesia and trismus **SS:** Mild distended abdomen, mild suprapubic discomfort and hematuria	Adenocarcinoma of the prostate. Metastasis to the bladder	Soft tissue mass of 4 x 4 cm, firm, indurated in the left genial region that seemed fixed to the underlying tissue. No cervical lymphadenopathy **Dh:** Dental infection **Obs:** The patient had undergone extraction of several left posterior mandibular teeth in the affected area because of suspected dental infection. The swelling in the left posterior mandible had continued to increase despite this treatment	**Rad-** Normal **CT-** No involvement of the mandible	Palliative radiotherapy	Death after 3 week
Mehta et al., 2012	1	M	60	Gingiva	1	**LS:** Mobile teeth (for 1 year) and bleeding **SS:** None	Unknown primary site until the time of oral metastasis diagnosis Adenocarcinoma of the esophagus	Exophytic growth of 3 × 3 cm, non-tender, sessile, pinkish red in color, firm. Another exophytic growth of 2 × 3 cm in size, non-tender, with normal overlying mucosa, firm and pedunculated. **Dh:** Generalized periodontitis with pyogenic granuloma, fibrous epulis, giant cell lesion, and neoplastic lesion involving gingiva	**OPT-** Mild-to-moderate bone loss in all the teeth	Refused to take any treatment	Death after 5 montl
Melgaço-Costa et al., 2020	1	F	45	Mandible	N.I	**LS:** Pain, lip paresthesia **SS:** N.I	Breast cancer. Later, developed metastasis to vertebral bodies and costal arcs	Normal oral mucosa and no expansion of the mandible. Pulp vitality was tested, and the tooth was determined to be non vital given pain during vertical percussion. **Dh:** Pulp necrosis and a periapical inflammatory process, noninflammatory odontogenic lesion and central giant cell granuloma, metastasis **Obs:** Initially misdiagnosed and treated as a pulp necrosis and a periapical inflammatory process with root canal treatment, but without improvement	**Rad-** Unilocular radiolucency in the periapical region of the first lower right premolar and the slight widening of the periodontal ligament **CT-** Hypodense image with the destruction of the buccal and lingual cortical bone and the root resorption of the first lower right premolar, yet without expansion **Scintigraphy-** Suggested the metastasis of a malignant bone tumor	Chemotherapy	Death after 2 years

Menezes et al., 2008	1	F	42	TMJ	N.I	**LS:** Pain **SS:** N.I	Adenocarcinoma of the breast	Swelling and crepitation over the right temporomandibular joint **Dh:** Temporomandibular disorder, metastatic lesion **Obs:** The patient was previously diagnosed by another clinician as having TMD and received a conventional occlusal splint but it had not eliminated nor diminished the TMJ pain	**Rad-** Area of radiolucency with a hazy osteolytic-like outline **CT-** Osteolytic lesion with osseous erosion and a spiculated periosteal reaction that extended from the vertical ramus to the condyle on the right side. There was also evidence of a soft tissue extension with involvement of the masseter and lateral pterygoid muscles	Chemotherapy (Zometa and Aromasin), and radiotherapy	Alive after 12 mont
Menezes et al., 2013	1	M	54	Mandible	12	**LS:** Pain, paresthesia of the mandible **SS:** N.I	Prostate acinar adenocarcinoma. Metastasis to the right clavicle and scapula, humerus, ribs, spine, sternum, hip bone and femur	Mandibular bulging in the buccolingual aspect and tooth mobility involving bulging region associated with a slight gums erythema **Dh:** Osteomyelitis and or cancer, atypical neuralgia of the trigeminal nerve **Obs:** Past history of a pathology originated from a root treatment about one year before, which developed a mandibular abscess clinically treated. Once healed from this abscess, chronic pain and paresthesia persisted. Treatment with Carbamazepin and Gabapentin about 1 year (suggested diagnosis of Trigeminal Neuralgia)	**Rad-** Mild, diffuse radiolucency in the left mandibular body **CT-** Anatomical structure alteration with osteolysis areas in the premolars, molars and in the left region of the chin **Scintigraphy-** Increased uptake of the radiocontrast agent in the mandibular region	Chemotherapy (Goserelin, Bisphosphonate)	Death less than a year
Miles et al., 2006	1	F	78	TMJ	36	**LS:** Severe trismus, progressive inability to open the mouth, occasional pain on her right side in the preauricular region **SS:** Weight loss, mild headaches	Adenocarcinoma of the right breast. Metastasis to pelvis, right humerus, skull, right lateral sternum, bilateral proximal humeri, bilateral femurs, and at multiple spinal levels	No intraoral soft tissue pathology was noted, although the examination was limited by severe trismus. No cervical lymphadenopathy **Dh:** Bilateral fibrous ankylosis of unknown etiology **Obs:** Full dentition in good repair with excellent hygiene	**Rad-** Bilateral joint space narrowing consistent with ankylosis. Sclerotic changes bilaterally and a 0.5 cm radiolucency within the left condyle **CT-** Deformed, flattened, and fragmented right condyle and sclerotic changes bilaterally with a small amount of expansion of the left condyle	Surgical excision, palliative care	Alive
Milobsky et al., 1975	1	F	66	Maxilla	0.75	**LS:** Pain **SS:** N.I	Adenocarcinoma of the kidney. Metastasis to the lung	Swelling, tender to palpation, firm and nonfluctuant **Dh:** Pulpitis (endodontic problem) **Obs**: Severe pulpitis involving tooth 11, which had developed following preparation for a full crown. Endodontic therapy was made	**Rad-** Large radiolucency around the apex of tooth 11	Radiotherapy, and chemotherapy	Alive
Misir et al., 2013	1	M	55	Mandible	2	**LS**: Pain and paresthesia in the right lower lip **SS:** None	Unknown primary site until the time of oral metastasis diagnosis Adenocarcinoma of the lung	Lesion of 2 x 2 cm, non-tender, with intact mucosa and a smooth surface. No cervical lymphadenopathy. **Dh:** Mimicking a dentoalveolar infection (radiography) **Obs**: Antibiotic was prescribed, but without improvement	**OPT**-Ill-defined radiolucent osteolytic lesion	Chemotherapy (Etoposide, Ondansetron, Granisetron and Tropisetron)	Death after 17 months
Miyake et al., 2015	1	F	65	Gingiva	9	**LS:** Painless, paralysis of the lower lip **SS:** Abdominal distension	Colon adenocarcinoma. Metastasis to the lung	Gingival mass of 2.4 x 2 cm, reddish pink, moderately firm, partially pedunculated, slightly erosive but ulcerated, at the buccal gingiva of the right lower second premolar **Dh:** Epulis granulomatosa or pyogenic granuloma	**Rad-** Small periapical lesion in the right second premolar	Palliative resection, chemotherapy, and palliative radiotherapy	N.I
Moffat, 1976	1	M	56	Gingiva	3	**LS:** N.I **SS:** N.I	Adenocarcinoma of the rectum. Later, developed metastasis to the lung	Nodule of 1,2 x 1 cm, hard, subsequently ulceration occurred **Dh:** Epulis **Obs:** Patient was edentulous and his denture did not fit as well as previously	**Rad-** Bone destruction beneath the lesion	Chemotherapy (Cyclophosphamide, Methotrexate, Vincristine and 5-	Death

										fluorouracil)	
Moharil et al., 2010	1	M	40	Gingiva	0.75	**LS:** Pain **SS:** None	Unknown primary site until the time of oral metastasis diagnosis Undifferentiated epithelial malignancy of the lung. Metastasis to brain	Growth of 5 x 2 cm, reddish-pink, pedunculated, irregular shape and soft to firm in consistency. Left submandibular lymph nodes were enlarged, tender and mobile. Pus discharge, bleeding on probing and slough with indentations were noted **Dh:** Pyogenic granuloma and peripheral giant cell granuloma	N.I	No treatment was performed (death)	Death after a week
Moraes et al., 2017	1	M	66	Mandible	12	**LS:** Pain **SS:** N.I	Adenocarcinoma of the prostate (bone metastasis) and non-small-cell lung cancer (primary site)	Slightly bluish area located in the overlying mucosa of the edentulous alveolus of the right mandible (first premolar) **Dh:** Residual cyst **Obs:** Past history of first premolar extraction, which after 4 months, became the site of the current complaint	**Rad-** Unilocular, oval radiolucency of 0.5 x 0.7 cm with well-defined sclerotic borders	Surgical excision, and chemotherapy (Paclitaxel)	Alive after 4 month
Morita et al., 2006	1	F	60	Floor of the mouth	3	**LS:** Minimal discomfort **SS:** N.I	Hemangiopericytoma of the brain and kidney (primary site). Later, developed metastasis to posterior peritoneum	Mass of 2 x 3 cm, elastic, hard in the floor of the mouth, adhered to submandibular and sublingual glands and was not fixed to the oral mucosa. No cervical lymphadenopathy **Dh:** Pleomorphic adenoma	**MRI-** Tumor in the right side of the floor of the mouth	Surgical excision	Alive after 3 years
Morris et al., 2001	1	M	61	Mandible	1	**LS:** Hypesthesia in the mental region **SS:** N.I	Ductal carcinoma of the breast. Metastasis to the cranium, right parotid region, lymph nodes and lumbar and thoracic spine	Soft tissue mass of 4 x 3 cm in the anterior submental triangle. The mandibular incisors showed gingival inflammation and recession and mobility. The teeth were not tender to percussion, and the alveolus was not tender to palpation **Dh:** Odontogenic abscess and metastatic tumor **Obs:** Root canal therapy was made by another dentist in the lower incisor teeth, followed by prescription of antibiotics. The swelling persisted with slow but gradual progression over the next 2 weeks	**Rad-** Moderate to severe alveolar bone loss involving the lower incisors. A mandibular occlusal radiograph revealed questionable calcifications in the floor of the mouth **CT-** A 4.5 x 3 cm ring-enhanced submental mass with scattered radiopacities	Chemotherapy	Death after 12 months
Muller et al., 2022	1	M	58	Maxilla	2	**LS:** N.I **SS:** Dyspnea, weight loss, hip pain	Unknown primary site until the time of oral metastasis diagnosis Sarcomatoid tumor of the lung Multiple metastasis to the retroperitoneum, axial and proximal appendicular skeleton, liver and kidne	Mass of 2 x 1 cm, pedunculated, extended from the anterior maxillary gingiva to the hard palate. Cervical lymphadenopathy **Dh:** Dental abscess **Obs:** Past history of antibiotic therapy, tooth extractions	**CT-** .2.1 × 1.2 cm maxillary mass between incisors and adjacent to the right canine with bony erosion	N.I	Death
Murray et al., 2011	1	F	46	Tongue	8	**LS:** No pain or discomfort **SS:** Shortness of breath	Unknown primary site until the time of oral metastasis diagnosis Malignant mesothelioma of the pleura. Later, developed metastasis to the chest wall	2 polypoid lesions. One was a 1 x 0. 5 cm, firm, rounded, pink swelling. The other lesion was very similar in appearance but smaller 0.3 x 0. 3 cm **Dh:** Benign fibroepithelial polyps, giant cell fibroma, lipoma, myxoma, neurofibroma schwannoma, leiomyoma, granular cell tumor, papilloma or verruciform xanthoma **Obs:** Shortly after treatment, the patient developed 3 small tongue lesions	N.I	Surgical excision and, palliative chemotherapy (Cisplatin and Pemetrexed)	N.I
Murugaraj et al., 2013	1	M	70	Mandible	0.75	**LS:** Difficulty in eating and paresthesia involving the right mandible **SS:** Reduced appetite, tiredness, abdominal pain and	Unknown primary site until the time of oral metastasis diagnosis Rectal adenocarcinoma. Metastasis to the liver and abdomen	Mass of 3 x 3 cm arising from the lower right edentulous ridge and buccal mucosa **Dh:** Malignancy or infection	**Rad-** Extensive radiolucency throughout the posterior body and ramus of the right mandible with loss of definition of the superior cortical margin	N.I	Death after 9 month

						weight loss					
Myall et al., 1983	1	F	30	Mandible	4	**LS:** Paresthesia of the right lower lip and discomfort **SS:** Fever, weakness	Malignant melanoma of chest	Buccal expansion of 5 x 1 cm, tender to palpation alongside the first and second right lower molars, both of which were mobile.Right submandibular lymph nodes were enlarged and tender **Dh**: Multiple sclerosis and malignancy **Obs:** Because of deep-seated discomfort, an impacted wisdom tooth was extracted. Considerable pain followed the extraction and she was unable to open her mouth	**Rad-** Small areas of bone destruction with irregular margins suggesting a malignancy	Surgical excision, and radiotherapy	Death after a few months
Naik et al., 2019	1	M	60	Gingiva	N.I	**LS:** Pain **SS:** N.I	Unknown primary site until the time of oral metastasis diagnosis Adenocarcinoma of unknown primary origin	Growth of 2 cm, round in shape, diffuse borders, on the left upper front gingiva. A similar growth of 4 x 1 cm, pedunculated, with diffuse borders, was seen on the left lower gingiva **Dh:** Peripheral giant cell granuloma	N.I	Surgical excision	N.I
Ndiaye et al., 2020	1	F	43	Gingiva	N.I	**LS:** Painless **SS:** N.I	Ductal carcinoma of the breast	Mass of 1 cm, rounded, well-limited, nonbleeding, seat near tooth 33 **Dh:** Benign lesion (Epulis or granuloma)	**CT-** Small gingival thickening without bone involvement	Surgical excision, chemotherapy	Alive after 1 year
Nesbitt et al., 2019	1	M	59	Buccal mucosa	N.I	**LS:** Painless **SS:** Complete loss of sensation of his left arm, progressive weakness in the left upper limb	Unknown primary site until the time of oral metastasis diagnosis Renal cell carcinoma. Metastasis to the brain and lung	Mass of 3 cm and ulcerated **Dh:** Infective mass, a primary squamous cell carcinoma or other malignant lesion **Obs:** A local dentist performs root canal treatment followed by a course of oral antibiotics. The lesion persisted despite this treatment	N.I	Palliative radiotherapy	N.I
Newland et al., 1985	1	M	6	Maxilla	1.50	**LS:** Difficulty in mastication and pain **SS:** Fever, anorexia and abdominal discomfort	Unknown primary site until the time of oral metastasis diagnosis Neuroblastoma in the adrenal gland. Later, developed metastasis to the bone marrow, tibia and greater wing of the sphenoid	Bilateral, tender, compressible swellings **Dh:** Infection of dental origin **Obs:** Pediatrician thought the swelling was secondary to an infection of dental origin. Antibiotic therapy was performed, but without improvement	**Rad-** Ill-defined radiolucent lesion displacing a tooth **CT-** Irregular, bilateral lytic lesions	Chemotherapy (Cytoxan, Vincristine, Adriamycin, and Cis-platinum), radiotherapy	Death after 18 months
Nikitakis et al., 2016	1	F	54	Mandible	3	**LS:** Pain and numbness of the lower lip **SS:** Ear pain	Adenocarcinoma of the breast	Swelling of the buccal cortical plate in the right posterior mandible toward the angle that caused facial asymmetry **Dh:** Chronic osteomyelitis, ameloblastoma, odontogenic myxomas, central giant cell granuloma, squamous cell carcinoma, osteosarcoma, chondrosarcoma, lymphoma, metastasis **Obs:** Initially misdiagnosed and treated with antibiotic treatment with limited improvement	**Rad-** Ill-defined radiolucency of the right posterior body of the mandible with a diffuse alteration of the bone trabeculation pattern **CT-** Thinning and multiple areas of perforation of the cortical bone (“moth-eaten” appearance) of the body and ramus of the right mandible	Referred to oncologist	N.I
Nishii et al., 2020	1	M	89	Maxilla	0.50	**LS:** Pain **SS**: N.I	Renal cell carcinoma of the kidney. Metastasis to lung	8x8 mm granulomatous tumor **Dh**: Arteriovenous malformation or neoplastic lesion	**Rad-** Resorption of the left maxillary alveolar bone **CT-** Tumor destroying the left maxillary bone **MRI-** Mass in the left maxillary bone	Surgical excision	Death after 17 months

Noor et al., 2018	1	F	58	Mandible	N.I	**LS:** Pain, numbness of the left mandible, paraesthesia of the left lower lip, tooth mobility **SS:** Nausea, vomiting and dehydration	Cutaneous amelanotic melanoma of the lower back. Later, developed metastasis to the lungs	No clinical alterations **Dh:** Iatrogenic nerve injury, dental abscess **Obs:** Initially misdiagnosed and treated as a dental abscess with root canal therapy. After 3 months, the symptoms returned	**Rad-** Radiolucent lesion of 1 cm, well-defined, associated with the roots of the left lower first molar **CT-** Osteolytic lesion, however, showed no evidence of osteomyelitis or focal abnormality **After 9 weeks** **MRI-** Extensive marrow infiltration and perforation of the lingual plate in the angle of the mandible	Declined palliative treatment	Death after 1.5 months
Nuyen et al., 2016	1	M	59	Maxilla	3	**LS:** Asymptomatic **SS:** Cough	Unknown primary site until the time of oral metastasis diagnosis Adenocarcinoma of the lung. Metastasis to lymph node, vertebra, pelvic and liver	Nonulcerative mass. Multiple nonspecific small lymph nodes in the jugulodigastric, submandibular, and posterior cervical regions of the neck bilaterally were observed **Dh:** Benign bony growth **Obs:** Several years earlier, the patient had started noting sensitivity over his left upper teeth but had no pain or visible lesions. Later, he noticed a lesion on his gingiva. He was evaluated at that time by a dentist who diagnosed a bony growth to be managed conservatively	**CT-** Destructive bone lesion	Palliative radiotherapy	N.I
O'Neil , 1964	1	M	59	Gingiva	0.50	**LS**: Bleeding and pain. **SS:** Chronic cough	Unknown primary site until the time of oral metastasis diagnosis Adenocarcinoma of the lung. Autopsy revealed metastasis to subcarinal lymph nodes, liver, splenium, kidney, adrenal, brain vertebrae and ribs	Epulis of 3 x 2 x 2 cm, firm , pedunculated, irregular surface covered with mottled pink mucosa. No cervical lymphadenopathy **Dh:** Fibroepithelial hyperplasia	**Rad-**Minimal superficial erosion of bone	N.I	Death after 2 ½ months
Oliver et al., 2021	1	F	51	Mandible	N.I	**LS:** Pain, trismus **SS:** Weight loss	Unknown primary site until the time of oral metastasis diagnosis Adenocarcinoma of the lung. Metastasis to bones and adrenal gland	Only symptoms, no cervical lymphadenopathy **Obs**. Diagnosis of condylar fracture and treated with physiotherapy for 7 months **Dh**: Osteomyelitis	**CT-** Osteolytic lesions of the mandible	N.I	N.I
Olsen et al., 2019	1	F	73	Gingiva	2	**LS:** Asymptomatic **SS:** N.I	Hepatic epithelioid hemangioendothelioma. Metastasis to the lung and axilla	Ulcerated gingival lesion associated with tooth 44. No cervical lymphadenoáthy **Dh:** Periodontal pathosis **Obs:** The lesion failed to resolve after debridement	**CT-** Tooth 44 with adjacent horizontal loss of bone	Surveillance	N.I
Otto et al., 2010	1	F	53	Mandible	18	**LS:** Numbness of the lower lip and chin **SS:** N.I	Breast cancer. Metastasis to iliac bone and spine	A protrusion of the left mandibular body was palpable extra- and intra orally and intraoral examination revealed no area of exposed bone **Dh:** Bisphosphonate-related osteonecrosis **Obs:** Both metastasis and osteonecrosis were found	**Rad-** Radiolucent and radiopaque areas specially of the left mandibular body and an irregular lining of the nerve channel **CT-** Distinctive sclerosis specially of the left mandibular body and widening of the periodontal gap of molars and premolars in the mandible	Radiotherapy	Death after 6 montl
Panos sian et al., 2009	1	F	79	Mandible	6	**LS:** Pain, sensations of burning and tingling **SS**: N.I	Unknown primary site until the time of oral metastasis diagnosis Breast carcinoma. Metastatic foci involving the vertebrae, ribs, iliac, femur, lung and liver	Mass of 4.0 x 3.0-cm, non-tender, firm and nontender, and the overlying skin was intact and nonerythematous **Dh:** Infectious sialadenitis **Obs:** Antibiotics were prescribed for what was presumed to be infectious sialadenitis of the left parotid gland. However, without improvement	**Rad-** Poorly defined mixed radiopaque/lucent destruction **CT**-Ill-defined "sunray"-like periosteal opacity o with marked thinning of cortical bone	Radiotherapy , chemotherap y (Pamidronate), and hormonal	Alive after 10 mont

										therapy	
Park et al., 2006	1	M	55	Gingiva	3	**LS**: Halitosis and easily bleeding **SS**: N.I	Unknown primary site until the time of oral metastasis diagnosis Sarcomatoid carcinoma of the lung. Newly developed metastatic lesions at various locations, including the brain, pelvis, and multiple sites of ribs	Exophytic mass, of 4 cm and pedunculated. No cervical lymphadenopathy **Dh**: Granuloma and malignant tumor	**Rad-** Diffuse alveolar bone loss	Palliative chemotherapy	Death
Patel et al., 2013	1	M	59	Gingiva	6	**LS:** N.I **SS:** Cough, breathlessness	Basaloid squamous cell carcinoma of the lung. Metastasis to the liver	Growth of 1 x 1.5 cm, tender on palpation, exophytic, erythematous, soft in consistency, attached to the gingival margin with the associated tooth showing grade III mobility **Dh:** Periodontal abscess, periapical pathology and pyogenic granuloma **Obs:** Severe periodontitis	N.I	Surgical excision, radiotherapy, and chemotherapy	Alive after 36 mont
Patel et al., 2020	1	F	59	Buccal mucosa	0.75	**LS:** Interfering with the fit of the dentures **SS:** Hip and back pain	Unknown primary site until the time of oral metastasis diagnosis Renal cell carcinoma. Metastasis to the brain and others distant organs (disseminated disease)	Lesion of 3.8 x 2.5 x 1.7 cm, pink-red, oval, ulcerated, pedunculated, with a white pseudomembranous surface. No cervical lymphadenopathy **Dh:** Pyogenic granuloma, buccal fat pad herniation, traumatic ulcerative granuloma, squamous cell carcinoma, and metastatic disease **Obs:** Edentulous patient. The swelling was interfering with the fit of the dentures	N.I	Surgical excision	Death after few months
Patricia et al., 2011	1	F	51	Mandible	12	**LS:** Trismus and pain in the TMJ region **SS:** N.I	Ductal carcinoma of the breast. Later, developed metastasis to the spinal column	Swelling on the right mandibular body region. No cervical lymphadenopathy **Dh:** Temporomandibular joint disorder, metastatic lesion **Obs**: The patient was previously treated for temporomandibular joint disorder with an interoclusal custom-made acrylic appliance, without success	**Rad-** Extensive radiopaque lesion located in molars region with ill-defined margins **CT-** Mass extending from the anterior region of the mandible to the condyle **Scintigraphy-** High accumulation of the isotope in the affected area	Palliative radiotherapy	Death after 6 montl
Patrocinio et al., 2008	1	F	29	Parotid gland	N.I	**LS:** Trismus and mouth opening limitation (5mm) **SS:** Jaundice, clay-colored stools, bilirubinuria, fever, enterorrhagia, and upper right quadrant abdominal pain	Unknown primary site until the time of oral metastasis diagnosis Autopsy revealed cholangiocarcinoma in the extrahepatic bile duct and metastases were found in the left parotid, paraaortic, and peripancreatic lymph nodes, liver, colon, and heart	Mass **Dh:** Infection **Obs**: Trismus started just after upper left third molar extraction	**CT-** 5 cm diameter heterogeneous mass	None	Death after 2 days
Pelissari et al., 2018	1	F	64	Mandible	5	**LS:** Toothache **SS:** N.I	Adenocarcinoma of the colon	Inflamed gingival overgrowth permeating the space at which tooth 35 had been extracted **Dh:** Pulpal inflammatory process **Obs:** Initially misdiagnosed and treated as a pulpal inflammatory process with endodontic treatment of tooth 34, but the intensity of the pain increased. So, tooth 35 was extracted and this failed to alleviate any symptoms	**Rad-** Radiolucent lesion with irregular contours in the periapical region of the teeth 34 and 35 **CT-** Destructive bone lesion of 5 cm in diameter encompassing the areas surrounding teeth 33, 34, and 35	Palliative chemotherapy (5-Fluorouracil, and Leucovorin)	Death after 6 montl

Perlmutter et al., 1974	1	F	44	Gingiva	N.I	**LS:** Bleeding, bad taste and unpleasant mouth odor **SS:** N.I	Duct carcinoma. Metastasis to axillary and pectoral lymph nodes	Mass of 1 x 1,5 cm, fiery red, elliptical, soft, pedunculated, smooth, shiny, friable and firmly attached. Presence of a large swelling about the size of an olive in the upper right premolar area. The swollen interdental papillae were detached. Both premolars as well as the adjacent teeth exhibited a slight mobility **Dh:** Pyogenic granuloma or peripheral giant-cell granuloma **Obs:** Recurrence of the lesion after biopsy	**Rad-** Generalized bone loss	Radiotherapy, and chemotherapy	Death after 29 months
Persad et al., 1991	1	F	62	Buccal mucosa	N.I	**LS**: N.I **SS:** Later, developed severe pain in the right thigh	Unknown primary site until the time of oral metastasis diagnosis Renal cell carcinoma. Later, developed metastasis to the femur	Lesion of 2.5 x 2 cm, reddish and firm but pulsatile **Dh:** Hemangioma, "confirmed" on arteriography	N.I	Nephrectomy was not carried out because of the presence of metastatic disease	N.I
Pesis et al., 2014	1	M	54	Mandible	2	**LS:** Numbness of left lower lip and cheek and gingival bleeding **SS**: N.I	Unknown primary site until the time of oral metastasis diagnosis Hepatocellular carcinoma of the liver. Later, developed multiple metastases	Submucosal mass **Dh**: Periodontal disease **Obs:** Another dentist thought to be periodontal disease	**Rad-** Mostly defined radiolucent lesion and a pathological fracture **CT and MRI-**Large destructive mass	Radiotherapy, and chemoembolization (Embospheres and Cisplatin)	Death after 15 months
Pfammatter et al., 2012	1	F	55	Peri-implant mucosa	N.I	**LS:** Pain, numbness of the lower lip **SS:** N.I	Pancreatic carcinoma and non small cell lung cancer (primary site)	Swelling. The mucosa had a smooth surface, and at this stage, it showed typical signs of inflammation in the form of pain, swelling, reddening, and a probing depth of 7 mm **Dh:** Peri-implant infection **Obs:** Misdiagnosis and treated as peri-implant infection **Obs2:** Good oral hygiene	**Rad-** Vertical peri-implant bone loss of 2 to 3 mm **CT-** Osteolytic process	N.I	Death after 1 mont
Piattelli et al., 2000	1	F	54	Gingiva	N.I	**LS:** Painless **SS:** N.I	Medullary thyroid carcinoma. Metastasis to cervical lymph nodes	Maxillary gingival mass **Dh:** Alveolar abscess **Obs:** Teeth tested all vital **Obs 2:** Poor oral hygiene	**Rad and bone scintigraphy-** No bone involvement	Surgical excision	Alive after 4 years
Pliskin et al., 1976	1	F	23	Gingiva	N.I	**LS:** Pain. **SS**: Enlargement of the right upper quadrant of the abdomen, severe bouts of vomiting	Unknown primary site until the time of oral metastasis diagnosis Malignant melanoma at an unknown site. Metastasis to the liver. At autopsy, metastasis to lung, pancreas, intestine and lymph nodes was discovered	Mass of 1.5 cm, non-tender, firm and non-ulcerated **Dh:** Acute periapical abscess **Obs**: It was thought to be an acute periapical abscess and the tooth was extracted	**Rad-** Radiolucency at the apex	Surgical excision, and chemotherapy (Dimethyl-triazo Imidazole Carboxamide)	Death in 6 months
Poojary et al., 2011	1	M	70	Gingiva	2	**LS**: N.I **SS:** Vomit and fever	Unknown primary site until the time of oral metastasis diagnosis Hepatocellular carcinoma of the liver. Metastasis to lungs, adrenal glands and vertebra	Exophytic mass, with 2.5 x 2.5 cm, non-tender, purplish and firm. The covering mucosa appeared lobular without surface ulceration. No cervical lymphadenopathy **Dh:** Addison's disease	**Rad-** No bone involvement	Palliative treatment	N.I

Poulias et al., 2011	1	F	55	Mandible	N.I	**LS:** Pain, altered sensation (mental nerve), and paresthesia of the lower lip and chin **SS:** N.I	Ductal carcinoma of the breast	Diffuse swelling of the buccal gingiva, soft and tender on palpation, with signs of inflammation. 47 and 48 showed slight mobility, moderate plaque and calculus deposits, bled upon probing. No cervical lymphadenopathy **Dh:** Metastatic disease, acute or chronic periodontal abscess, acute alveolar abscess, bisphosphonate-induced jaw osteonecrosis and osteomyelitis **Obs:** The patient's periodontal examination revealed severe generalized chronic periodontitis	**Rad-** Generalized horizontal bone loss **CT-** Small radiolucent areas in close proximity to 48	Chemotherapy (Bisphosphonate), and palliative radiotherapy	Alive
Poulopoulos et al., 2001	1	M	28	Labial mucosa	2	**LS:** N.I **SS:** None	Testicular embryonal carcinoma	Mass of 1 cm in diameter, tender on palpation, smooth, soft, without sense of compression with normal overlying mucosa on the labial mucosa of the upper lip extended between the incisors **Dh:** Cystic lesion	**Rad-** Diffuse radiolucency with ill-defined borders in the area of the maxillary incisors **CT-** Ill-defined defect in the anterior maxilla extending to the floor of the nose	Chemotherapy (Cisplatin, Vincristine, and Bleomycin)	Death after 8 montl
Poulopoulos et al., 2001	1	F	61	Gingiva	N.I	**LS:** Pain, teeth mobility and bleeding **SS:** N.I	Angiosarcoma of the breast. Metastasis to the right clavicle. Later, developed metastasis to skull and maxilla	Bilateral nodular bleeding boggy masses on the mandibular gingiva in the area of premolars, located on the buccal surface. No cervical lymphadenopathy **Dh:** Hemangioma or hyperplastic reactive lesion	**Rad-** Periodontal problem	Surgical excision	Death after 2 montl
Pozzi et al., 2008	1	F	57	Gingiva	3	**LS:** Painless, tooth mobility **SS:** Submandibular lymph node pain	Unknown primary site until the time of oral metastasis diagnosis Adenocarcinoma of the lung. Later, developed metastasis to the vertebra and lymph nodes	Exophytic mass, with well-defined margins, pedunculated and partial superficial ulcerations with a fibrin coverage. **Dh:** Reactive lesions, such as a pyogenic granuloma or a peripheral giant cell granuloma or a malignant neoplasm of unknown origin	**Rad-** General horizontal bone loss in the mandible, vertical and periapical alveolar bone loss. The bone structure in the region of the soft tissue lesion was shaped regularly	Surgical excision, palliative radiotherapy, and palliative chemotherapy	Death after 9 montl
Prakash et al., 2012	1	M	57	Gingiva	3	**LS:** Painless and bleeding **SS:** Weight loss	Unknown primary site until the time of oral metastasis diagnosis Adenocarcinoma of the lung	Multiple tumefactions, measuring 5 × 4 cm, 3 × 3 cm, and 1 ×2 cm, erythematous, soft and pedunculated. Bilateral enlargement of the submandibular lymph nodes which were non tender and partially fixed **Dh:** Pyogenic granuloma **Obs:** Generalized moderate to severe periodontitis. Calculus and bacterial plaque were prominent	**Rad-** No bone alterations	No treatment	Death after 1 mont
Prasanna et al., 2015	1	M	73	Alveolar mucosa	3	**LS**: N.I **SS:** N.I	Unknown primary site until the time of oral metastasis diagnosis Adenocarcinoma of the lung	Exophytic growth, with 1.5 x 1.0 cm in size, non-tender, firm consistency. No cervical lymphadenopathy **Dh**: Denture Granuloma	**Rad-** Slight evidence of bone resorption	Palliative care	Death after 6 montl
Prol et al., 2018	1	M	77	Mandible	19	**LS:** N.I **SS:** N.I	Adenocarcinoma of the prostate. Metastasis to vertebrae C7 and D1. Later, developed metastasis to the right orbit, ribs, sacral column, left humerus, both scapulae and right femoral diaphysis	Hemifacial swelling without ulceration of the oral mucosa. Cervical lymphadenopathies **Dh:** Paget's disease of bone	**Rad-** Bulging of both cortical of the ipsilateral mandible branch. Irregular sclerosis of right hemimandible and widening of adjacent periodontal spaces **CT-** Sclerotic intensification with mandibular bone growth, soft tissue increases in masticatory space	Radiotherapy	Death after 46 months
Pruckmayer et al., 1996	1	M	62	Mandible	N.I	**LS:** Pain **SS:** N.I	Prostate cancer	Swelling of the right mandibular region **Dh:** Acute osteomyelitis **Obs**: The symptoms and imaging exams all suggested the diagnosis of osteomyelitis. Consequently, the patient underwent antibiotic therapy and, initially, seemed to recover	**Rad-** No defects in bone structure in the mandibular region **CT-** No osteodestruction and thus appeared to be compatible with acute osteomyelitis **Scintigraphy-** Increased tracer uptake over	N.I	N.I

									nearly the whole corpus of the right mandible **Bone scans and immunoscintigraphy-** Mandibular hot spot and increased tracer uptake in the lesion in the right mandible		
Pruckmayer et al., 1998	1	F	74	Mandible	5	**LS:** Pain, anaesthesia of the lower lip **SS:** Lower back pain and severe discomfort of both hips and the occipital skull	Ductal carcinoma of the breast. Metastasis to multiple bones and lungs	Swelling of the right mandibular area (third molar region) **Dh:** Poorly adapted prosthesis, neuralgia of the trigeminal nerve **Obs:** The patient undergone dental procedures including tooth extractions and unsuccessful antibiotic and analgesic therapy. Conservative treatment, including carbamazepine, was initiated without significant relief of symptoms. When additional swelling of the right mandibular area occurred, she was referred to a specialized dental service	**Rad-** Osteolytic defect in the right mandible **Scintigraphy-** Hot spot over the right mandibular ramus	Chemotherapy (Vinorelbine, 1-Leucovorin, 5-Fluorouracil, Tamoxifen, G-CSF), and hormonal treatment	Alive after 22 mont
Raddeen and Reade, 1966	1	M	51	Gingiva	0.5	**LS**: Pain and bleeding. **SS:** Bloody cough, shortness of breath on exertion	Unknown primary site until the time of oral metastasis diagnosis Autopsy - Hepatocellular carcinoma of the liver. Multiple metastases	Swelling with 1 cm, firm, hemispherical, sessile, covered with a smooth hyperemic mucosa, but the lower half appeared completely ulcerated **Dh:** Fibrous epulis of chronic traumatic origin. **Obs:** Marked evidence of neglect, with gross deposits of calculus and extensive staining present on all the teeth, which were heavily restored	**Rad-** No bony abnormalities	Surgical excision	Death in 2 months
Ranjini Kanth et al., 2015	1	M	60	Mandible	3	**LS**: Pain **SS:** N.I	Unknown primary site until the time of oral metastasis diagnosis Adenocarcinoma of the lung	Swelling of 3 x 3 cm, non-tender, firm and ill-defined borders **Dh:** Inflammatory swelling, odontogenic cyst, odontogenic tumor, soft tissue tumor or metastatic tumor to the jawbones **Obs:** Patient was partially edentulous with poor oral hygiene	**CT**-Well-defined osteolytic lesion measuring 54 mm × 45 mm × 50 mm. It showed spiculated periosteal lesion with multiple irregular calcifications	Palliative radiotherapy, and chemotherapy (Cisplatin, Etoposide, Vomiset and Ultracet)	N.I
Ramirez et al., 2003	1	M	65	Gingiva	1	**LS:** N.I **SS:** Skin and mucosal jaundice, distended abdomen with umbilical hernia	Hepatocellular carcinoma	Tumor of 3 cm in diameter, red wine colouring, exophytic and lobulated in the incisal region of the gingival of the upper maxilla. Some areas were covered by a yellowish plaque with a fibrinoid appearance and recent signs of bleeding **Dh:** Pyogenic granuloma	**Rad and CT-** Normal	N.I	Death after 8 montl
Razmara et al., 2020	1	F	68	Gingiva	N.I	**LS**: Pain, teeth mobility, problems in eating **SS:** N.I	Ductal carcinoma of the breast. Later, developed metastasis to the brain	Mass, tender on palpation, ulcerated, exophytic, that led to distinct mobillity of the involved teeth **Dh:** Pyogenic granuloma, squamous cell carcinoma, and metastasis	**Rad-** There was not any intraosseous lesion, but the soft tissue mass produced mild saucerization in the mandibular crest in the same region	Surgical excision, and chemotherapy	Death after 6 montl
Redman et al., 1983	1	M	55	Gingiva	N.I	**LS:** Pain, bleeding, interference with appetite and chewing **SS:** Weight loss	Unknown primary site until the time of oral metastasis diagnosis Large cell carcinoma of the lung. Metastasis to ribs, right humerus and skin. Autopsy revealed metastasis to adrenal gland, mediastinal lymph nodes and pericardium	Granular growth, measured 2 x 1.5 cm. There was a 1 cm, firm, non-painful lymph node in the left submandibular area **Dh:** Peripheral giant cell granuloma, primary malignancy or metastasis **Obs:** Patient was being treated for periodontitis (subgingival curettage)	**Rad-** Extensive general periodontal bone loss.The radiolucent zone around the roots of the lower left first molar had the appearance of a soft tissue lesion eroding into and expanding above the level of the surrounding alveolar bone	Did not start treatment	Death in 1 month

Rim et al., 2003	1	F	70	Gingiva	2	**LS:** Bleeding **SS:** N.I	Hepatocellular carcinoma	Nodule, fungating, erythematous, and soft on the gingival mucosa of the mandible **Dh:** Pyogenic granuloma **Obs:** One month later, the mass recurred	N.I	Surgical excision	N.I
Rivera et al., 2010	1	M	56	Mandible	N.I	**LS:** Pain **SS:** N.I	Melanoma of the upper back. Metastasis to neck. Later, developed metastasis to axillary lymph nodes	Bone lesion **Dh**: Dental abscess **Obs:** The patient was treated for dental abscesses, and the mandibular left first premolar and canine were treated with root canal therapy	**Rad-** Radiolucent lesion of 2.5 cm, well-defined	Resection of the anterior mandible	Alive after 54 mont
Rocha et al., 2010	1	M	27	Maxilla	2	**LS:** Painless **SS:** N.I	Alveolar soft-part sarcoma of the thigh. Metastasis to brain and lungs	Nodule of 3 cm, erythematous, smooth, lobular **Dh:** Metastasis, pyogenic granuloma and giant cell lesion	**Rad-** Mass of soft tissue on the distal aspect of the right second upper molar, involving the subjacent bone giving a moth-eaten pattern	Superficial surgical excision, and chemotherapy	Death after 2 montl
Rubin et al., 1989	1	F	67	Mandible	2	**LS**: Pain and left lip paresthesia **SS:** Weight loss, nausea, vomit and night sweats	Unknown primary site until the time of oral metastasis diagnosis Adenocarcinoma of unknown site. Metastasis to the orbital, parietal, anterior frontal, manubrium, ribs and vertebral column regions	Swelling. No cervical lymphadenopathy **Dh**: Myofascial pain dysfunction syndrome of the TMJ **Obs:** The patient was treated with conservative methods including analgesics, to rule out a myofascial pain dysfunction syndrome of the TMJ	**CT-** Osteolysis with associated enlargement of the parotid gland	Radiotherapy	Death after 3 montl
Rusthoven et al., 1984	2	**C.1:** F **C.2:** M	**C.1:** 45 **C.2:** 65	**C.1:** Mandible **C.2:** Maxilla	**C.1:** 0.75 **C.2:** 12	**C.1: LS:** Pain and numbness over the right lower lip and chin **SS:** Diarrhea, increasing rectal pressure and decreased stool caliber. Right buttock and posterior thigh pain **C.2: LS:** Pain **SS:** N.I	**C.1:** Adenocarcinoma of the rectum. Metastasis to pelvis **C.2:** Adenocarcinoma of the rectum. Metastasis to the liver. Later, developed metastasis to the lung	**C.1:** Exudate resembling pus was noted around the right lower molar. Cervical lymphadenopathy **Dh:** Periodontal abscess **Obs:** Antibiotic Therapy and due to the exudate continued to expand within the resulting defect, the tooth was extracted **C.2:** Swelling at the site of a previous tooth extraction. Pinhead-sized white spot surrounded by swelling and redness. After 3 weeks, the lesion was 3 cm and appeared as a whitish-yellow crust denuded of epithelium **Dh:** Periodontal abscess **Obs:** Swelling at the site of a previous tooth extraction.	**C.1: Rad-** Normal **C.2: Rad-** Bony erosion of the right alveolar process of the maxilla	**C.1:** Chemotherapy (5-Fluorouracil and Allopurinol), and radiotherapy **C.2:** Radiotherapy, and chemotherapy (Mitomycin C IV)	**C.1:** Death after 1 month **C.1:** Death after 1' months
Saha et al., 2013	1	F	70	Mandible	4	**LS:** Pain **SS**: Chest pain and shortness of breath	Unknown primary site until the time of oral metastasis diagnosis Follicular carcinoma of the thyroid. Metastasis to the lung	Diffuse swelling measuring about 4 cm × 4 cm and firm. There was an erythematous change **Dh**: Periodontal abscess **Obs**: Patient began to notice the swelling after extraction of the upper second molar which was done due to tooth mobility and pain	**Rad-** Well-circumscribed osteolytic lesion of 4.4 cm × 5.09 cm	Radiotherapy	N.I
Sahoo et al., 2013	1	M	60	Mandible	8	**LS**: Pain and limitation of mouth opening **SS**: None	Unknown primary site until the time of oral metastasis diagnosis Ductal carcinoma of the breast. Metastasis to skin, frontal region, scapula, humerus, manubrium, sternum, rib, vertebra, pelvic bone and femur	Diffuse swelling, tender, hard on palpation and normal skin overlying. No intraoral alterations **Dh:** Osteomyelitis mandible following submasseteric space infection **Obs**: Patient made multiple tooth extractions due to tooth mobility **Obs 2:** Multiple missing teeth with poor oral hygiene	**Rad-** Ill-defined cortical plate and cotton-wool marrow space **CT-**Irregular thickening of the cortical margin. Infiltrative pathology **MRI-**Loss in normal intensity of marrow space with focal areas of cortical breach and periosteal reaction	Chemotherapy Paclitaxel, Cisplatin), and palliative treatment	Death

Salama et al., 2009	2	**C.1-2:** F	**C.1:** 54 **C.2:** 48	**C.1:** Mandible **C.2:** Alveolar mucosa	**C.1:** 36 **C.2:** 2	**C.1: LS:** Right lower lip paresthesia **SS:** N.I **C.2: LS**: N.I **SS:** Weight loss	**C.1:** Small cell carcinoma of the lung. Metastasis to ovarian. Later, developed metastasis to left femur and ileum **C.2:** Unknown primary site until the time of oral metastasis diagnosis Small cell carcinoma of the breast	**C.1:** Tooth 32 was negative to percussion, minimally mobile, and vital by pulp testing **Dh:** Odontogenic infection **Obs:** Following persistence of the paresthesia with endodontic therapy, teeth numbers 30 and 31 were extracted **C.2:** 2 discrete mucosal masses, one overlying the mandibular body, and the other arising in the right maxillary gingiva **Dh**: Unspecified benign lesion (undefined term) **Obs:** The lesions were noted after a dental extraction site failed to heal	**C.1: Rad-** Periapical radiolucency of 1 cm, ill-defined, at the apex of tooth number 32 **C.2:** N.I	**C.1:** Radiotherapy **C.2:** Radiotherapy, and chemotherapy	**C.1:** Alive after 18 months **C.2:** Alive
Salman and Darlington, 1944	1	M	49	Mandible	N.I	**LS:** N.I **SS:** Jaundiced and severe gastric hemorrhagel	Tentative of diagnosis was made of carcinoma of pylorus and duodenum with metastasis to lungs and liver. Later, the final diagnoses were Carcinoma of stomach with metastasis to liver and lungs	Swelling about the size of an egg. The underlying bone was of an eggshell consistency. Upon pressure. pus exuded **Dh:** Radicular cyst (smaller) and neoplasm (larger)	**Rad-** Two large arcas of bone destruction. One area, about 2 cm and the other about 0,5 cm. The smaller area appeared, radiographically, as a radicular cyst	N.I	Death in less than month
Sánchez et al., 2021	1	F	60	Gingiva	12	**LS:** Bleeding **SS:** N.I	Renal clear cell carcinoma	Lesion of 2 cm, exophytic, irregular shape and surface, sessil, with granulomatous appearance. Submandibular lymphadenopathy **Dh**: Pyogenic granuloma, peripheral granuloma of giant cell and squamous cell carcinoma	N.I	Referred to oncologist	N.I
Santa maría et al., 1997	1	M	55	Mandible	N.I	**LS:** Bleeding, pain and paresthesia in the region of the inferior alveolar nerve **SS:** N.I	Unknown primary site until the time of oral metastasis diagnosis Malignant melanoma of unknown primary site. Metastasis to lymph nodes and gluteus	Bleeding from the extraction socket. The mucosa was bluish-black. No cervical lymphadenopathy **Dh**: Giant cell tumor **Obs**: Tooth extraction (48) followed by pain and bleeding	**OPT-** Radiolucent, osteolytic lesion **CT-** Expansion of the angle and the ascending ramus, with punctate loss of continuity of the internal and external cortex	Surgical excision	Death after 28 months
Savithri et al., 2018	1	F	64	Mandible	3	**LS:** Pain in the chin and paresthesia of lower lip and chin **SS**: None	Unknown primary site until the time of oral metastasis diagnosis Adenocarcinoma of the lung. Metastasis to liver, kidneys, vertebrae, femur, sacrum, bilateral ribs and lymph nodes	Diffuse swelling with no change in the superficial oral mucosa. No cervical lymphadenopathy **Dh**: Osteomyelitis, primary intraosseous carcinoma either of odontogenic or salivary gland origin, osteosarcoma, metastatic malignancies and solitary plasmacytoma/multiple myeloma **Obs:** The patient initially consulted a local dentist for pain in the lower front teeth and she underwent extraction of 41, 42 and 43. However, the pain did not subside and further, she developed a swelling	**Rad-** (Taken before the extraction)- Ill-defined radiolucent area and expansion of buccal cortical plate with irregular bone loss	Chemotherapy (Gefitinib), and palliative radiotherapy	N.I
Sawheny et al., 2011	1	M	52	Gingiva	N.I	**LS:** Tooth pain **SS:** Dyspnea, left sided chest wall tenderness, intermittent productive cough, and weight loss	Unknown primary site until the time of oral metastasis diagnosis Lung carcinoma	Erythematous tumor **Dh:** Dental abscess **Obs:** The patient complained of tooth pain and was treated with antibiotics for presumed oral abscess, but without improvement	N.I	Radiotherapy, and chemotherapy	Death after 4 montl
Schaffner et al., 1982	2	**C.1:** F	**C.1:** 23	**C.1:** Maxilla	**C.1:** 1	**C.1: LS:** Pain and tooth mobility **SS:** N.I	**C.1:** Choriocarcinoma of the uterus. Autopsy revealed metastasis to the lungs bilaterally, right ventricle of the heart, brain and	**C.1:** Gingival swelling facial to a noncarious maxillary left first premolar that was considerably mobile **Dh**: Lateral periodontal abscess	**C.1: Rad-** Bone loss surrounding the roots of the involved tooth (34)	**C.1:** Chemotherapy	**C.1:** Death after 2 months

		C.2 : M	**C.2:** 64	**C.2:** Gingiva	**C.2 :** N.I	**C.2: LS:** Bleeding **SS:** Anorexia, early satiety, and crampy epigastric pain, especially after meals	pulmonary arterial system **C.2:** Unknown primary site until the time of oral metastasis diagnosis Clear cell carcinoma of unknown primary site **Obs:** An abdominal tumor had been subtotally removed years before	**Obs:** A week early, another dentist incises and drain the area **Obs 2:** Patient´s periodontal and dental health was noncontributory **C.2:** 2 polypoid masses, with 1.5 cm and 1 cm **Dh:** Severe periodontitis and associated pyogenic granuloma **Obs**: Partially edentulous mouth with poor oral hygiene andedematous gingiva.	**C.2: Rad-** Severe generalized periodontitis and periapical radiolucent areas	**C.2:** Patient declined treatment	**C.2:** Discharged
Schwab e Lee, 2012	1	M	63	Alveolar mucosa and palatine tonsils	2	**LS:** Difficult eating, assintomatic **SS:** Constipation, nausea, and vomiting	Renal clear cell carcinoma. Metastasis to the brain, bone, lungs, nodes, and adrenals	Masses, bilateral, friable, fungatin, covered with a grayish exudate and bled on manipulation with a foul odor **Dh:** Fungal infection **Obs:** Similar lesions was discovered 1 year prior, the dentist prescribed nystatin mouth rinse, and the lesions had responded **Obs2:** Positive for Candida albicans, treatment with fluconazole and Bactrim, but without improvement	N.I	Surgical excision	N.I
Scolozzi et al., 2012	1	F	72	Mandible	3	**LS**: TMJ pain, limited ability to open the mouth and the sense of a malocclusion **SS**: N.I	Unknown primary site until the time of oral metastasis diagnosis Large-cell carcinoma of the lung. Metastasis to lymph node and vertebrae	Severe dysfunction in the left TMJ, tenderness on palpation of the joint, pain during mith opening and limited mobility of the condyle. Mouth opening was limited to 25 mm and deviated slightly to the left side **Dh**: TMJ anterior disk displacement without reduction	**Rad-** Relatively well circumscribed round to oval radiolucency **CT and MRI**-Large mass and infiltrating the adjacent structures	Chemotherapy (Gemcitabine-vinorelbine), and palliative radiotherapy	Death after 6 montl
Seldenet al., 1998	1	M	49	Mandible	N.I	**LS:** Toothache. Later, developed left lower lip paresthesia and some swallowing difficulty **SS:** Shortness of breath, fatigue, feeling "feverish.", left rib and shoulder pain, increased malaise, anorexia and abdominal discomfort	Unknown primary site until the time of oral metastasis diagnosis Pancreatic carcinoma. Metastasis to stomach and lung **Obs:** Pancreatic carcinoma discovered shortly after the first symptoms in the mouth	Tooth (19) very sensitive to percussion, and tender on palpation **Dh**: Acute abscess **Obs:** After the extraction, the patient began complaining of sudden increased pain and swelling. Exophytic growth measuring 3.5 cm and was attached to the extraction site of his left first molar. There was buccal soft tissue swelling, tenderness and submandibular lymphadenopathy	**Rad-** Large area of rarefaction **Rad-** (After tooth extraction)-Expansion of the previous bone pathosis	Palliative radiotherapy, and chemotherapy (Leucovorin)	Death after 1 mont
Selvajothi et al., 2018	1	F	65	Gingiva	3	**LS:** Painless, tooth mobility **SS**: Mild lower abdominal pain, menorrhagia, decreased bowel movements and frequent urination	Unknown primary site until the time of oral metastasis diagnosis Mucinous adenocarcinoma of the uterus	Reddish enlargement. No cervical lymphadenopathy **Dh:** Pyogenic granuloma, irritational fibroma, peripheral ossifying fibroma and peripheral giant cell granuloma **Obs:** The oral hygiene was poor	**Rad-** Generalized horizontal pattern of bone loss with vertical defect compatible with advanced periodontal diseases	Palliative therapy	Death after 1 mont
Selvi et al.,	1	M	51	Gingiva	0.5	**LS:** Painless	Renal clear cell carcinoma. Metastasis to the lungs. Later, developed metastasis to the finger,	Lesion of 1 x 2 x 1 cm, nontender, pink-yellowish rubbery and exophytic mass with a granulomatous appearance. The surrounding gingiva was mildly erythematous. No cervical	**CT-** Destruction of the alveolar bone surrounding the teeth with associated	Surgical	Death after 6 montl

2016						**SS:** Finger and scalp lesions	scalp and brain	lymphadenopathy **Dh:** Inflammatory process and metastatic disease	splaying of the roots of these teeth	excision	
Shabestari et al., 2012	1	F	21	Maxilla	2	**LS:** Painless, diminished sensation of the nose, lip and nasofrontal area **SS:** Back pain, sweating, chills, dysphagia, and loss of appetite	Medullary carcinoma of thyroid gland	Mass, tender, with a variable consistency ranging from hard and firm to rubbery, darker in color than that of normal oral mucosa. The left maxillary second and third teeth had migrated and showed grade 2 mobility. No cervical lymphadenopathy **Dh**: Benign and malignant neoplasms, aggressive central giant cell granuloma, pyogenic granuloma	**Rad-** Well-defined mixed radiolucency of 2 x 3 cm. A poorly defined outline was seen around the upper left second and third teeth **CT-** Destructive mass. Neighboring teeth were displaced by the mass	Referred to an oncologist	Lost to follow-up
Shah and Mehta, 2009	1	F	25	Gingiva	N.I	**LS:** N.I **SS:** N.I	Duct carcinoma of the breast. Metastasis to axillary lymph nodes. Later, developed metastasis to the brain	Lesion on the upper alveolar gingiva, which clinically looked like an epulis **Dh:** Epulis	**CT-** Lesion of 1.6 x 1.2 x 2.3 cm in the right gingivo-buccal sulcus. The underlying maxilla appeared normal with no evidence of any cortical erosion or break. The underlying teeth did not show any radiological evidence of loosening	N.I	N.I
Shah et al., 2021	1	M	58	Mandible	2	**LS:** Pain and mobility of teeth **SS:** N.I	Carcinoma of the prostate	Irregular submental swelling. Mobile and firm sublingual and submental lymph nodes. Proliferative mass with surface ulceration **Dh**: Osteomyelitis or carcinoma **Obs**. Extraction of mandibular first molar about 2 months back	**Rad-** Irregular, radiolucent lesion, poorly defined radiolucency	N.I	N.I
Shan et al., 2022	1	F	59	Mandible	4	**LS:** Tooth mobility, numbness **SS:** N.I	Unknown primary site until the time of oral metastasis diagnosis Adenocarcinoma of the liver. Multiple bone metastasis	Facial swelling **Dh:** Periodontal-endodontic lesion, malignancy **Obs:** Past history of tooth extraction	**Rad-** Periodontal bone loss around the involved tooth **CT-** Extensive lytic lesion with a permeative margin, which involved the inferior alveolar canal, resulting in resorption of the wall	N.I	N.I
Shirazian and Bahrami, 2016	1	M	45	Gingiva	1	**LS**: N.I **SS:** N.I	Unknown primary site until the time of oral metastasis diagnosis Clear cell carcinoma of the kidney	Exophytic lesion, large, red-purple rubbery, sessile and smooth surface **Dh**: Unspecified benign lesion (undefined term), malignant mesenchymal tumor like as lymphoma or metastatic tumor **Obs:** 4 months earlier a small mass was adjacent to the left lateral of the maxilla, which had been excited along with extraction of lateral tooth, but it had recurred from 4 weeks ago and had been enlarged rapidly	**Rad-** Saucer shape bone resorption	Referral to nephrologist	Death after 6 montl
Sidhu et al., 1982	1	F	32	Mandible	5	**LS:** Bleeding and painless **SS:** Low backache for 15 years	Unknown primary site until the time of oral metastasis diagnosis Adenocarcinoma of the kidney	Growth was red, soft, sessile and not ulcerated. No cervical lymphadenopathy **Dh**: Hemangioma	**Rad-** Radiolucency area	N.I	N.I

Slee et al., 1989	1	F	32	Mandible	N.I	**LS:** Pain **SS:** Severe pain in the rectum and buttocks	Chordoma of the sacrococcygeal region	Swelling at the right angle of the mandible **Dh:** Dental cyst, ameloblastoma, giant cell tumor of bone, myeloma, histiocytosis X or metastatic tumor	**Rad-** Area of decreased density in the posterior body of the mandible adjacent to the roots of the last right molar tooth	Referred for further treatment	N.I
Soares et al., 2011	1	M	42	Gingiva	2	**LS:** Painless and tooth mobility **SS:** N.I	Unknown primary site until the time of oral metastasis diagnosis Colorectal adenocarcinoma	Nodule, red and sessile **Dh:** Peripheral ossifying fibroma, peripheral giant cell granuloma and pyogenic granuloma **Obs:** Three months after the the excisional biopsy the gingival tumor recurred	**Rad-** Generalized horizontal area of rarefaction compatible with advanced periodontal disease	Chemotherapy (4 Folfox protocol)	Alive after 4 month
Soares et al., 2018	1	M	43	Gingiva	1	**LS:** N.I **SS**: N.I	Unknown primary site until the time of oral metastasis diagnosis Adenocarcinoma of the stomach	Exophytic ulcerated mass **Dh**: Pyogenic granuloma or peripheral giant cell lesion	**Rad-** No alterations	Palliative radiotherapy, and chemotherapy	Death after 3 month
Sohal and Moshy, 2015	1	M	82	Mandible	5	**LS:** Localized pain, tooth mobility, numbness around the chin **SS:** None	Adenocarcinoma of the prostate. Later, developed metastasis to lungs, sternum, thoracic vertebrae, pelvic wings, right ischium and left humeral head	Swelling on the right body of mandible, which extended from level of tooth 46 to the retro-molar region, with more buccal bone expansion. On palpation, the lesion was firm, mildly tender and fixed to the underlying structure **Dh:** Odontogenic infection **Obs:** The patient was diagnosed with odontogenic infection and was given some medications, but without improvement	**Rad-** Irregular ridge with osteolytic areas in region of ascending ramus to level of tooth 46 with tooth 47 appearing floating	Palliative chemo-radiotherapy	N.I
Sokolosky et al., 1986	1	M	30	Mandible	N.I	**LS**: Pain and dysphagia **SS:** Sharp epigastric pain, odynophagia and weight loss	Unknown primary site until the time of oral metastasis diagnosis Squamous cell carcinoma of esophagus	Exophytic lesion of 2 x 2-cm in the region of the previous extraction site. Cervical lymphadenopathy **Dh:** Carious lesion **Obs:** Tooth extraction was done due to pain (caries of the right mandibular second premolar)	**Rad-** Radiolucency suggestive of a destructive process	Chemotherapy (Adriamycin, Cytoxan, and Cisplatin)	Death
Solomon et al., 1975	1	F	60	Submandibular gland and Parotid	N.I	**LS:** N.I **SS:** Paresthesia of the left thumb and forefinger and a loss of flexor movement of the left arm	Duct carcinoma of the breast (source of the submandibular lesion), lobular carcinoma of the breast and papillary adenocarcinoma of the lung. Metastasis to the supraclavicular lymph nodes	Mass of 4 x 2 cm,movable and not attached to the overlying skin (submandibular region). Mass of 1 cm, tender on palpation, firm and fixed (parotid gland) **Dh:** Sialadenitis and neoplastic lesion	N.I	Surgical excision, and chemotherapy (Fluorouracil, Methotrexate, Prednisone, and Cytoxan)	Alive after 12 mont
Stavropoulos and Ord, 1993	1	F	55	TMJ	2	**LS:** Pain, trismus and malocclusion **SS:** N.I	Adenocarcinoma of the breast. Metastasis to the skull. spine. ribs, and proximal femurs	Anterior open bite of 2 mm. Her right condyle was palpable via the external auditory canal, but her left condyle was not **Dh:** Malpositioned condyle, pathologic fracture as a result of bone metastasis or osteoporosis **Obs:** Her dentist radiographically diagnosed a malpositioned condyle and treated her malocclusion conservatively with an acrylic bite splint for several weeks	**Rad-** Osteolytic lesion of the left condyle with a possible old fracture of the left condylar neck, with shortening of the vertical ramus and a moth-eaten appearance of the condylar head **CT-** Malpositioned left condylar head with areas of sclerosis and bony destruction	Surgical excision, and referred to oncologist	N.I

Stecher et al., 1985	1	M	46	Gingiva	N.I	**LS:** Pain and difficulty swallowing **SS:** Anorexia, weight loss, midsternal and epigastric pain, regurgitation and dyspnea	Adenocarcinoma of the pancreas. Metastasis to parabronchial and mesenteric lymph nodes	Inflamed, edematous gingival tissue **Dh:** Periodontal abscess **Obs:** History of trauma and chronic periodontitis. Multiple teeth mobile that were extracted because of the extent of the bone loss and the degree of mobility	**Rad-** Severe bone loss, consistent with advanced periodontitis, and showed no apparent findings suggestive of malignancy	Surgical excision, and chemotherapy (CAMP)	Death after 1 mont
Sterling and Goldsmith et al., 1954	1	M	34	Gingiva	N.I	**LS:**Pain, numbness of the jaw and difficulty chewing and opening his mouth **SS:** Cough, tightness of the sternum and dyspnea	Adenocarcinoma of the lung. Metastasis to hilar lymph nodes. Later, developed metastasis to skull, spine and rib	Mass of 1x4x3, gray, soft, friable, fungating and easily bleeding. Two ulcerations were seen at the site of previous dental extraction and teeth left impressions in the soft tissue. Submaxillary and suprahyoid lymphadenopathy **Hd**: Abscess **Obs**: Past history of tooth extraction. The dentist thought to be an abscess	**Rad:** No bone alteration	Surgical excision, and radiotherapy	Death after 4 montl
Svirsky et al., 1994	1	M	67	Maxilla	N.I	**LS:** Chronic soreness and tenderness **SS:** N.I	Unknown primary site until the time of oral metastasis diagnosis Small cell carcinoma of the lung	Lesion at root apex of tooth 21 **Dh**: Radicular cyst **Obs:** This tooth had root canal therapy 5 years previously **Obs 2:** Apicoectomy with a retrograde amalgam was performed	**Rad-** Endodontic obturating material stopped 3 mm short of the radiographic apex. Large periapical radiolucency	N.I	N.I
Taicher et al., 1991	1	F	45	Gingiva	N.I	**LS:** Tooth mobility **SS:** N.I	Chondrosarcoma of the calf. Metastasis to knee and lung	Growth of 1 cm, tender to palpation, pink to red, hard and exophytic **Dh:** Pyogenic granuloma or peripheral giant cell granuloma **Obs:** Tooth 10 was slightly mobile	**Rad-** No bone destruction **CT-** After 2 months the tumor was limited and did not penetrate the maxillary sinus wall	Surgical excision, and radiotherapy	Death after 1 mont
Tamgadge et al., 2020	1	M	41	Maxilla	4	**LS:** Pain, teeth mobility **SS:** N.I	Unknown primary site until the time of oral metastasis diagnosis Adenocarcinoma of the lung	Diffuse mild insignificant swelling, nontender extending from 12 to 21. Gingival recession associated with mild cortical plate expansion. Inflamed gingiva in 11 and 12 with bleeding on provocation **Dh:** Benign lesion or odontogenic pathology **Obs:** Tooth extraction due to mobility	**CT-** Osteolytic lesion	N.I	N.I
Tanwar et al., 2019	1	M	68	Maxilla	0.25	**LS:** Numbness over right side of the face and bleeding from right ear **SS**: N.I	Unknown primary site until the time of oral metastasis diagnosis Hepatocellular carcinoma of the liver	Diffuse swelling with hard consistency. No cervical lymphadenopathy **Dh:** Unspecified benign lesion (undefined term) **Obs:** Symptoms appeared after tooth extraction	**MRI-** 4.5cm x 6.1cm x 6.1cm large heterogeneously enhancing mass **CT**-Soft tissue mass lesion	Chemotherapy (Nanoxel and Carboplatin), and palliative radiotherapy	N.I
Tatlidil and Gozubuyuk, 2011	1	F	50	Mandible	N.I	**LS**: Pain **SS:** N.I	Unknown primary site until the time of oral metastasis diagnosis Adenocarcinoma of the lung	Swelling (abscess) **Dh:** Apparent infection **Obs:** The abscess was incised, and the apparent infection was drained. After antibiotic treatment for several days, the luxated crowns were removed. The first molar, which was endodontically treated years ago, and the second premolar tooth were extracted	**Rad-** 12-mm bony defect and bone resorption	Surgical excision	Death after 12 months

Terada, 2011	1	M	55	Gingiva	N.I	**LS:** N.I **SS**: N.I	Unknown primary site until the time of oral metastasis diagnosis Hepatocellular carcinoma of the liver	Tumors of 2 x 2 x 1 cm and polipoid **Dh:** Granulation tissue	N.I	Chemotherapy	Alive
Terakado et al., 2004	1	M	53	Mandible	N.I	**LS:** N.I **SS:** Pain in the right side of the scapula and chest	Malignant pleural mesothelioma. Metastasis to axillary lymph node	Tumor of 1.5 x 1.5 cm, hard, subcutaneously over the left submandibular area. Intraoral examination showed decay of the left lower wisdom tooth but there was no abnormal mobility or gingival swelling **Dh:** Radicular cyst **Obs:** The lesion was thought to be a radicular cyst, and the tooth was removed	**Rad-** Ill-demarcated radiolucent area and resorption at the alveolar bone in the periapical region of the third molar **CT-** Low density rounded area in the mandibular bone and the lingual cortex bone was absorbed	N.I	N.I
Thomas and Koshi, 2013	1	M	47	Gingiva	0.25	**LS:** Asymptomatic **SS:** None	Malignant fibrous histiocytoma of the lung. Metastasis to supraclavicular lymph node, liver, vertebrae	Swelling overhanging the upper right lateral incisor and the canine, it was soft, non-tender, mobile on its base. No cervical lymphadenopathy **Dh:** Granuloma pyogenicum or a fibroma	**Rad-** Normal	Chemotherapy (Paclitaxel and Carboplatin), and palliative radiotherapy	Death after 2.25 months
Thorawat et al., 2015	1	F	45	Mandible	3	**LS:** Pain, paresthesia, teeth mobility **SS:** N.I	Breast cancer. Later developed metastasis to pelvis	Swelling of 3 x 4 cm, mild tenderness, firm to hard in consistency with diffuse borders and local rise in temperature. Skin overlying was normal and intraorally expansion of buccal cortex was noticeable with grade 1 mobility (47 and 48) **Dh:** Ameloblastoma, fibro-osseous lesions	**Rad-** Expansion of buccal cortex, multiple irregular radiopaque foci in relation to mandibular molars and also a trabecular pattern was observed. Multiple discrete radiolucent osteolytic lesions over the skull vault measuring around 0.5 to 1 cm, well delineated with no sclerotic borders	Surgical excision	Death after 3 montl
Tideman et al., 1986	1	M	59	Maxillaang Gingiva	N.I	**LS:** Dental pain and dysphagia **SS:** Nausea, vomit, weight loss and hepatomegaly	Unknown primary site until the time of oral metastasis diagnosis Adenocarcinoma of the esophagus. Metastasis to the liver	Mass with 3 x 1.5 cm, granulomatous and with soft consistency extruded from the recent extraction socket. Cervical lymphadenopathy. **Dh:** Giant cell lesion, granulation tissue secondary to an oroantral fistula, osteomyelitis, and malignant tumor **Obs:** The non-vital first permanent molar had been removed 9 weeks previously following unsuccessful attempts to relieve pain in the upper left quadrant by conservative techniques. The dental surgeon had noted a palatal swelling and loss of support around the symptomatic tooth	**Rad-** Irregular radiolucency **Rad-** Irregular bony defect, and the adjacent antral floor was ill defined	Surgical excision, and chemotherapy (Mitomycin C, Adriamycin and 5-Fluorouracil)	Death after 5 montl
Titinchi et al., 2021	1	F	58	Mandible	9	**LS:** Pain **SS:** N.I	Amelanotic melanoma of the back. Later, developed metastasis to neck lymph node	Lobulated, bony hard mass which caused buccal-lingual expansion and mild mobility of the involved dentition **Dh:** Ameloblastoma, odontogenic myxoma and cemento-ossifying fibroma (benign odontogenic neoplasm)	**Rad/CT-** Radiolucent well demarcated, expansile lesion without sclerotic margin	Surgical resection, and radiotherapy	Alive
Tomikawa et al., 2001	1	F	80	Gingiva	N.I	**LS**: Pain **SS:** Right lower abdominal pain	Unknown primary site until the time of oral metastasis diagnosis Squamous cell carcinoma of the colon	Nodule, moderately firm, hemispherical and non-ulcerated at the site of the extraction **Dh:** Unspecified benign lesion (undefined term) **Obs:** Recent tooth extraction	N.I	Surgical excision	Death after 6 montl
Tran et al., 2021	1	F	56	Mandible	N.I	**LS:** Painless and teeth mobility. No paresthesia **SS:** None	Unknown primary site until the time of oral metastasis diagnosis. Non-small cell carcinoma of the lung. Multiple metastasis	Large exophytic mass arising from extraction sockets. The mas was fleshy, gray and painless **Obs**. A week's course of antibiotic had no effect on the swelling and the extraction was performed **Dh**: Central giant cell granuloma	**Rad**- Extensive ill-defined bone loss **CT**- Bony destruction	Referred to oncologist	Death after 2 montl

Tucker et al., 1968	1	M	46	Gingiva	N.I	**LS:** Pain around a tooth with moderate mobility **SS:** N.I	Bronchogenic carcinoma	Soft tissue lesion in the region of the upper right central incisor **Dh:** Localized periodontitis **Obs:** Slight to moderate calculus, fair oral hygiene **Obs 2:** After tooth extraction, a mass of 1,5 cm protruded from the extraction site	**Rad-** Radiolucencies around upper right central incisor, lower right second molar, and both lower third molars. Two faint radiolucencies in lower molar region	N.I	Death after 2 montl
Tzanavaris et al., 2022	1	M	63	Tongue	5	**LS:** Painless **SS:** N.I	Melanoma of the right chest. Metastasis to the brain	Exophytic, brown, pedunculated, partially ulcerated, friable hemorrhagic mass of soft consistency involving the left base of the tongue. No cervical lymphadenopathy **Dh:** Pyogenic granuloma or other reactive soft tissue lesions, primary or metastatic malignancy	N.I	Surgical excision, referred to oncologist	Lost to follow-up
Uchiyama et al., 2009	1	F	73	Mandible	Few months early	**LS:** Painless, paresthesia **SS:** N.I	Gastric adenocarcinoma. Metastasis to the liver. Later, developed metastasis to lymph node	Mass of 2.1 x 1.8 x 2 cm around the mandibular canine on the left side. There was a granular appearance and elastic surface mucosa covering the mass, partially covered by epithelium **Dh:** Unspecified benign lesion (undefined term), malignant tumor **Obs:** Past history of antibiotic therapy and incision without improvement	**CT-** Nonhomogeneous enhanced 3 cm round mass in the left canine region. There was bone resorption under the mass **MRI-** Poorly circumscribed mass of 3 cm in the left canine region, showing low signal intensity on T1-weighted image and moderate signal intensity on T2-weighted image. A sagittal MR image showed extension of the mass	Chemotherapy (Cis-platinum, TS-1, and Taxane), and palliative radiotherapy	Death after 10 months
Upadhyay et al., 2021	1	M	52	Gingiva	N.I	**LS:** N.I **SS:** Pain in lower thigh	Chondrosarcoma of the thigh. Metastasis to the lungs and lymph nodes	Proliferative soft tissue growth **Dh**: Benign diagnosis	N.I	Refused treatment	Death after 6 montl
Van Hale et al., 1981	1	F	47	Gingiva	N.I	**LS:** N.I **SS:** Anorexia, weight loss, right eye pain and right-sided headaches	Unknown primary site until the time of oral metastasis diagnosis Malignant fibrous histiocytoma in tibia. Possible metastasis to the lung	Mass of 3 x 5 cm, fixed, ulcerated and fungating. 1). It involved the buccal vestibule and the hard palate **Dh:** Unspecified benign lesion (undefined term) **Obs:** The maxillary right first molar and second premolar had been extracted 2 months previously, because of complaints of palatal swelling of the soft tissue in the right upper molar region **Obs 2:** One month after biopsy, the oral lesion had approximately doubled in size	**Rad-** Well-demarcated radiolucency distal to the right second premolar resembled a recent extraction site. Also multiple carious teeth	Surgical reduction	Death
Varadarajan et al., 2017	1	F	73	Mandible	Several weeks	**LS:** Numbness of the left mandible and bleeding **SS**: N.I	Unknown primary site until the time of oral metastasis diagnosis Follicular carcinoma of the thyroid	Lesion with 5 cm with normal mucosa **Dh:** Sialadenitis **Obs:** Initially, symptoms had been presumed to represent an episode of sialadenitis by an outside provider	**CT-** Aggressive mass destroying the bone	Surgical excision, and radiotherapy	Alive after 18 mont
Varghese et al., 2014	1	F	40	Mandible	5	**LS:** Asymptomatic **SS:** N.I	Invasive ductal carcinoma of the breast. Later, developed metastasis to vertebra	Swelling of 4 x 3 cm, non-tender, round, hard, localized. No intraoral alterations. No cervical lymphadenopathy **Dh:** Chronic osteomyelitis, osteogenic sarcoma and secondary metastasis	**Rad-** Retained root remnant of left mandibular first molar, carious second molar and an area of rarefaction on the left angle with indistinguishable margin **CT-** Destructive lesion on left angle of mandible. Codman triangle and sunray appearance seen in the margin of the lesion	N.I	N.I

Vasilyeva et al., 2018	1	F	78	Gingiva	Months	**LS:** Asymptomatic **SS**: None	Unknown primary site until the time of oral metastasis diagnosis Renal cell carcinoma. Metastasis to the femur	Mass of 3 x 1.5 cm, dark-red color, with soft consistency and ulcerated. Other smaller, similar appearing lesion was identified **Dh:** Pyogenic granuloma	**Rad-** No bone involvement	Referred to oncologist	N.I
Velasco et al., 2013	1	M	33	Gingiva (buccal and palatal)	0.5	**LS:**Discomfort and pain **SS:** Dysphagia and weight loss	Testicular Choriocarcinoma. Metastasis to brain, neck, lungs and retroperitoneum	Mass of 2 x 2 cm, purple-colored, lobulated **Dh:** Peripheral giant-cell granuloma or pyogenic granuloma	**Rad-** No bone involvement	N.I	Death after 2 week
Vierne et al., 2014	1	F	55	Mandible	N.I	**LS:** N.I **SS:** N.I	Melanoma of the trunk. Later developed metastasis to intestine, brain and bone	Tumor of 2 cm, non-pigmented, ulcerated, necrotic, bloody, located in the region of tooth 37 **Dh:** Tooth infection **Obs:** Tooth 37 extraction was performed a month early, due to tooth mobility and the diagnosis of infection	**Rad-** Significant irregular gap in the left mandibular angle, in contact with tooth 36 **CT-** Tissue mass of 6 cm, massively invading the left mandibular angle	Chemotherapy (Dacarbazine, Vemurafenib and Photemustine)	Death after 6 montl
Vishveshwaraiah et al., 2013	1	F	56	Mandible	6	**LS:** Painless, paresthesia of the lower lip and body of the mandible and tooth mobility **SS:** N.I	Unknown primary site until the time of oral metastasis diagnosis Follicular carcinoma of the thyroid	Swelling with 3 x 2 cm, oval, diffuse and hard consistency. Grade II mobility in relation to right mandibular permanent second and third molar **Dh:** Odontogenic tumor **Obs**: Patient had earlier undergone an incisional biopsy elsewhere which was diagnosed as an odontogenic tumor	**Rad-** Unilocular radiolucency with ill-defined borders with external resorption of root	Referred to oncologist	N.I
Viviano et al., 2012	1	F	53	Mandible	2	**LS:** Discomfort, tingling sensation on the left side of the lip, constant draining of saliva, loss of food and liquids while eating, trismus **SS**: N.I	Unknown primary site until the time of oral metastasis diagnosis Adenocarcinoma of the breast. Autopsy revealed metastasis to liver, lung, bone and brain **Obs**: Patient died one day after biopsy in mouth	Swelling, painful and hard in consistency. Cervical lymphadenopathy **Dh**: Neuralgia of the trigeminal nerve **Obs:** The patient experienced a sudden, stabbing pain sporadically affecting all 3 branches of the trigeminal nerve. Neurologist diagnosed neuralgia of the trigeminal nerve. The neurologist prescribed pharmacological treatment, which did not relieve the pain	**Rad-** Irregular osteolytic area **CT-** Large area of bone destruction, penetrating the soft tissues	No treatment was carried out	Death 1 day after biopsy
Viviano et al., 2012	1	M	47	Gingiva	N.I	**LS:** Bleeding **SS:** N.I	Adenocarcinoma of the esophagus. Later, developed metastasis to the iliac bone, femur and rib	Mass inthe upper left region, red, rigid consistency, not mobile. Extraoral examination, mild edema on the left side **Dh:** Unspecified benign lesion (undefined term) **Obs:** Previous history of antibiotic therapy, without improvement	**Rad-** Endo-periodontal lesions on teeth 57 and 36, increase in hard blade on teeth 24 and 25 **CT-** Large area of bone remodeling in the upper left alveolar arch, due to presence of a newly formed tissue	Radiotherapy	N.I

Vrebos et al., 1961	1	M	56	Parotid gland and Mandible	0.75	**LS:** Dull ache (first like a pressure pain and later like a toothache). **SS:** Cough with bright red blood	Unknown primary site until the time of oral metastasis diagnosis Squamous cell epithelioma of the lung	Mass with 9 cm. in diameter, non-tender, firm, and slightly irregular **Dh**: Parotitis **Obs.** Prescribed Achromycin; but in spite of this the mass continued to enlarge and became hot and tender	**Rad-** Extensive destruction with an associated large, soft tissue mass	Palliative x-ray therapy	N.I
Wang et al., 2013	1	M	74	Mandible	N.I	**LS:** Tooth mobility **SS**: N.I	Unknown primary site until the time of oral metastasis diagnosis Hepatocellular carcinoma of the liver. Later, developed metastasis to the chest, abdomen, pelvis, adrenal gland, vertebra, spine, face, bones	Swelling with active purulent drainage. At the time of extraction, extensive granulation and soft tissue **Dh:** Benign process	**Rad-** Focal bone loss	Surgical excision, and chemoembolization (Adriamycin and Sorafenib)	N.I
Webster, 1988	1	F	54	TMJ	18	**LS:** Pain in the left TMJ **SS:** Feeling of fullness in her ear	Adenocarcinoma of the breast. Metastasis to the ribs, sternum and upper cervical spine	Anterior open bite **Dh:** Rheumatoid disease or metastatic lesion **Obs:** Fully dentate and exhibited no deviation on opening	**Rad-** Erosion of the anterior region of the left condyle	Conservative treatment, and referred to surgeon for further management	N.I
Welch et al., 1985	1	M	23	Maxilla (tooth)	N.I	**LS:** Pain **SS:** N.I	Malignant melanoma of the skin. Metastasis to the axillary lymph node, spleen and brain **Obs:** Diagnosis of melanoma metastatic to periapical cystic tissue and periodontal ligament	Nodular black lesions were present on the left lateral border of the tongue, the mucosa apical to the maxillary left first premolar tooth, the labial gingiva overlying the maxillary right lateral incisor tooth, and the lingual gingiva of the mandibular left first molar tooth **Dh:** Unspecified benign lesion (undefined term) **Obs:** Carious lesion of the labial and mesial cervical portion of tooth 12. Poor oral hygiene and poorly fitting removable prosthesis in the adjacent edentulous area. Tooth 12 was extracted, and a portion of the root surface was discolored blue-black, and similarly pigmented tissue was curetted through the open alveolus	**Rad-** Radiolucency, circumscribed and unilocular involving the apex of tooth 12	N.I	Death after short tir
Wertheimer and Crayle, 1973	1	F	66	Gingiva	N.I	**LS:** N.I **SS:** N.I	Previous history of carcinoma of the breast. Lymphangiosarcoma of the arm	Purplish, red, enlarged and spony gingival inflammation between the mandibular right premolars **Dh:** Gingival hyperplasia **Obs:** Periodontist thought it was a periodontal problem (gingival hyperplasia), the lesion failed to respond to several sessions of curettement	**Rad-** No bone involvement	N.I	N.I
Win et al., 1992	1	F	59	Gingiva	0.5	**LS:** N.I **SS:** N.I	Angiosarcoma of the breast Obs: 2 previous biopsies were performed with the diagnosis of capillary hemangioma. Only at the third biopsy the metastatic disease was diagnosed	Mass of 2 cm, purple, tender to palpation, soft, and irregular in the maxillary right first molar region **Dh:** Capillary hemangioma of the gingiva **Obs:** A metal bridge was fixed between the maxillary right first premolar and second molar. It was removed and the first biopsy was performed with the diagnosis of capillary hemangioma of the gingiva. After 7 months, a second biopsy was performed with the same diagnosis, and The maxillary right second and third molars were extracted to eliminate traumatic irritation. After 18 months, another local recurrence occurred and the third biopsy was performed with the diagnosis of metastatic angiosarcoma	**Rad-** Poorly demarcated radiolucency in the alveolar bone	Surgical excision	Death after 2 days

Wolujewicz, 1980	1	M	74	Mandible	0.50	**LS:** Asymptomatic. **SS:** Abdominal discomfort and backache with pain and unsteadiness of both legs	Unknown primary site until the time of oral metastasis diagnosis Adenocarcinoma of the prostate gland. Bone and supraclavicular lymph node metastases	Swelling of 4 cm, non-tender, poorly circumscribed, hard and normal overlying skin. No cervical lymphadenopathy **Dh:** Chronic osteomyelitis **Obs:** The histological diagnosis of chronic osteomyelitis was made. The patient was treated with erythromycin	**TC**-2 cm spherical radio-opacity	Palliative radiation	Death
Wu et al., 2017	1	M	75	Gingiva	1	**LS:** Painless **SS:** N.I	Gastric adenocarcinoma. Metastasis to lymph nodes	Lump of 2 cm, gray, with local hemorrhage on palpation **Dh:** Epulis **Obs:** His dentist had originally diagnosed epulis and suggested surgical excision. However, the patient refused. He was treated with antibiotics and non-steroidal anti-inflammatory drugs, but without improvement	**PET-CT-** Upper gingiva (left molar area) involvement, which were considered as the malignant lesions	Radiotherapy, and chemotherapy (Raltitrexed)	Alive after 9 month
Yacabucci et al., 1972	1	M	51	Mandible	0.50	**LS:** Numbness in the right lower lip, and gingiva. **SS**: Diarrhea, flatulence and slightly sore (right hip)	Unknown primary site until the time of oral metastasis diagnosis Hepatocellular carcinoma of the liver. Metastasis to thoracic vertebra and occipital bone	Enlargement of the right mandible The right first and second mandibular molars were mobile anal tender to percussion. The second molar was slightly extruded. **Dh:** Odontogenic infection **Obs:** The numbness had started after a root canal filling had been placed in the right mandibular first premolar 6 months previously and that a burning sensation in the lower right gingiva had been noted subsequently	**Rad-** Thinning of the osseous structure. After 4 months diffuse radiolucency	N.I	Death after 5 month
Yan et al., 2018	1	M	60	Lip and cheek	3	**LS:** None **SS:** None	Unknown primary site until the time of oral metastasis diagnosis Squamous cell carcinoma of the lung	Mass, measuring 3,5 × 4,7cm on and 5,6 ×3,2 cm, tender on palpation. The skin surface was normal Dh: Primary tumor of the head and neck, metastasis from the thyroid or lung, lymphoma, or inflammation	**N.I**	Chemotherapy (Gemcitabine and Cisplatin)	N.I
Yanagisawa et al., 2017	1	M	84	Mandible	N.I	**LS:** Paresthesia of the right chin, lip, and gingiva, pain and gradually restricted mouth opening **SS:** Hoarseness and progressive productive cough	Small-cell lung carcinoma. Metastasis to bones	Initially no clinical anteration. Later, the patient's right mandible showed swelling **Dh:** Medication-related osteonecrosis of the mandible **Obs:** Discontinued the denosumab treatment and started oral cleaning with various antibiotics, but without improvement	**PET-CT-** Osteolytic lesion in the right mandible	Chemotherapy (Amrubicin)	N.I
Yang et al., 2017	1	M	61	Gingiva	0.25	**LS:** Painless **SS:** N.I	Angiosarcoma of the scalp. Metastasis to the sternum	Mass of 7 x 7 cm on the buccal side and a 6 mm × 6 mm on the palatal side of the gingival papilla, tenderness, well-defined, protruding and immobile. The surrounding soft tissues were normal without swelling **Dh:** Epulis and other inflammatory hyperplasias	**Rad-** Alveolar bone resorption	Surgical excision, and chemotherapy (Isophosphamide, Etoposide and Bevacizumab	N.I

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Yaren et al., 2009	1	M	63	Palatine tonsils	N.I	**LS:** Swallowing pain **SS:** Dysphagia	Small cell carcinoma of the lung	White hard object in 2cm diameter within the right tonsillar crypt **Dh:** Tonsillolith or a peritonsillar abscess	N.I	Radiotherapy, and chemotherapy (Cisplatin plus Etoposide)	Alive
Yasar et al., 2006	1	M	73	Mandible	0.75	**LS:** Pain **SS:** N.I	Unknown primary site until the time of oral metastasis diagnosis Adenocarcinoma of the lung	Non-healing extraction socket Non-tender lymph nodes in the left submandibular region. **Dh:** Chronic osteomyelitis, central squamous cell carcinoma and metastatic carcinoma **Obs:** Past history of dental extraction due pain, but no relieve **Obs 2**: Poor oral hygiene, missing and carious teeth and periodontitis	**Rad-** Poorly defined, irregularly shaped, somewhat radiolucent area within which multiple small, more radiopaque areas	Referred to oncologist	N.I
Yokoe et al., 2010	1	F	71	Mandible	10	**LS:** Painless **SS:** N.I	Unknown primary site. Mouth first sign. Thyroid follicular carcinoma	Mass in the right retromolar region, covered with normal mucosa. No cervical lymphadenopathy **Dh:** Hemangiosarcoma or an A–V mal-formation (AVM) **Obs:** Angiography showed expansion of the right facial artery	**Rad-** Mass spread over the right mandibular angle region **CT-** Tumor of 4 x 4 cm with osteoclastic images in the right ramus and mandibular angle	Surgical excision	Alive after 48 mont
Yoshiba et al., 2016	1	F	60	Gingiva	1	**LS:** Pain **SS:** N.I	Malignant phyllodes tumor of the mammary gland. Metastasis to the lung. Later, developed metastasis to the spine	Mass of 2.8 x 2.7 cm, elastic, hard, with ulcerated surface around the left mandibular second molar **Dh:** Pericoronaritis **Obs:** Pericoronitis of the left lower third molar was diagnosed and an antibacterial agent was administered intraorally, but without improvement	**Rad-** Radiolucent area around the left wisdom tooth, attributed to progressive bone resorption **CT-** Soft-tissue mass shadow with diffuse swelling in the buccolingual region around the left mandibular molars **MRI-** Mass with non-uniform internal consistency, measuring 42 × 58 mm around the left mandibular molars. Abnormal accumulation of fluorodeoxyglucose (FDG) was apparent in both the left mandibular molar region	Radiotherapy	Death after 3 montl

Yoshii et al., 2002	1	M	61	Gingiva	N.I	**LS:** After the diagnosis, the tumor started bleeding and severe spontaneous pain **SS:** Bloody sputum, chest pain while coughing, and fever	Unknown primary site until the time of oral metastasis diagnosis Large cell carcinoma of the lung. Metastasis to the adrenal gland and lymph nodes	Exophytic tumor, with 13 x 10 mm, dark red, with well-defined margins, elastic and partial superficial necrosis. Cervical lymphadenopathy **Dh:** Pyogenic granuloma, periodontal abscess, or malignant tumor **Obs**: Antibiotics had failed to reduce the swelling	**Rad-** Tumor of soft tissue and no obviously abnormal bone resorption	Radiotherapy, and chemotherapy (Cisplatin and Fluorouracil)	Death after 3 montl
Yoshitomi et al., 2011	1	M	74	Tongue	0.50	**LS:** N.I **SS:** N.I	Unknown primary site until the time of oral metastasis diagnosis Clear cell carcinoma of the kidney. Metastasis to the right adrenal gland, pleura, abdomen and lungs	Lump measuring approximately 5 x 5 mm and red in color **Dh**: Pyogenic granuloma and a benign tumor of the tongue **Obs:** 2 months before, the patient presented a nodule in the same region that had spontaneously fallen off **Obs 2:** A similar nodule reappeared on the same part of the tongue	N.I	Surgical excision, and chemotherapy (Interferon alpha, Sunitinib and Sorafenib)	Alive after 2 years
Yu et al., 2012	1	M	72	Mandible	1	**LS:** Pain, paresthesia of the lip and chin **SS:** None	Prostate cancer Unknown primary site until the time of oral metastasis diagnosis Hepatocellular carcinoma. Metastasis to the right humerus and clavicle	Submucosal mass, palpable in the medial and lateral aspects, indurated, expansile, in the right ascending ramus. No cervical lymphadenopathy **Dh:** Dental abscess, metastatic neoplasm, lymphoma, and other primary neoplasms **Obs:** The patient had received a dental crown in the right posterior mandibular arch and the symptoms had coincidentally started. Subsequently received endodontic and antibiotic therapy, which failed to resolve the problem	**Rad-** Ill-defined unilocular radiolucency centered in the right vertical ramus of the mandible **MRI-** locally invasive mass in the region of the medial pterygoid muscle perforating the vertical ramus of the mandible and invading into the masseteric space **CT-** Large radiolucent mass of 3.5 x 2.2 cm centered in the right subcondylar portion of the mandibular ramus. Marked bony destruction was present and the lesion appeared to infiltrate the masseter and pterygoid muscles	Palliative radiotherapy, and chemotherapy (Sorafenib)	Death after 11 months
Yu et al., 2013	1	M	36	Parotid gland	3	**LS:** Painless **SS:** N.I	Hepatocellular carcinoma	Mass of 2 x 2 cm, palpable, firm. No lymphadenopathy **Dh:** Pleomorphic adenoma or Warthin's tumor	**CT-** Well defined enhancing lesion of 1.6 cm, in the superficial lobe of the left parotid gland	Superficial parotidectomy	Alive after 6 montl
Zachariades and Papanicolao	1	F	52	Mandible	2	**LS:** Tooth mobility **SS:** Dry cough	Adenocarcinoma of the breast. Metastasis to the lung	Mass of 1 x 1 x 3 cm, nontender, reddish, soft, lobulated and smooth mass arising from the sites of the missing mandibular central incisors. No cervical lymphadenopathy **Dh:** Periodontal disease **Obs:** Tooth 31 had become mobile and had fallen out. Tooth 41 had been extracted 2 weeks	**Rad-** Complete bone destruction. Radiopacity of 0,5 x 0,5 cm, well-defined, surrounded by a linear radiolucency at the site of the missing lower central incisors. Radiolucencies approximately 1,5 cm in	Surgical excision, and referred for further palliative	Lost to follow-up

u, 1982								later	diameter, with no clear borders, were located at the apex of the right canine and first premolar	treatment	
Zacha riades et al., 1989	1	M	62	Mandible	2	**LS:** N.I **SS:** N.I	Malignant tumor of the lung	Hard swelling at the area of the right mandibular angle. No cervical lymphadenopathy **Dh:** Unspecified benign lesion (undefined term) **Obs:** Swelling did not respond to antibiotics	**Rad-** Absorption of the right mandibular angle corresponding to the swelling	Denied treatment	No follow-up afte discharge
Zaubit zer et al., 2019	1	F	66	Palatine tonsils	N.I	**LS**: None **SS:** Hoarse voice and weight loss	Unknown primary site until the time of oral metastasis diagnosis Adenocarcinoma of the lung. Metastasis to lymph node, adrenal gland, brain and thigh	Asymmetry of a bigger and indurated palatine tonsils. Cervical lymphadenopathy **Dh:** Unspecified benign lesion (undefined term) **Obs:** Antibiotic therapy was performed, but without improvement	**CT-**Confirmed the diagnosis	Palliative chemotherap y (Cisplatin and Pemetrexed)	Alive
Zhang and Gu, 2003	1	F	40	Right parotid gland	N.I	**LS:** N.I **SS:** Flu symptoms	Malignant phyllodes tumor of the breast. Metastasis to the lung	Mass in the right parotid gland **Dh:** Abscess, metastasis **Obs:** The patient was treated with antibiotics for a clinically presumed abscess. The flu symptoms resolved, however, the parotid mass persisted	**CT-** Soft tissue mass of 3.1 x 2.8 cm, encapsulated, in the posterolateral portion of the right parotid gland with an area of high attenuation within it	Surgical excision	Alive after 10 mont
Zhang et al., 2020	1	F	56	Mandible	3	**LS:** Paraesthesia of the lower lip and tongue, mild pain, reduced mouth opening **SS:** Haematuria	Unknown primary site until the time of oral metastasis diagnosis Renal cell carcinoma. Later, developed metastasis to the liver	Swelling of 4 cm, tender, firm, fixed. There were no overlying skin changes **Dh:** Parotitis, primary tumors involving the parotid **Obs:** Initially treated with antibiotics. but without improvement	**Rad-** Complete destruction of the right condyle, coronoid ramus with an irregular non-corticated extension of the lesion into the body of the mandible **CT-** Large enhancing soft tissue mass with central area of necrosis measuring 57 x 53 mm	Chemotherap y (Sunitinib), and palliative radiotherapy	Death after 11 months
Zhang et al., 2021	1	F	69	Parotid gland	24	**LS:** Painless **SS:** N.I	Follicular carcinoma of the thyroid	Smooth, soft lesion with 3 cm. No cervical lymphadenopathy **Dh**: Benign mass	N.I	Surgical excision	Alive after 7 montl
Zoum poula kis et al., 2020	1	M	86	Maxilla	2	**LS:** Pain **SS:** N.I	Unknown primary site until the time of oral metastasis diagnosis Adenocarcinoma of the lung	Marked swelling on the left posterior maxillary gingival mucosa **Dh:** Periapical abscess	**Rad-** Residual roots but findings of radiolucent area within the lesion	Palliative care	N.I

Abbreviations: *C.* = case; *CT* = computed tomography; *Dh* = diagnostic hypothesis; *E.T* = evolution time; *LS* = local symptoms; *MRI* = magnetic resonance imaging; *N.I* = not informed; *PET* = positron emission tomography; *Rad* = radiograph *SS* = systemic symptoms.

REFERENCES

Abbaszadeh-Bidokhty H, Motallebnejad M, Rajabi-Moghaddam M. Metastatic Renal cell Carcinoma Presenting as a clear-cell Tumor in Tongue: A Case Report. **Iranian journa of otorhinolaryngology**. 2014;26(76):185–190. http://www.ncbi.nlm.nih.gov/pubmed/25009810.

Adams HL, Howlett DC. Jaw pain. **BMJ**. 2016. https://www.bmj.com/lookup/doi/10.1136/bmj.i4799.

Agarwal N, Gupta P. Oral Soft Tissue Metastasize Ovarian Malignancy, Way to Other Hidden Malignancies: A Rare Case Report. **International Journal of Dental and Medical Specialty**. 2015;2(1):18. https://renupublishers.com/images/article/144072132304_IJDMS_2(1)_05_CR_20150320_V3.pdf.

Agerberg G, Söderström U. Metastasis of mammary carcinoma to the mandibular condyle. **International Journal of Oral Surgery**. 1974;3(1):34–40. https://linkinghub.elsevier.com/retrieve/pii/S0300978574800347.

Agrawal M, Khan TS, Agrawal D, *et al*. Reduced mouth opening: Common presentation with an uncommon cause. **Research**. 2014;1. http://www.labome.org/research/Reduced-mouth-opening-Common-presentation-with-an-uncommon-cause.html.

Aguirre A, Rinaggio J, Diaz-Ordaz E. Lingual metastasis of renal cell carcinoma. **Journal of Oral and Maxillofacial Surgery**. 1996;54(3):344–347. https://linkinghub.elsevier.com/retrieve/pii/S0278239196907570.

Ahuja US, Shetty DC, Rathore A, *et al*. Occult prostate carcinoma with metastasis to the mandible presenting as numb chin syndrome. **Journal of Oral Biology and Craniofacia Research**. 2021;11(3):393–395. https://linkinghub.elsevier.com/retrieve/pii/S2212426821000506.

Aisenberg MS, Inman CL. Tumors that have metastasized to the jaws. **Oral Surgery, Oral Medicine, Oral Pathology**. 1956;9(11):1210–1217. https://linkinghub.elsevier.com/retrieve/pii/0030422056901906.

Akheel M, Tomar SS, Hussain SMDJ. Metastatic oral soft-tissue lesions: An incidental finding in four cases. **South Asian Journal of Cancer**. 2013;2(3):146. http://www.journal.sajc.org/text.asp?2013/2/3/146/114132.

Akhtar SS, Salim KP, Imran-Ul-Haq, *et al*. Intraoral Metastasis as the Initial Manifestation of Hepatocellular Carcinoma. **Annals of Saudi Medicine**. 1996;16(1):95–95. http://www.annsaudimed.net/doi/10.5144/0256-4947.1996.95.

Aksoy S, Orhan K, Kursun S, *et al*. Metastasis of prostate carcinoma in the mandible manifesting as numb chin syndrome. **World Journal of Surgical Oncology**. 2014;12(1);401 https://wjso.biomedcentral.com/articles/10.1186/1477-7819-12-401.

Albers DD. Adenocarcinoma of the Prostate, Metastatic to the Mandible: Report of Case. **The Journal of the American Dental Association**. 1970;81(4):883–886. https://linkinghub.elsevier.com/retrieve/pii/S0002817770140207.

Ali RAE, Mohamed KEH. Metastatic Clear Cell Renal Cell Carcinoma Presenting with a Gingival Metastasis. **Clinics and Practice**. 2016;6(2):847. https://www.mdpi.com/2039-7283/6/2/847.

Almazyad A, Woo S, Villa A. Persistent Pain and Gingival Swelling in a Middle-aged Woman. **JAMA Otolaryngology–Head & Neck Surgery**. 2019;145(7):676. https://jamanetwork.com/journals/jamaotolaryngology/fullarticle/2731889.

Altintas A, Vardar MA, Aridoğan N, *et al*. Choriocarcinoma metastatic to the maxillary gingiva. **European Journal of Surgical Oncology (EJSO)**. 1995;21(5):579–580. https://linkinghub.elsevier.com/retrieve/pii/S0748798395977120.

Ambroggi M, Orlandi E, Foroni RP, *et al*. Malignant pleural mesothelioma metastatic to the submandibular salivary gland, simulating glandular hypertrophy, diagnosed by fine needle aspiration biopsy: a case report and literature review. **World Journal of Surgical Oncology**. 2014;12(1):129.https://wjso.biomedcentral.com/articles/10.1186/1477-

7819-12-129.

Amin A, Jha M, Reddy A. Lower lip numbness in a patient with colorectal cancer. **Case Reports**. 2011;2011(15):bcr0120113682–bcr0120113682. https://casereports.bmj.com/lookup/doi/10.1136/bcr.01.2011.3682.

Amro L, Maliki L, Belabidia B, *et al*. Gingival Metastasis Revealing Lung Adenocarcinoma. **Advances in Lung Cancer**. 2014;3(2):35–37. http://www.scirp.org/journal/doi.aspx?DOI=10.4236/alc.2014.32005.

Anil S, Lal PM, Gill DS, *et al*. Metastasis of thyroid carcinoma to the mandible: Case Report. **Australian Dental Journal**. 1999;44(1):56–57. https://onlinelibrary.wiley.com/doi/10.1111/j.1834-7819.1999.tb00537.x.

Araki M, Nishimura S, Iwanari S, *et al*. Mandibular metastases from follicular carcinoma of the thyroid gland: a case report. **Oral Radiology**. 2008;24(2):85–89. http://link.springer.com/10.1007/s11282-008-0081-7.

Arroyo HH, Takehara J, Ogawa AI, *et al*. Small cell lung carcinoma metastasis to palatine tonsils. **Brazilian Journal of Otorhinolaryngology**. 2013;79(5):645. https://linkinghub.elsevier.com/retrieve/pii/S1808869415303293.

Ashar A, Khateery SM, Kovacs A. Mandibular metastatic hepatocellular carcinoma: A case involving severe postbiopsy hemorrhage. **Journal of Oral and Maxillofacial Surgery** 1997;55(6):547–552. https://linkinghub.elsevier.com/retrieve/pii/S0278239197904808.

Aswath N, Balakrishnan C, Shyamsundar V, *et al*. Oral gingival metastasis: A diagnostic dilemma. **Indian Journal of Dental Research**. 2017;28(3):344. http://www.ijdr.in/text.asp?2017/28/3/344/210670.

Aydin AA, Alparslan AŞ, Ayik H, *et al*. A challenging palliation via novel therapeutic approach for unusual presenting with gingival metastasis from renal cell carcinoma relapse eight years after nephrectomy. **The European Research Journal**. 2018. https://dergipark.org.tr/en/doi/10.18621/eurj.348318.

Ayranci F, Omezli MM, Torul D, *et al*. Metastatic Prostate Adenocarcinoma of the Mandible Diagnosed With Oral Manifestations. **Journal of Craniofacial Surgery**. 2019;31(3):e220–e222. http://journals.lww.com/10.1097/SCS.0000000000006025.

Baber MA, Abubaker O, Laskin DM. Metastatic Neuroblastoma in the Mandibular Condyle: Report of a Case. **Journal of Oral and Maxillofacial Surgery**. 2008;66(9):1941–194 https://linkinghub.elsevier.com/retrieve/pii/S0278239108009257.

Baez FS, Collazo EP. Metástasis oral de carcinoma de células renales. A propósito de un caso y revisión de la literatura. **Odontoestomatología**. 2022;24:1-7. http://dx.doi.org/10.22592/ode2022n39e408.

Bakeen G, Hiyarat AM, Al-Ubaidy SS. Chorioepithelioma presenting as a bleeding gingival mass. **Oral Surgery, Oral Medicine, Oral Pathology**. 1976;41(4):467–471. https://linkinghub.elsevier.com/retrieve/pii/0030422076902747.

Baldi DS, Pinto FS, Ferrari TC, *et al*. Fine needle aspiration biopsy of mandible: an effective alternative to conventional biopsy for the differential diagnosis between metastasi and osteonecrosis in oncologic patients treated with bisphosphates - Case report. **JORDI - Journal of Oral Diagnosis**. 2017;2:1–5. http://www.gnresearch.org/doi/10.5935/2525-5711.20170024.

Barr CE, Dym H, Weingarten LA. Metastatic Mucous-Producing Adenocarcinoma of the Gingiva. **The Journal of the American Dental Association**. 1980;101(1):53–54. https://linkinghub.elsevier.com/retrieve/pii/S0002817780110229.

Bastian HL, Jensen EK, Jylling AMB. Urachal carcinoma with metastasis to the maxilla: the first reported case. **Journal of Oral Pathology & Medicine**. 2001;30(6):378–380. http://doi.wiley.com/10.1034/j.1600-0714.2001.300609.x.

Bedogni A, Saia G, Ragazzo M, *et al*. Bisphosphonate-associated osteonecrosis can hide jaw metastases. **Bone**. 2007;41(6):942–945. https://linkinghub.elsevier.com/retrieve/pii/S8756328207006266.

Beena VT, Heera R, Panda S, *et al*. Multiple metastatic tumors in the oral cavity. **Journal of Oral and Maxillofacial Pathology**. 2011;15(2):214. http://www.jomfp.in/text.asp?2011/15/2/214/84508.

Bhadage CJ, Vaishampayan S, Umarji H. Mandibular metastasis in a patient with follicular carcinoma of thyroid. **Contemporary Clinical Dentistry**. 2012;3(2):212. http://www.contempclindent.org/text.asp?2012/3/2/212/96835.

Bisht N, Singh S, Sarin A, *et al*. Maxillary metastasis from carcinoma lung: An unusual presentation. **Asian Journal of Oncology**. 2017;3(2):136–138. http://www.thieme-connect.de/DOI/DOI?10.4103/ASJO.ASJO_16_17.

Bluestone LI. Malignant melanoma metastatic to the mandible. **Oral Surgery, Oral Medicine, Oral Pathology**. 1953;6(1):237–242. https://linkinghub.elsevier.com/retrieve/pii/0030422053901595.

Boniello R, Gasparini G, D'amato G, *et al*. TMJ metastasis: A unusual case report. **Head & Face Medicine**. 2008;4(1):8. https://head-face-med.biomedcentral.com/articles/10.1186/1746-160X-4-8.

Branch CF, Norton RH. Metastatic Hypernephroma of the Jaw. **New England Journal of Medicine**. 1928;198(11):559–561. http://www.nejm.org/doi/abs/10.1056/NEJM192805031981105.

Brook IM, Martin BAE. Angiosarcoma, metastatic to the mandible and maxilla. **British Journal of Oral Surgery**. 1980;18(3):266–271. https://linkinghub.elsevier.com/retrieve/pii/0007117X80900724.

Brown JB, O'keefe CD. Sarcoma of the ovary, with unusual oral metastases. **International Journal of Orthodontia, Oral Surgery and Radiography**. 1928;14(6):534–540. https://linkinghub.elsevier.com/retrieve/pii/S0099696328902185.

Buchner A, Begleiter A. Metastatic Renal Cell Carcinoma in the Gingiva Mimicking a Hyperplastic Lesion: Case Report. **Journal of Periodontology**. 1980;51(7):413–415. http://doi.wiley.com/10.1902/jop.1980.51.7.413.

Butler JH. Myofascial Pain Dysfunction Syndrome Involving Tumor Metastasis: Case Report. **Journal of Periodontology**. 1975;46(5):309–311. http://doi.wiley.com/10.1902/jop.1975.46.5.309.

Butt FMA, Guthua SW, Waweru W; *et al*. Metastatic bronchogenic carcinoma to the mandible. **The ANNALS of AFRICAN SURGERY**. 2016;13(1):32–35.

Cai Z, Zhu C, Wang L, *et al*. A retrospective study of six patients with mandibular metastatic carcinoma. **Oncology Letters**. 2016;11(6):3650–3654. https://www.spandidos-publications.com/10.3892/ol.2016.4484.

Carroll MKO, Krolls SO, Mosca NG. Metastatic carcinoma to the mandible. **Oral Surgery, Oral Medicine, Oral Pathology**. 1993;76(3):368–374. https://linkinghub.elsevier.com/retrieve/pii/003042209390270E.

Carvalho MV, Hopp RN, Correa MB, Totti V, Jorge J, Vargas PA. Oral metastasis of uterine carcinoma: Case report and 83-year review of this uncommon occurrence. **Archive o Oncology**. 2012;20(3–4):75–80. http://www.doiserbia.nb.rs/Article.aspx?ID=0354-73101204075D.

Cash CD, Royer RQ, Dahlin DC. Metastatic tumors of the jaws. **Oral Surgery, Oral Medicine, Oral Pathology**. 1961;14(8):897–905. https://linkinghub.elsevier.com/retrieve/pii/0030422061900019.

Cassoni A, Terenzi V, Bartoli D, *et al*. Metastatic Uterine Leiomyosarcoma in the Upper Buccal Gingiva Misdiagnosed as an Epulis. **Case Reports in Oncological Medicine**. 2014;2014:1–4. http://www.hindawi.com/journals/crionm/2014/402342/.

Cataldo E, Savage M, Shklar G. Osteogenic sarcoma of femur metastatic to mandible. **Oral Surgery, Oral Medicine, Oral Pathology**. 1965;19(1):86–92. https://linkinghub.elsevier.com/retrieve/pii/0030422065902215.

Chatterjee M, Balaraman K, Mcdermott P. Metastatic breast carcinoma discovered in a dentigerous cyst — a case report. **British Dental Journal**. 2006;201(6):349–350. http://www.nature.com/articles/4814042.

Chebil RB; Dorsaf T, Oualha L, *et al*. Mandibular metastasis in a patient with undiscovered lung cancer: a case report. **PAMJ Clinical Medicine**. 2020;4. https://www.clinical-medicine.panafrican-med-journal.com/content/article/4/119/full.

Chen C, Wang W, Tseng C, *et al*. Clinicopathological study of 13 cases of intraoral soft tissue metastatic carcinomas. **Journal of Dental Sciences**. 2020;15(1):92–95. https://linkinghub.elsevier.com/retrieve/pii/S1991790219307482.

Chiarelli A, Boccone P, Goia F, *et al*. Gingival metastasis of a radiotherapy-induced breast angiosarcoma. **Anti-Cancer Drugs**. 2012;23(10):1112–1117. https://journals.lww.com/00001813-201211000-00013.

Coad FHG, Thayalasekaran S, Booth J. An unusual presentation of metastasis from a rectal adenocarcinoma. **QJM**. 2013;106(10):943–945. https://academic.oup.com/qjmed/article-lookup/doi/10.1093/qjmed/hcs122.

Colombo P, Tondulli L, Masci G, *et al*. Oral ulcer as an exclusive sign of gastric cancer: report of a rare case. **BMC Cancer**. 2005;5(1):117. https://bmccancer.biomedcentral.com/articles/10.1186/1471-2407-5-117.

Corsi A, Ungari C, Riminucci M, *et al*. Bisphosphonate-Related Osteonecrosis and Metastasis Within the Same Site of the Jaw. **Journal of Oral and Maxillofacial Surgery**. 2017;75(8):1679–1684. https://linkinghub.elsevier.com/retrieve/pii/S0278239117300770.

Court DR, Encina S, Levy I. Prostatic adenocarcinoma with mandibular metastatic lesion: case report. **Medicina oral, patologia oral y cirugia bucal**. 2007;12(6):E424-7. http://www.ncbi.nlm.nih.gov/pubmed/17909506.

Curi MM, Curra C, Condezo AFB, *et al*. Rare Metastatic Lesion Affecting the Mouth: Case Report and Review. **Journal of Cancer Therapy**. 2017;8(4):399–404. http://www.scirp.org/journal/doi.aspx?DOI=10.4236/jct.2017.84034.

Curien R, Moizan H, Gerard E. Gingival metastasis of a bronchogenic adenocarcinoma: report of a case. **Oral Surgery, Oral Medicine, Oral Pathology, Oral Radiology, and Endodontology**. 2007;104(6):e25–e28. https://linkinghub.elsevier.com/retrieve/pii/S1079210407005331.

Curtin J, Radden BG. Mandibular metastasis from a primary adenocarcinoma of the fallopian tube. **Journal of Oral and Maxillofacial Surgery**. 1985;43(8):636–638. https://linkinghub.elsevier.com/retrieve/pii/0278239185901387.

Dashow JE, Gemmete JJ, Mchugh JB, *et al*. Metastatic Clear Cell Renal Carcinoma of the Palate Mimicking Noninvoluting Congenital Hemangioma. **Journal of Oral and Maxillofacial Surgery**. 2011;69(6):1836–1841. https://linkinghub.elsevier.com/retrieve/pii/S0278239110010943.

Deeming G, Divakaran R, Butterworth D, *et al*. Temporomandibular region metastasis from cystosarcoma phyllodes: a case report and review of the literature. **Journal of Cranio-Maxillofacial Surgery**. 2003;31(5):325–328. https://linkinghub.elsevier.com/retrieve/pii/S1010518203000192.

Delfino JJ, Wilson TK, Rainero DM. Metastatic adenocarcinoma from the colon to the mandible. **Journal of Oral and Maxillofacial Surgery**. 1982;40(3):188–190. https://linkinghub.elsevier.com/retrieve/pii/0278239182900593.

Derakhshan S, Rahrotaban S, Mahdavi N, *et al*. Metastatic renal cell carcinoma presenting as maxillary lesion: Report of two rare cases. **Journal of Oral and Maxillofacial Pathology**. 2018;22(4):39. http://www.jomfp.in/text.asp?2018/22/4/39/224613.

Dhawad MS, Nimonkar PV. Metastatic Carcinoma of Gingiva Mimicking Pyogenic Granuloma. **Journal of Maxillofacial and Oral Surgery**. 2011;10(2):163–165. http://link.springer.com/10.1007/s12663-010-0096-6.

Dhupar V, Akkara F, Kamat RD, Shetye O. Mandibular metastasis from a pulmonary squamous cell carcinoma. **Annals of Maxillofacial Surgery**. 2014;4(1):103. http://www.amsjournal.com/text.asp?2014/4/1/103/133086.

Dib LL, Soares AL, Sandoval RL, *et al*. Breast Metastasis around Dental Implants: A Case Report. **Clinical Implant Dentistry and Related Research**. 2007;9(2):112–115. https://onlinelibrary.wiley.com/doi/10.1111/j.1708-8208.2007.00033.x.

Dikhaye MA, Fejjal N, Benazzou S, *et al*. Métastase mandibulaire révélatrice d'un carcinome vésiculaire de la thyroïde : A propos d'un cas. **Médecine Buccale Chirurgie Buccale**. 2017;23(1):33–36. https://www.jomos.org/10.1051/mbcb/2016030.

Doykos JD. Wilms' tumor metastatic to mandible and oral mucosa. **Oral Surgery, Oral Medicine, Oral Pathology**. 1969;27(2):220–224. https://linkinghub.elsevier.com/retrieve/pii/0030422069901765.

Eichhorn W, Wehrmann M, Blessmann Marco, *et al*. Metastases in odontogenic cysts: literature review and case presentation. **Oral Surgery, Oral Medicine, Oral Pathology, Oral Radiology, and Endodontology**. 2010;109(4):582–586. https://linkinghub.elsevier.com/retrieve/pii/S1079210409008579.

Eisenberg E, Natarajan E, Yamase H, *et al*. Undifferentiated Cardiac Sarcoma Metastatic to the Maxilla: Report of a Case. **Journal of Oral and Maxillofacial Surgery**. 2007;65(1):148–151. https://linkinghub.elsevier.com/retrieve/pii/S0278239106016429.

El Dibany MM, Azab AS, Kutty MK. Breast carcinoma metastatic to the maxillary gingiva. **Journal of Oral and Maxillofacial Surgery**. 1984;42(7):459–461. https://linkinghub.elsevier.com/retrieve/pii/0278239184902337.

Elkhoury J, Cacchillo DA, Tatakis DN, *et al*. Undifferentiated Malignant Neoplasm Involving the Interdental Gingiva: A Case Report. **Journal of Periodontology**. 2004;75(9):129 1299. http://doi.wiley.com/10.1902/jop.2004.75.9.1295.

Elledge R, Elledge ROC, Raskauskiene D. Metastatic involvement of the maxillary antrum from an uncommon source. **Dental Update**. 2014;41(3):230–235. http://www.magonlinelibrary.com/doi/10.12968/denu.2014.41.3.230.

Ellis GL, Jensen JL, Reingold IM, *et al*. Malignant neoplasms metastatic to gingivae. **Oral Surgery, Oral Medicine, Oral Pathology**. 1977;44(2):238–245. https://linkinghub.elsevier.com/retrieve/pii/0030422077902742.

Elo JA, Sun H, Rogers JM, *et al*. Osteolytic expansile lesion of the mandible in a 60-year-old male. **Oral Surgery, Oral Medicine, Oral Pathology and Oral Radiology**. 2016;121(5):450–455. https://linkinghub.elsevier.com/retrieve/pii/S221244031501202X.

Elsherif N, Jeremic P, Blackburn T. Lung carcinoma presenting as bilateral metastases in the mandibular gingivae: a case report and literature review. **Dental Update**. 2021;48(10):846–848. http://www.magonlinelibrary.com/doi/10.12968/denu.2021.48.10.846.

Enokiya Y, Hashimoto S, Inoue T, *et al*. A rare case report of mandibular metastasis of hepatocellular carcinoma: autopsy, immunohistochemical, and ultrastructural examination with literature review. **Oral Medicine & Pathology**. 2008;12(4):135–140. http://www.jstage.jst.go.jp/article/omp/12/4/12_4_135/_article.

Erickson HP; Hamao-Sakamoto A. Breast cancer metastasis to a mandibular extraction socket: A case report and discussion on clinical detection of metastasis to the oral cavit **Journal of Oral and Maxillofacial Surgery, Medicine, and Pathology**. 2014;26(2):262–267. https://linkinghub.elsevier.com/retrieve/pii/S2212555813000057.

Erkilic S, Keskinruzgar A, Bozdag Z, *et al*. Metastasis of a Renal Collecting Duct Adenocarcinoma to the Oral Cavity After Tooth Extraction. **Journal of Craniofacial Surgery**. 2017;28(4):e398–e399. http://journals.lww.com/00001665-201706000-00109.

Eversole LR, Sabes WR, Brandebura J, *et al*. Medulloblastoma: Extradural metastasis to the jaw. **Oral Surgery, Oral Medicine, Oral Pathology**. 1972;34(4):634–640. https://linkinghub.elsevier.com/retrieve/pii/0030422072903477.

Fantasia JE, Chen L. A testicular tumor with gingival metastasis. **Oral Surgery, Oral Medicine, Oral Pathology**. 1979;48(1):64–68. https://linkinghub.elsevier.com/retrieve/pii/003042207990238X.

Farahmandfar F, Shakeri S, Askari E, *et al*. Parotid metastasis as the first presentation of papillary thyroid carcinoma. **Iranian Journal of Nuclear Medicine**. 2020;28(2):42–45.

Fernández-Barriales M, García-Montesinos B, Reija FG, *et al*. Metastatic Leiomyosarcoma of the Oral Region From a Uterine Primary: A Case Report and Review of the Literature. **Journal of Oral and Maxillofacial Surgery**. 2013;71(9):1626–1633. https://linkinghub.elsevier.com/retrieve/pii/S0278239113002152.

Flores IL, Silva ARS, Coletta RD, *et al*. Synchronous antiresorptive osteonecrosis of the jaws and breast cancer metastasis. **Oral Surgery, Oral Medicine, Oral Pathology and Or Radiology**. 2014;117(3):e264–e268. https://linkinghub.elsevier.com/retrieve/pii/S2212440313016805.

Frei M, Bornstein MM, Schaller B, *et al*. Bisphosphonate-Related Osteonecrosis of the Jaw Combined With Jaw Metastasis of Prostate Adenocarcinoma: Report of a Case. **Journal of Oral and Maxillofacial Surgery**. 2010;68(4):863–867. https://linkinghub.elsevier.com/retrieve/pii/S0278239109020692.

Freudlsperger C, Kurth R, Werner MK *et al*. Condylar metastasis from prostatic carcinoma mimicking temporomandibular disorder: a case report. **Oral and Maxillofacial Surgery**. 2012;16(1):79–82. http://link.springer.com/10.1007/s10006-010-0256-3.

Fujihara H, Chikazu D, Saijo H, *et al*. Metastasis of Hepatocellular Carcinoma into the Mandible with Radiographic Findings Mimicking a Radicular Cyst: A Case Report. **Journal Endodontics**. 2010;36(9):1593–1596. https://linkinghub.elsevier.com/retrieve/pii/S0099239910004632.

Fukuda M, Miyata M, Okabe K, *et al*. A case series of 9 tumors metastatic to the oral and maxillofacial region. **Journal of Oral and Maxillofacial Surgery**. 2002;60(8):942–944. https://linkinghub.elsevier.com/retrieve/pii/S0278239102000459.

Gallego L, Santamarta TR, Blanco V, *et al*. Inflammatory Myofibroblastic Tumor of the Lung and the Maxillary Region: A Benign Lesion with Aggressive Behavior. **Case Reports in Dentistry**. 2013;2013:1–5. http://www.hindawi.com/journals/crid/2013/879792/.

Gallo C, Beghetto M, Marcato A, *et al*. Metastasi gengivale di un adenocarcinoma polmonare:caso clinico. **IL Dentista Moderno**. 2010;1–7.

Gandhiraj, Subalakshmi K. Oral Metastasis as the First Manifestation of an Extragonadal Primary Choriocarcinoma of Pancreas: A Rare Case Report. **Journal of Indian Academ of Oral Medicine and Radiology**. 2013;25:59–62. http://www.jaypeejournals.com/eJournals/ShowText.aspx?ID=5090&Type=FREE&TYP=TOP&IN=~/eJournals/images/JPLOGO.gif&IID=392&isPDF=YES.

Gaver A, Polliack G, Pilo R, *et al*. Orofacial pain and numb chin syndrome as the presenting symptoms of a metastatic prostate cancer. **Journal of postgraduate medicine**. 2002;48(4):283–4. http://www.ncbi.nlm.nih.gov/pubmed/12571384.

Georgy JT, Mathuram AJ, George AA, *et al*. Renal cell carcinoma presenting as a cutaneous horn and nodules on the gingiva and scalp. **BMJ Case Reports**. 2017. https://casereports.bmj.com/lookup/doi/10.1136/bcr-2017-220913.

Gholami S, Bakhshi M, Atarbashi-Moghadam S, *et al*. Mandibular Metastasis of Silent Papillary Thyroid Carcinoma: A Rare Case Report with Review of the Literature. **Case Reports in Dentistry**. 2020:1–6. https://www.hindawi.com/journals/crid/2020/8683465/.

Giugliano FM, Alberti D, Guida G, *et al*. Non small-cell lung cancer with metastasis to thigh muscle and mandible: two case reports. **Journal of Medical Case Reports**. 2013;7(1):98. https://jmedicalcasereports.biomedcentral.com/articles/10.1186/1752-1947-7-98.

Gobbo M, Ottaviani G, Rupel K, *et al*. Unusual solid tumors metastasis to the oral cavity. **Annali di stomatologia**. 2013;4(2):21. http://www.ncbi.nlm.nih.gov/pubmed/24353784.

Gonzalez-Perez LM, Infante-Cossio P, Crespo-Torres S, *et al*. Mandibular metastases as first clinical sign of an occult male breast cancer. **International Journal of Oral and Maxillofacial Surgery**. 2012;41(10):1211–1214. https://linkinghub.elsevier.com/retrieve/pii/S0901502712000860.

Gooran S, Yasseri AF, Behtash N, *et al*. Mandibular Mass as an Only Presentation of Metatatic Renal Cell Carcinoma For Four Years: A Case Report. **Urology journal**. 2017;14(1):2979–2981. http://www.ncbi.nlm.nih.gov/pubmed/28116743.

Gorris S, Perdaens C, Delvaux V, *et al*. A Solitary Melanoma Metastasis Confined to the Submandibular Gland. **Case Reports in Oncology**. 2021;14(2):957–962. https://www.karger.com/Article/FullText/516796.

Goveia G,; Bahn S. Asymptomatic hepatocellular carcinoma metastatic to the mandible. **Oral Surgery, Oral Medicine, Oral Pathology**. 1978;45(3):424–430. https://linkinghub.elsevier.com/retrieve/pii/0030422078905285.

Grace A, Drake-Lee A, Conn P, *et al*. Metastatic lingual carcinoma masquerading as Ludwig's angina. **The Journal of Laryngology & Otology**. 1984;98(5):535–537. https://www.cambridge.org/core/product/identifier/S0022215100147036/type/journal_article.

Guarda-Nardini L, Stellini E, Di Fiore A, *et al*. A Rare Case of Misdiagnosed Silent Lung Cancer with Solitary Metastasis to the Temporomandibular Joint Condyle. **Journal of Or & Facial Pain and Headache**. 2017;31(2):180–185. http://www.quintpub.com/journals/ofph/abstract.php?iss2_id=1445&article_id=17290&article=11&title=A Rare Case of Misdiagnosed Silent Lung Cancer with Solitary Metastasis to the Temporomandibular Joint Condyle#.WQOooP1JmG8.

Guimarães ALS, Perdigão PF, Siqueira FM, *et al*. Oral Metastasis of Breast Carcinoma Diagnosed by Fine Needle Aspiration Cytology. **Acta Cytologica**. 2003;47(6):1074–1076. https://www.karger.com/Article/FullText/326650.

Gultekin SE, Senguven B, Gonul II, *et al*. Unusual Presentation of an Adenocarcinoma of the Lung Metastasizing to the Mandible, Including Molecular Analysis and a Review of the Literature. **Journal of Oral and Maxillofacial Surgery**. 2016;74(10):2007.e1-2007.e8.https://linkinghub.elsevier.com/retrieve/pii/S0278239116302476.

Gumusay O, Bostankolu B, Gonul II, *et al*. Tumor homing to the oral cavity after tooth extraction in a patient with metastatic lung adenocancer: A case report. **Journal of Oncological Science**. 2016;1:5–7. https://linkinghub.elsevier.com/retrieve/pii/S2452336415000035.

Gupta S, Shahid N, Fouracres M. Uncommon metastatic site from vulval carcinoma: The tongue. **Journal of Obstetrics and Gynaecology**. 2005;25(7):733–734. http://www.tandfonline.com/doi/full/10.1080/01443610500307680.

Hasheminasab M, Karimi A, Parizi MK, *et al*. Metastasis of a prostate adenocarcinoma to mandible: A case report and review of literature. **Clinical Case Reports**. 2020;8(10):2063–2066. https://onlinelibrary.wiley.com/doi/10.1002/ccr3.3065.

Hashmi SH, Ahmed SS, Parveen S, *et al*. Metastatic adenocarcinoma of the mandible–a rare entity. **Journal of Oral Biology and Craniofacial Research**. 2011;1(1):44–46. https://linkinghub.elsevier.com/retrieve/pii/S2212426811600110.

Hecker R, Noon W, Elliott M. Adenocarcinoma metastatic to the temporomandibular joint. **Journal of Oral and Maxillofacial Surgery**. 1985;43(8):629–631. https://linkinghub.elsevier.com/retrieve/pii/0278239185901363.

Heera R, Pragya, Divya KT. Metastatic Tumours to Oral Cavity : Uninvited Guests with Innocuous Guise. **Acta Scientific Dental Sciences**. 2018;2(12):138–143.

Heslop IH. Secondary neoplasia of the jaws. **British Journal of Oral Surgery**. 1964;2:47–53. https://linkinghub.elsevier.com/retrieve/pii/S0007117X64800093.

Hisa Y, Tatemoto K. Bilateral parotid gland metastases as the initial manifestation of a small cell carcinoma of the lung. **American Journal of Otolaryngology**. 1998;19(2):140–143. https://linkinghub.elsevier.com/retrieve/pii/S0196070998901120.

Holland DJ. Metastatic carcinoma to the mandible. **Oral Surgery, Oral Medicine, Oral Pathology**. 1953;6(4):567–571. https://linkinghub.elsevier.com/retrieve/pii/0030422053901236.

Hope I, Morton K, Newlands C, *et al*. Lockjaw from a metastatic uterine leiomyosarcoma- case report and review of the literature. **BMC Women's Health**. 2017;17(1):119. https://bmcwomenshealth.biomedcentral.com/articles/10.1186/s12905-017-0472-1.

Hussain I, Maharaj K, Prince S. The "numb chin syndrome": A case report. **International Journal of Surgery Case Reports**. 2020;67:157–160. https://linkinghub.elsevier.com/retrieve/pii/S2210261220300870.

Hwang KG, Park CJ, Paik SS, *et al*. Gingival Metastasis from Gastric Adenocarcinoma. **Otolaryngology–Head and Neck Surgery**. 2007;137(1):169–170. http://journals.sagepub.com/doi/10.1016/j.otohns.2007.01.014.

Ismail SB, Abraham MT, Zaini ZB, *et al*. Metastatic follicular thyroid carcinoma to the mandible: a case report. **Cases Journal**. 2009;2(1):6533. https://casesjournal.biomedcentral.com/articles/10.1186/1757-1626-2-6533.

Jaffa NR, Adam D, Akhtar S, *et al*. Pancreatic adenocarcinoma presenting as mandibular tumor: case report. **Oral Surgery, Oral Medicine, Oral Pathology and Oral Radiology**. 2014;117(1):23–26. https://linkinghub.elsevier.com/retrieve/pii/S2212440313004276.

Jaguar GC, Prado JD, Soares F, *et al*. Gingival metastasis from non-small cell undifferentiated carcinoma of the lung mimicking a pyogenic granuloma. **Oral Oncology Extra**. 2006;42(1):36–39. https://linkinghub.elsevier.com/retrieve/pii/S1741940905000750.

Jakharia-Shah A, Wheatley H, Beesley M. Reminder of an important clinical lesson: breast cancer metastasis to the parotid gland. **BMJ Case Reports**. 2019;12(10):e226494. https://casereports.bmj.com/lookup/doi/10.1136/bcr-2018-226494.

Jatti D, Puri G, Aravinda K, *et al*. An Atypical Metastasis of Renal Clear Cell Carcinoma to the Upper Lip: A Case Report. **Journal of Oral and Maxillofacial Surgery**. 2015;73(2):371.e1-371.e6. https://linkinghub.elsevier.com/retrieve/pii/S0278239114014839.

Jawanda MK, Narula R, Gupta S, Gupta P. Mandibular metastasis of follicular thyroid carcinoma: a case report along with the concise review of literature. **Journal Of Oral Anc Maxillofacial Pathology**. 2022;26(1):133. http://dx.doi.org/10.4103/jomfp.jomfp_408_21.

Johnson C, Read-Fuller A. Mandibular metastasis from lung adenocarcinoma as the first sign of occult malignancy. **Baylor University Medical Center Proceedings**. 2020;33(2):261–262. https://www.tandfonline.com/doi/full/10.1080/08998280.2020.1719783.

Jones GM, Telfer MR, Eveson JW. Metastatic renal clear cell carcinoma of the jaws. Two cases illustrating clinical and pathological diagnostic problems. **British Journal of Oral and Maxillofacial Surgery**. 1990;28(3):172–175. https://linkinghub.elsevier.com/retrieve/pii/026643569090082V.

Kadokura M, Yamamoto S, Kataoka D, *et al*. Pulmonary adenocarcinoma metastatic to the gingiva. **International Journal of Clinical Oncology**. 1999;4(4):253–255. http://link.springer.com/10.1007/s101470050064.

Kahn MA, Mccord PT. Metastatic thyroid carcinoma of the mandible: Case report. **Journal of Oral and Maxillofacial Surgery**. 1989;47(12):1314–1316. https://linkinghub.elsevier.com/retrieve/pii/0278239189907325.

Kalaitsidou IG, Astreidis IT, Kontos KI, *et al*. Metastatic Tumours to the Oral Cavity: Report of Three Cases. **Journal of Oral and Maxillofacial Research**. 2015;6(4). http://www.ejomr.org/JOMR/archives/2015/4/e5/v6n4e5ht.htm.

Kalburge JV, Kini YK, Kalburge VJ. Numb chin in thyroid carcinoma: A rare clinical presentation. **International Journal of Case Reports and Images**. 2012;3(11)28–31.

Karr RA, Best CG, Salem PA, *et al*. Synovial sarcoma metastatic to the mandible: Report of two cases. **Journal of Oral and Maxillofacial Surgery**. 1991;49(12):1341–1346. https://linkinghub.elsevier.com/retrieve/pii/027823919190316E.

Katsnelson A, Tartakovsky JV, Miloro M. Review of the Literature for Mandibular Metastasis Illustrated by a Case of Lung Metastasis to the Temporomandibular Joint in an HI Positive Patient. **Journal of Oral and Maxillofacial Surgery**. 2010;68(8);1960–1964. https://linkinghub.elsevier.com/retrieve/pii/S027823910901489X.

Kaugars GE, Svirsky JA. Lung malignancies metastatic to the oral cavity. **Oral Surgery, Oral Medicine, Oral Pathology**. 1981;51(2)179–186. https://linkinghub.elsevier.com/retrieve/pii/0030422081900372.

Kawakami T, Kimura A, Hasegawa H, *et al*. A Case Report of Metastatic Carcinoma of the Gingiva. **Oral Medicine & Pathology**. 1998;3(1):35–39. http://www.jstage.jst.go.jp/article/omp/3/1/3_1_35/_article.

Kawamura M, Nakabayashi Y, Otsuka M, *et al*. Gingival Metastasis from Rectal Cancer. **Journal of Gastrointestinal Surgery**. 2008;12(6):1121–1122. http://link.springer.com/10.1007/s11605-007-0401-y.

Kechagias N, Ntomouchtsis A, Patrikidou A, *et al*. Metastasis of a ductal breast carcinoma to the buccal mucosa of the mandible with tooth involvement. **Oral and Maxillofaci Surgery**. 2012;16(4):377–381. http://link.springer.com/10.1007/s10006-011-0300-y.

Khalili M, Mahboobi N, Shams J. Metastatic Breast Carcinoma Initially Diagnosed as Pulpal/Periapical Disease: A Case Report. **Journal of Endodontics**. 2010;36(5)922–925. https://linkinghub.elsevier.com/retrieve/pii/S0099239910000476.

Khodayari A, Khojasteh A. Mandibular pathologic fracture as a first sign of disseminated angiosarcoma: A case report and review of literatures. **Oral Oncology Extra**. 2005;41(8):178–182. https://linkinghub.elsevier.com/retrieve/pii/S174194090500035X.

Kim MG, Seok H, Kim SG, *et al*. Poorly Differentiated Adenocarcinoma in the Injured Mandible Metastasized from Lung Cancer. **Kor J Oral Maxillofac Pathol**. 2012;36(3):195–200.

Kim DW, Hah JH, An SY, *et al*. Follicular Thyroid Carcinoma Presenting as Bilateral Cheek Masses. **Clinical and Experimental Otorhinolaryngology**. 2013;6(1):52 http://e-ceo.org/journal/view.php?doi=10.3342/ceo.2013.6.1.52.

Kishore M, Chauhan DS, Dogra S. Unusual presentation of renal cell carcinoma: A rare case report. **Journal of Laboratory Physicians**. 2018;10(2):241–244. http://www.thiem connect.de/DOI/DOI?10.4103/JLP.JLP_153_17.

Kizaekka A, Chengot P, Mannion CJ. Recurrent oral metastatic lesion of renal cell carcinoma - A case report. **International Journal of Oral and Craniofacial Science**. 2019;5(2):24–26. https://www.peertechz.com/articles/IJOCS-5-141.php.

Kolokythas A, Miloro M, Olsson AB, *et al*. Metastatic Pancreatic Adenocarcinoma to the Mandibular Condyle: A Rare Clinical Presentation. **Journal of Oral and Maxillofacial Surgery**. 2014;72(1):83–88. https://linkinghub.elsevier.com/retrieve/pii/S0278239113008124.

Kostrubala JG, Thurston EW, Chapin ME. Metastatic dysgerminoma of the mandible. **Oral Surgery, Oral Medicine, Oral Pathology**. 1950;3(9):1184–1193. https://linkinghub.elsevier.com/retrieve/pii/0030422050900156.

Kovalski LNS, Ribeiro JT, Martins MD, Oliveira MG, Rivero LF, Carrard VC, Martins MAT. A rare case of oral metastasis of renal clear cell carcinoma: case report and review of literature. **Journal of oral Diagnosis**, 2020.

Koyama T, Hashimoto K, Yamaguchi K, *et al*. Esophageal carcinoma metastatic centrally to the mandible: A case report with implication of cell proliferating marker KI-67. **Journal of Oral and Maxillofacial Surgery**. 1997;55(6):640–645. https://linkinghub.elsevier.com/retrieve/pii/S0278239197905012.

Krishnamurthy A, Deen S, Ramshankar V, *et al*. Metastatic Follicular Carcinoma Thyroid Masquerading as a Primary Jaw Tumor. **Journal of Maxillofacial and Oral Surgery**. 2016;15(S2):266–269. http://link.springer.com/10.1007/s12663-015-0782-5.

Kruse ALD, Luebbers HT, Obwegeser JA, *et al*. Temporomandibular disorders associated with metastases to the temporomandibular joint: a review of the literature and 3 additional cases. **Oral Surgery, Oral Medicine, Oral Pathology, Oral Radiology, and Endodontology**. 2010;110(2):e21–e28. https://linkinghub.elsevier.com/retrieve/pii/S1079210410001393.

Küçükgüven MB. A Rare Case Of Maxillary Hepatocellular Carcinoma Metastasis Mimicking Pyogenic Granuloma In A Geriatric Patient. **The Turkish Journal of Geriatrics**. 2019;22(1):112–116. http://geriatri.dergisi.org/uploads/pdf/pdf_TJG_1104.pdf.

Kumar RVK, Chakravarthy C, Sekhar GR, *et al*. Metastatic Thyroid Carcinoma Presenting as Hypervascular Lesion of the Mandible: A Case Report and Review of Literature. **Journal of Oral and Maxillofacial Surgery**. 2010;68(10):2613–2616. https://linkinghub.elsevier.com/retrieve/pii/S027823910901934X.

Kuttan NAA, Flemming DK, Dane JN, *et al*. Metastatic lesion of the anterior mandible with an occult primary: A case report. **Special Care in Dentistry**. 2006;26(2):76–80. https://onlinelibrary.wiley.com/doi/10.1111/j.1754-4505.2006.tb01514.x.

Lansigan NC, Benisch BM, Sidoti JS. Renal carcinoma presenting as metastasis to uvula. **Urology**. 1973;2(4):449–451. https://linkinghub.elsevier.com/retrieve/pii/0090429573900241.

Lasiter JC, Liess BD, Zitsch RP, *et al*. An Expansile Mandibular Mass as the Initial Manifestation of Hepatocellular Carcinoma. **Ear, Nose & Throat Journal**. 2011;90(2):E19–E21. http://journals.sagepub.com/doi/10.1177/014556131109000213.

Lavanya C, Ranganathan K, Veerabahu M. Mandibular Metastasis of Thyroid Carcinoma: A Case Report. **Journal of Clinical and Diagnostic Research**. 2014;8(7):15–16. http://jcdr.net/article_fulltext.asp?issn=0973-709x&year=2014&volume=8&issue=7&page=ZD15&issn=0973-709x&id=4588.

Lawes KP, Danford M, Di Palma S. Delayed Metastasis to the Mandible of Esophageal Adenocarcinoma. **Head and Neck Pathology**. 2013;7(4):416–420. http://link.springer.com/10.1007/s12105-013-0450-3.

Lechien JR, Doyen J, Deleuze M, *et al*. Giant metastasis invading pharyngeal wall, pterygo-maxillary space, submaxillary and parotid glands. **Revue de laryngologie - otologie -**

rhinologie. 2015;136(4):167–168. http://www.ncbi.nlm.nih.gov/pubmed/29400040.

Li M, Saghafi N, Freymiller E, *et al*. Metastatic Merkel cell carcinoma of the oral cavity in a human immunodeficiency virus–positive patient and the detection of Merkel cell polyomavirus. **Oral Surgery, Oral Medicine, Oral Pathology and Oral Radiology**. 2013;115(5):e66–e71. https://linkinghub.elsevier.com/retrieve/pii/S2212440312015106.

Lin HY, Chiang CP, Wang YP, *et al*. Metastatic lung carcinoma in the right maxilla. **Journal of the Formosan Medical Association**. 2018;117(12):1130–1132. https://linkinghub.elsevier.com/retrieve/pii/S0929664618305783.

Liuzzi J, Rincón N, Velázquez Y, *et al*. Tumor de cavidad oral como primera manifestación de un adenocarcinoma gástrico metastásico. **Revista Venezolana de Oncología**. 2009;21(3):157–164.

Lombardo EM, Ponce K, Tregnago L, *et al*. Metastasis of Prostate Adenocarcinoma in the Mandible. **Journal of Craniofacial Surgery**. 2020;31(1):e75–e78. http://journals.lww.com/00001665-202001000-00115.

Loncarevic S, Brajkovic D, Djurdjevic BV, *et al*. Bilateral numb chin syndrome as a symptom of breast cancer metastasis in the mandible: a case report and discussion on the usefulness of cone-beam computed tomography to assess bone involvement in oral cancer. **Oral Radiology**. 2016;32(2)136–142. http://link.springer.com/10.1007/s11282-01 0223-7.

Maestre-Rodriguez O, Gonzalez-Garcia R, Mateo-Arias J, *et al*. Metastasis of renal clear-cell carcinoma to the oral mucosa, an atypical location. **Medicina Oral Patología Oral Cirugia Bucal** 2009. http://www.medicinaoral.com/medoralfree01/v14i11/medoralv14i11p601.pdf.

Maiorano E, Piattelli A, Favia G. Hepatocellular Carcinoma Metastatic to the Oral Mucosa: Report of a Case With Multiple Gingival Localizations. **Journal of Periodontology**. 2000;71(4):641–645. http://doi.wiley.com/10.1902/jop.2000.71.4.641.

Majumdar S, Uppala D, Boddepalli R, *et al*. A rare case of mucous adenocarcinoma with gingival metastasis: A case report and review of literature. **Journal of Oral and Maxillofacial Surgery, Medicine, and Pathology**. 2016;28(2):197–201. https://linkinghub.elsevier.com/retrieve/pii/S2212555815001957.

Manjunath KV, Guruprasad, B, Krishnamurthy. A rare case of gastric carcinoma with oral metastasis. **Online Journal of Health and Allied Sciences**. 2013;12(3):3–5.

Mariano FV, Corrêa MB, Da Costa MV, *et al*. Labial mucosa metastasis of fibule giant cell-rich osteosarcoma: An unusual presentation. **Quintessence International**. 2013;44(10).

Marker P Clausen PP. Metastases to the mouth and jaws from hepatocellular carcinomas. A case report. **International Journal of Oral and Maxillofacial Surgery**. 1991;20(6):371–374.https://linkinghub.elsevier.com/retrieve/pii/S090150270580270X.

Markman RL, Rosa GAB, Cardili L, *et al*. Tongue metastasis of cutaneous melanoma: Report of two cases and literature review. **Journal of Clinical and Experimental Dentistry** 2018. http://www.medicinaoral.com/medoralfree01/aop/54980.pdf.

Martín-Moro JG, Carretero JLC, García EG, Vera JLCP, Del Val D. Intraoral tumor with rapid growing. Report of a case. **Medicina oral, patologia oral y cirugia bucal**. 2005;10(5):440–443. http://www.ncbi.nlm.nih.gov/pubmed/16264378.

Masamatti SS, Pandav AB, Kulkarni MP, *et al*. Gastroesophageal junction adenocarcinoma metastasizing to gingiva. **International Journal of Applied and Basic Medical Research**. 2013;3(1):69. https://journals.lww.com/10.4103/2229-516X.112247.

Mason AC, Azari KK, Farkas LM, *et al*. Metastatic adenocarcinoma of the colon presenting as a mass in the mandible. **Head & Neck**. 2005;27(8):729–732. https://onlinelibrary.wiley.com/doi/10.1002/hed.20224.

Mast HL, Nissenblatt MJ. Metastatic colon carcinoma to the jaw: A case report and review of the literature. **Journal of Surgical Oncology**. 1987;34(3):202–207. https://onlinelibrary.wiley.com/doi/10.1002/jso.2930340316.

Matsuda S, Yoshimura H, Kondo S, *et al*. Temporomandibular dislocation caused by pancreatic cancer metastasis: A case report. **Oncology Letters**, 2017. http://www.spandidos-publications.com/10.3892/ol.2017.6951.

Mavili E, Ozturk M, Yucel T, *et al*. Tongue metastasis mimicking abscess: a case report. **Diagnostic and Interventional Radiology**, 2010. https://www.dirjournal.org/en/tongue metastasis-mimicking-an-abscess-13388.

Mcgoldrick DM, Brady P, Sleeman D. Metastatic adenocarcinoma of the mandible. **Oral Surgery**. 2016;10(4):248–251. https://onlinelibrary.wiley.com/doi/10.1111/ors.12257

Medina BR, Barba EM, Torres AV, *et al*. Gingival metastases as first sign of a primary uterine angiosarcoma. **Journal of Oral and Maxillofacial Surgery**. 2001;59(4):467–471. https://linkinghub.elsevier.com/retrieve/pii/S0278239101015105.

Mehra P, Cottrell DA, Booth DF, *et al*. An unusual presentation of metastatic prostate cancer. **Journal of Oral and Maxillofacial Surgery**. 1998;56(4):517–521. https://linkinghub.elsevier.com/retrieve/pii/S0278239198907273.

Mehta DN, Bailoor DN, Tarsariya VM, *et al*. From esophagus to gingiva: A rare case of metastatic adenocarcinoma. **Journal of Oral and Maxillofacial Pathology**. 2012;16(3):42 http://www.jomfp.in/text.asp?2012/16/3/428/102509.

Melgaço-Costa JLB, Carneiro BT, Antunes FL, *et al*. Oral metastasis intraosseous mimicking periapical lesion: a case report. **RGO - Revista Gaúcha de Odontologia**. 2020. http://www.scielo.br/scielo.php?script=sci_arttext&pid=S1981-86372020000100800&tlng=en.

Menezes AV, Lima MP, Mendonça JEF, Haiter-Neto F, Kurita LM. Breast Adenocarcinoma Mimicking Temporomandibular Disorders: A Case Report. **The Journal of Contemporary Dental Practice**.2008;9(5):100–106. https://www.thejcdp.com/doi/10.5005/jcdp-9-5-100.

Menezes JDS, Cappellari PFM, CapelarI MM, *et al*. Mandibular metastasis of adenocarcinoma from prostate cancer: case report according to epidemiology and current therapeutical trends of the advanced prostate cancer. **Journal of Applied Oral Science**. 2013;21(5):490–495. http://www.scielo.br/scielo.php?script=sci_arttext&pid=S1678-77572013000500490&lng=en&tlng=en.

Miles BA, Schwartz-Dabney C, Sinn DP, *et al*. Bilateral Metastatic Breast Adenocarcinoma Within the Temporomandibular Joint: A Case Report. **Journal of Oral and Maxillofacial Surgery**. 2006;64(4):712–718. https://linkinghub.elsevier.com/retrieve/pii/S0278239105019889.

Milobsky SA, Milobsky L, Epstein LI. Metastatic renal adenocarcinoma presenting as periapical pathosis in the maxilla. **Oral Surgery, Oral Medicine, Oral Pathology**. 1975;39(1):30–33. https://linkinghub.elsevier.com/retrieve/pii/0030422075903916.

Misir AF, Mercan U, Günhan Ö. Metastasis of lung adenocarcinoma to the mandible: Report of a case. **Journal of Oral and Maxillofacial Pathology**. 2013;17(2):253. http://www.jomfp.in/text.asp?2013/17/2/253/119745.

Miyake M, Takebayashi R, Ohbayashi Y, *et al*. Metastasis in the Gingiva from Colon Adenocarcinoma. **Journal of Maxillofacial and Oral Surgery**. 2015;14(S1);279–282. http://link.springer.com/10.1007/s12663-013-0487-6.

Moffat DA. Metastatic adenocarcinoma of the rectum presenting as an epulis: A case report. **British Journal of Oral Surgery**. 1976;14(1):90–92. https://linkinghub.elsevier.com/retrieve/pii/0007117X76901001.

Moharil RB, Khandekar S, Dive A. Metastatic lung malignancy to mandibular gingiva. **Indian Journal of Dental Research**. 2010;21(3):449. http://www.ijdr.in/text.asp?2010/21/3/449/70795.

Moraes RM, Alves FA, Carvalho BFC, *et al*. Mandible metastasis of small cell lung cancer mimicking a residual cyst. **Autopsy and Case Reports**. 2017;7(1):37–41. http://autopsyandcasereports.org/article/doi/10.4322/acr.2017.003.

Morita N, Yabuta T, Todo K, *et al*. A metastatic haemangiopericytoma of the floor of the mouth. **International Journal of Oral and Maxillofacial Surgery**. 2006;35(6):563–565 https://linkinghub.elsevier.com/retrieve/pii/S0901502705004005.

Morris PR, Prstojevich SJ, Hedayati P. Male breast cancer with maxillofacial metastasis: Case report. **Journal of Oral and Maxillofacial Surgery**. 2001;59(5):578–580. https://linkinghub.elsevier.com/retrieve/pii/S0278239101735628.

Muller RG, Patel N, Weidenbecher M, Abramovich CM, Ludlow D. Metastatic SMARCA4-deficient thoracosarcomatoid tumor presenting as a maxillary mass: case report and review of the literature. **Otolaryngology Case Reports**. 2022;23:1-4. http://dx.doi.org/10.1016/j.xocr.2022.100397.

Murray LJ, Higham J, Suvarna SK, *et al*. Oral presentation of malignant mesothelioma. **Oral Surgery, Oral Medicine, Oral Pathology, Oral Radiology, and Endodontology**. 2011;111(1):e21–e26. https://linkinghub.elsevier.com/retrieve/pii/S1079210410003215.

Murugaraj V, Bischoff P, Fasanya S, *et al*. Metastatic colorectal adenocarcinoma of the jaw - a case report. **Oral Surgery**. 2013;6(2):88–90. https://onlinelibrary.wiley.com/doi/10.1111/ors.12012.

Myall, RWT, Morton TH, Worthington P. Melanoma metastatic to the mandible. **International Journal of Oral Surgery**. 1983;12(1):56–59. https://linkinghub.elsevier.com/retrieve/pii/S0300978583800817.

Naik R, Chatura KR, Mujib BR. Ahmed; *et al*. Gingival metastasis of adenocarcinoma with an unknown occult primary. **Journal of Family Medicine and Primary Care**. 2019;8(3):1246. https://journals.lww.com/10.4103/jfmpc.jfmpc_132_19.

Ndiaye M, Faye AD, Diouf MS, *et al*. Gingival metastasis of a breast carcinoma. **Clinical Case Reports**. 2020;8(12):2518–2520. https://onlinelibrary.wiley.com/doi/10.1002/ccr3.3216.

Nesbitt AL, Lim ZLT, Chan KJ, *et al*. Metastatic renal cell carcinoma presenting with both acute stroke and an oral lesion. **Urology Case Reports**. 2019;23:75–77. https://linkinghub.elsevier.com/retrieve/pii/S221444201830439X.

Newland JR, Mcclendon JL, Lynch DP. Metastatic neuroblastoma of the jaws. **Journal of Oral and Maxillofacial Surgery**. 1985;43(7):549–553. https://linkinghub.elsevier.com/retrieve/pii/S0278239185800380.

Nikitakis NG, Vlachaki A, Boussios V, *et al*. A painful swelling of the mandible. **Oral Surgery, Oral Medicine, Oral Pathology and Oral Radiology**. 2016;122(5)525–529. https://linkinghub.elsevier.com/retrieve/pii/S2212440315013267.

Nishii N, Shimamoto H, Ohsako T, *et al*. Renal cell carcinoma metastasis to the maxillary bone successfully treated with surgery after vascular embolization: a case report. **Journal of Medical Case Reports**. 2020;14(1):193. https://jmedicalcasereports.biomedcentral.com/articles/10.1186/s13256-020-02522-6.

Noor A, Cheng A, Sambrook P, *et al*. Melanoma Metastatic to the Mandible: Symptoms Precede Imaging Findings. **Journal of Maxillofacial and Oral Surgery**. 2018;17(3):281–285. http://link.springer.com/10.1007/s12663-017-1000-4.

Nuyen B. Gingival Metastasis: A Case Report and Literature Review. **The Permanente Journal**. 2016. http://www.thepermanentejournal.org/issues/2016/winter/6020-gingiva metastasis.html.

O'neil R. Bronchial adenocarcinoma presenting as epulis. **British Journal of Oral Surgery**. 1964;2:148–151. https://linkinghub.elsevier.com/retrieve/pii/S0007117X64800317.

Oliver C, Mouallem G, Dutot-Philipeau N, *et al*. A case report of condyle metastasis and a review of the literature. **Journal of Stomatology, Oral and Maxillofacial Surgery**. 2021. https://linkinghub.elsevier.com/retrieve/pii/S2468785521000896.

Olsen JB, Gebauer D, Frydrych A. Metastatic epithelioid haemangioendothelioma masquerading as periodontal pathosis: a case report. **British Journal of Oral and Maxillofac Surgery**. 2019;58(1):85–88. https://linkinghub.elsevier.com/retrieve/pii/S026643561930333X.

Otto S, Schuler K, Ihrler S, *et al*. Osteonecrosis or Metastases of the Jaw or Both? Case Report and Review of the Literature. **Journal of Oral and Maxillofacial Surgery**. 2010;68(5):1185–1188. https://linkinghub.elsevier.com/retrieve/pii/S027823910901756X.

Panossian M, Gady J, Natarajan E, *et al*. Breast Cancer Metastatic to the Mandible Misdiagnosed as Parotitis: Report of a Case. **Journal of Oral and Maxillofacial Surgery**. 2009;67(6):1333–1337. https://linkinghub.elsevier.com/retrieve/pii/S0278239108015930.

Park JY, Kim HS, Zo JI, *et al*. Initial Presentation of Lung Sarcomatoid Carcinoma as a Metastatic Lesion in the Mandibular Gingiva. **Journal of Periodontology**. 2003;77(4):734–737. http://doi.wiley.com/10.1902/jop.2006.050137.

Patel PN, Mutalik VS, Rehani S, *et al*. Basaloid squamous cell carcinoma of oral cavity with incongruent clinical course. **Case Reports**. 2013. https://casereports.bmj.com/lookup/doi/10.1136/bcr-2013-200441.

Patel S, Barros J, Nwizu NN.; *et al*. Metastatic renal cell carcinoma to the oral cavity as first sign of disease: A case report. **Clinical Case Reports**. 2020;8(8):1517–1521. https://onlinelibrary.wiley.com/doi/10.1002/ccr3.2923.

Patricia A, Trierveiler MM; Kaba SP, *et al*. Osteoblastic metastasis from breast affecting the condyle misinterpreted as temporomandibular joint disorder. **Indian Journal of Cancer**. 2011;48(2):252. http://www.indianjcancer.com/text.asp?2011/48/2/252/82877.;

Patrocinio LG, Patrocinio TG, Pacheco LF *et al*. Trismus as the first manifestation of cholangiocarcinoma. **Medicina oral, patologia oral y cirugia bucal**. 2008;13(9)573-575. http://www.ncbi.nlm.nih.gov/pubmed/18758402.

Pelissari C, Cavalcanti D, Gallottini M. Metastatic colorectal adenocarcinoma in oral cavity : case report and Literature review Abstract. 2018.

Perlmutter S, Buchner A, Smukler H. Metastasis to the gingiva. **Oral Surgery, Oral Medicine, Oral Pathology**. 1974;38(5):749–754. https://linkinghub.elsevier.com/retrieve/pii/0030422074903958.

Persad R, Jones G, Gingell JC. Metastatic Carcinoma of the Kidney Presenting to the Oral Surgeon. **British Journal of Urology**. 1991;68(6):658–659 https://onlinelibrary.wiley.com/doi/10.1111/j.1464-410X.1991.tb15436.x.

Pesis M, Taicher S, Greenberg G, *et al*. Metastasis to the jaws as a first manifestation of hepatocellular carcinoma: Report of a case and analysis of 41 cases. **Journal of Cranio Maxillofacial Surgery**. 2014;42(8):1997–2001. https://linkinghub.elsevier.com/retrieve/pii/S101051821400256X.

Pfammatter C, Lindenmüller IH, Lugli A, *et al*. Metastases and primary tumors around dental implants: A literature review and case report of peri-implant pulmonary metastasis. **Quintessence international (Berlin, Germany : 1985)**. 2012;43(7):563–570. http://www.ncbi.nlm.nih.gov/pubmed/22670251.

Piattelli A, Fioroni M, Rubini C. Gingival Metastasis From a Medullary Thyroid Carcinoma: Case Report. **Journal of Periodontology**. 2000;71(1):112–116. http://doi.wiley.com/10.1902/jop.2000.71.1.112.

Pliskin ME, Mastrangelo MJ, Brown AM, *et al*. Metastatic melanoma of the maxilla presenting as a gingival swelling. **Oral Surgery, Oral Medicine, Oral Pathology**. 1976;41(1):101–104. https://linkinghub.elsevier.com/retrieve/pii/0030422076902577.

Poojary D, Baliga M, Shenoy N, *et al*. Adrenal Insufficiency with Gingival Mass—An Unusual Presentation of Hepatocellular Carcinoma. **Journal of Oral and Maxillofacial Surgery**. 2011;69(7):e291–e293. https://linkinghub.elsevier.com/retrieve/pii/S0278239111003363.

Poulias E, Melakopoulos I, Tosios, K. Metastatic breast carcinoma in the mandible presenting as a periodontal abscess: a case report. **Journal of Medical Case Reports**. 2011;5(1):265. https://jmedicalcasereports.biomedcentral.com/articles/10.1186/1752-1947-5-265.

Poulopoulos AK, Antoniades K, Kiziridou A, *et al*. Testicular embryonal carcinoma metastatic to the labial mucosa of the upper lip. **Oral Oncology**. 2001;37(4):397–399. https://linkinghub.elsevier.com/retrieve/pii/S1368837500001044.

Poulopoulos AK, Antoniades K, Kiziridou A. Bilateral metastatic breast angiosarcoma to the mandibular gingiva: case report. **Oral Oncology**. 2001;37(2):199–201. https://linkinghub.elsevier.com/retrieve/pii/S1368837500000786.

Pozzi ECF, Altermatt HJ, Rees TD, *et al*. Exophytic Mass of the Gingiva as the First Manifestation of Metastatic Pulmonary Adenocarcinoma. **Journal of Periodontology**. 2008;79(1):187–191. http://doi.wiley.com/10.1902/jop.2008.070246.

Prakash SMV, Verma S, Gill N, Malik V. Multiple gingival metastasis of adenocarcinoma of the lung. **Indian Journal of Dental Research**. 2012;23(4):558. http://www.ijdr.in/text.asp?2012/23/4/558/104978.

Prasanna C, Silva SPI, Liyanage RLPR. Metastatic carcinoma of the gingiva mimicking a denture granuloma : A case report. **Sri Lanka Dental Journal**. 2015;45(01):30–35.

Prol-Teijeiro C, Ruiz-Oslé S, Malaxetxebarria S, *et al*. Metastatic prostate adeno-carcinoma and Paget's bone disease of the mandible. **Revista de Osteoporosis y Metabolism Mineral**. 2018;10(1):37–40.

Pruckmayer M, Glaser C, Nasel C, *et al*. Bone metastasis with superimposed osteomyelitis in prostate cancer. **Journal of nuclear medicine : official publication, Society of Nuclear Medicine**. 1996;37(6):999–1001. http://www.ncbi.nlm.nih.gov/pubmed/8683333.

Pruckmayer M, Glaser C, Marosi C, *et al*. Mandibular pain as the leading clinical symptom for metastatic disease: Nine cases and review of the literature. **Annals of Oncology**. 1998;9(5):559–564. https://linkinghub.elsevier.com/retrieve/pii/S0923753419610148.

Radden BG, Reade PC. Gingival metastasis from a hepatoma. **Oral Surgery, Oral Medicine, Oral Pathology**. 1966;21(5):621–625. https://linkinghub.elsevier.com/retrieve/pii/0030422066900405.

Rajinikanth M, Prakash AR, Swathi TR, *et al*. Metastasis of lung adenocarcinoma to the jaw bone. **Journal of Oral and Maxillofacial Pathology**. 2015;19(3):385. http://www.jomfp.in/text.asp?2015/19/3/385/174624.

Ramirez JR, Seoane J, Montero J, *et al*. Isolated gingival metastasis from hepatocellular carcinoma mimicking a pyogenic granuloma. **Journal of Clinical Periodontology**. 2003;30(10):926–929. http://doi.wiley.com/10.1034/j.1600-051X.2003.00391.x.

Razmara F, Sharifi R, Shabankareh G, *et al*. Metastasis of breast cancer to the mandibular gingiva: Report of a rare case. **Middle East Journal of Cancer**. 2020;11(1):109–113.

Redman RS, Behrens AS, Calhoun NR. Carcinoma of the lung presenting as a mandibular metastasis. **Journal of Oral and Maxillofacial Surgery**. 1983;41(11):747–750. https://linkinghub.elsevier.com/retrieve/pii/0278239183901933.

Rim JH, Moon SE, Chang MS, *et al*. Metastatic hepatocellular carcinoma of gingiva mimicking pyogenic granuloma. **Journal of the American Academy of Dermatology**. 2003;49(2):342–343. https://linkinghub.elsevier.com/retrieve/pii/S019096220300416X.

Rivera RD, Diamante M, Kasten SJ, *et al*. Metastatic Melanoma to the Mandible: Case Report and Review of the Literature. **Journal of Oral and Maxillofacial Surgery**. 2010;68(11):2903–2906. https://linkinghub.elsevier.com/retrieve/pii/S0278239110008876.

Rocha LA, Rizo VHT, Romañach MJ, *et al*. Oral metastasis of alveolar soft-part sarcoma: a case report and review of literature. **Oral Surgery, Oral Medicine, Oral Pathology, Oral Radiology, and Endodontology**. 2010;109(4):587–593. https://linkinghub.elsevier.com/retrieve/pii/S1079210409009287.

Rubin MM, Jui V, Cozzi GM. Metastatic carcinoma of the mandibular condyle presenting as temporomandibular joint syndrome. **Journal of Oral and Maxillofacial Surgery**. 1989;47(5):507–510. https://linkinghub.elsevier.com/retrieve/pii/0278239189902863.

Rusthoven JJ, Fine S, Thomas G. Adenocarcinoma of the rectum metastatic to the oral cavity. Two cases and a review of the literature. **Cancer**. 1984;54(6):1110–1112. https://onlinelibrary.wiley.com/doi/10.1002/1097-0142(19840915)54:6%3C1110::AID-CNCR2820540631%3E3.0.CO;2-O.

Saha K, Jash D, Banerjee SN, *et al*. A rare case of mandibular metastasis in adenocarcinoma of lung. **Clinical Cancer Investigation Journal**. 2013;2(1):48. http://www.ccij-

online.org/text.asp?2013/2/1/48/110779.

Sahoo NK, Rangan NM, Kakkar S, *et al*. Masticator space metastasis from a male breast carcinoma: A case report. **Journal of Oral and Maxillofacial Surgery, Medicine, and Pathology**. 2013;25(2):160–163. https://linkinghub.elsevier.com/retrieve/pii/S2212555812001561.

Salama AR, Jham BC, Papadimitriou JC, *et al*. Metastatic neuroendocrine carcinomas to the head and neck: report of 4 cases and review of the literature. **Oral Surgery, Oral Medicine, Oral Pathology, Oral Radiology, and Endodontology**. 2009;108(2):242–247. https://linkinghub.elsevier.com/retrieve/pii/S1079210409002091.

Salman I, Darlington CG. Rare (unusual) malignant tumors of the jaws. **American Journal of Orthodontics and Oral Surgery**. 1944;30(12):725–749. https://linkinghub.elsevier.com/retrieve/pii/S0096634744901675.

Sánchez FGV, Lozada DF, Sánchez CIR, Macías LHE. Granulomatous Lesion in Inserted Gum-Metastasis of Renal Clear Cell Carcinoma. Case Presentation. **Odovtos - International Journal of Dental Sciences**. 2021;125–134. https://revistas.ucr.ac.cr/index.php/Odontos/article/view/39553.

Santamaria J, Garcia AM, Gil J, *et al*. Metastasis of a malignant melanoma to the region of an impacted mandibular third molar: A case report. **Journal of Oral and Maxillofaci Surgery**. 1997;55(9):1003–1006. https://linkinghub.elsevier.com/retrieve/pii/S0278239197900793.

Savithri V, Suresh R, Janardhanan M, *et al*. Metastatic adenocarcinoma of mandible: in search of the primary. **BMJ Case Reports**. 2018;11(1). https://casereports.bmj.com/lookup/doi/10.1136/bcr-2018-227862.

Sawheny E, Jones K, Keddissi J, *et al*. Metastatic Lung Carcinoma Involving the Maxillary Gingiva. **Chest**. 2011;140(4):79A. https://linkinghub.elsevier.com/retrieve/pii/S001236921653832X.

Schaffner DL, Mckinney RV, Braxton M, *et al*. Metastatic Disease of the Jaws Simulating Periodontal Pathologic Conditions. **The Journal of the American Dental Association**. 1982;105(5):809–812. https://linkinghub.elsevier.com/retrieve/pii/S0002817782550155.

Schwab B, Lee WT. Bilateral renal cell carcinoma metastasis in the oral cavity. **American Journal of Otolaryngology**. 2012;33(1):154–155. https://linkinghub.elsevier.com/retrieve/pii/S0196070910002577.

Scolozzi P, Becker M, Lombardi T. Mandibular condylar metastasis mimicking acute internal derangement of the temporomandibular joint. **Journal (Canadian Dental Association)**. 2012;78:77. http://www.ncbi.nlm.nih.gov/pubmed/22889503.

Selden HS, Manhoff DT, Hatges NA, *et al*. Metastatic carcinoma to the mandible that mimicked pulpal/periodontal disease. **Journal of Endodontics**. 1998;24(4):267–270. https://linkinghub.elsevier.com/retrieve/pii/S0099239998801118.

Selvajothi P, Ponniah I, Kannan SKLP. Uterine cervical adenocarcinoma metastasis to oral cavity – A case report. **Journal of Oral and Maxillofacial Surgery, Medicine, and Pathology**. 2018;31(2):142–147. https://linkinghub.elsevier.com/retrieve/pii/S2212555818301959.

Selvi F, Faquin WC, Michaelson MD, *et al*. Three Synchronous Atypical Metastases of Clear Cell Renal Carcinoma to the Maxillary Gingiva, Scalp and the Distal Phalanx of the Fifth Digit: A Case Report. **Journal of Oral and Maxillofacial Surgery**. 2016;74(6):1286.e1-1286.e9. https://linkinghub.elsevier.com/retrieve/pii/S0278239116001464.

Shabestari SB, Shirinbak I, Agha-Hosseini F. Maxillary Metastasis of a Medullary Thyroid Carcinoma in a 21-year-old Woman 7 Years After Thyroidectomy. **Journal of Oral and Maxillofacial Surgery**. 2012;70(6):1495–1499. https://linkinghub.elsevier.com/retrieve/pii/S0278239111006823.

Shah MY, Mehta AR. Metastasis from breast cancer presenting as an epulis in the upper gingiva. **Journal of Oral and Maxillofacial Pathology**. 2009;13(1):38. http://www.jomfp.in/text.asp?2009/13/1/38/48756.

Shah SJ, Mishra B, JadwanI S. Metastasis in the mandible involving gingiva: An intriguing case with a perplexing pathology. **Journal of Oral and Maxillofacial Pathology**. 2021;25(1):203. http://www.jomfp.in/text.asp?2021/25/1/203/316042.

Shan S, Liu S, Yang ZY, Wang, TM, Lin ZT, Feng YL, Pakezhati S, Huang, XF, Zhang L, Sun GW. Oral and maxillofacial pain as the first sign of metastasis of an occult primary tumour: a fifteen-year retrospective study. **World Journal Of Clinical Cases**. 2022;10(14):4436-4445. http://dx.doi.org/10.12998/wjcc.v10.i14.4436.

Shirazian SH, Bahrami N. An oral metastatic carcinoma guiding to discovery of a renal carcinoma: A case report. **Journal of Craniomaxillofacial Research**. 2016;3(3):230–334.

Sidhu SS, Parkash H, Chopra P. Renal metastatic carcinoma of the mandible. **Journal of Dentistry**. 1982;10(2):103–106. https://linkinghub.elsevier.com/retrieve/pii/S030057128280002X.

Slee RW, Al-Hilli F, Abdul-Wahab AW. Secondary chordoma of the mandible. **British Journal of Oral and Maxillofacial Surgery**. 1989;27(4):346–349. https://linkinghub.elsevier.com/retrieve/pii/0266435689900508.

Soares AB, Thomaz, LA, Duarte MT, *et al*. Metastatic Adenocarcinoma of the Colon: Early Manifestation in Gingival Tissue. **Head and Neck Pathology**. 2011;5(2):140–143. http://link.springer.com/10.1007/s12105-010-0222-2.

Soares CD, Rocha BA, Paranaiba LMR, *et al*. A challenging diagnosis. **Medicine**. 2018;97(13):e9934. https://journals.lww.com/00005792-201803300-00074.

Sohal KS, Moshy J. Adenocarcinoma of the mandible : Metastasis from the prostate- a case report. **Sky. J. Med. Med. Sci.** 2015;3(5):52–55.

Sokolosky, M, Bouquot JE, Graves RW. Esophageal carcinoma metastatic to the oral cavity. **Journal of Oral and Maxillofacial Surgery**. 1986;44(10):825–827. https://linkinghub.elsevier.com/retrieve/pii/0278239186901643.

Solomon MP, Rosen Y, Gardner B. Metastatic malignancy in the submandibular gland. **Oral Surgery, Oral Medicine, Oral Pathology**. 1975;39(3):469–473. https://linkinghub.elsevier.com/retrieve/pii/0030422075900924.

Stavropoulos MF, Ord RA. Lobular adenocarcinoma of breast metastatic to the mandibular condyle. **Oral Surgery, Oral Medicine, Oral Pathology**. 1993;75(5):575–578. https://linkinghub.elsevier.com/retrieve/pii/003042209390227U.

Stecher JA, Mostofi R, True LD, *et al*. Pancreatic carcinoma metastatic to the mandibular gingiva. **Journal of Oral and Maxillofacial Surgery**. 1985;43(5):385–390. https://linkinghub.elsevier.com/retrieve/pii/0278239185902642.

Sterling JA, Tassman GC, Goldsmith R. Solitary metastatic lesion to the gingivae masquerading as inflammation. **Oral Surgery, Oral Medicine, Oral Pathology**. 1954;7(4):403–405. https://linkinghub.elsevier.com/retrieve/pii/0030422054901486.

Svirsky JA, Epstein RA, Dent CD, *et al*. Small cell carcinoma of the lung metastatic to the wall of a radicular cyst. **Journal of Endodontics**. 1994;20(10):512–514. https://linkinghub.elsevier.com/retrieve/pii/S009923990680049X.

Taicher S, Mazar A, Hirshberg A, *et al*. Metastatic Chondrosarcoma of the Gingiva Mimicking a Reactive Exophytic Lesion: A Case Report. **Journal of Periodontology**. 1991;62(3):223–226. http://doi.wiley.com/10.1902/jop.1991.62.3.223.

Tamgadge S, Pereira T, Kale S, *et al*. Lung metastasis, an incidental finding in maxilla – A case report. **Indian Journal of Pathology and Microbiology**. 2020;63(2):273. http://www.ijpmonline.org/text.asp?2020/63/2/273/264517.

Tanwar A. A Case of Maxillofacial Metastasis of Hepatocellular Carcinoma. **Journal of Medical Science And clinical Research**. 2019;7(6). http://jmscr.igmpublication.org/v7-i6/78 jmscr.pdf.

Tatlidil R, Gözübüyük MM. Mucinous Adenocarcinoma of Lung Presenting as Oral Metastases: A Case Report and Literature Review. **Journal of Endodontics**. 2011;37(1):110–113. https://linkinghub.elsevier.com/retrieve/pii/S0099239910007995.

Terada T. Hepatocellular Carcinoma Metastatic to the Gingiva as a First Manifestation of Hepatocellular Carcinoma. **Journal of Maxillofacial and Oral Surgery**. 2011;10(3):271–274. http://link.springer.com/10.1007/s12663-011-0187-z.

Terakado N, Shintani S, Nakashiro K, *et al*. Malignant pleural mesothelioma metastasis to the mandible. **International Journal of Oral and Maxillofacial Surgery**. 2004;33(8):798–800. https://linkinghub.elsevier.com/retrieve/pii/S0901502703003084.

Thomas ME, Koshi R. Electron microscopy in the diagnosis of malignant fibrous histiocytoma of the lung presenting as metastasis to the maxillary gingiva. **International Journ of Oral and Maxillofacial Surgery**. 2013;42(1):99–101. https://linkinghub.elsevier.com/retrieve/pii/S0901502712004109.

Thorawat A. Secondary Metastasis to the Mandible From Breast Carcinoma –A Rare Case Report. **JOURNAL OF CLINICAL AND DIAGNOSTIC RESEARCH**. 2015. http://jcdr.net/article_fulltext.asp?issn=0973-709x&year=2015&volume=9&issue=7&page=ZD25&issn=0973-709x&id=6224.

Tideman H, Arvier JF, Bosanquet AG, *et al*. Esophageal adenocarcinoma metastatic to the maxilla. **Oral Surgery, Oral Medicine, Oral Pathology**. 1986;62(5):564–568. https://linkinghub.elsevier.com/retrieve/pii/0030422086903221.

Titinchi F, Opperman J, Jones MD. Metastatic amelanotic melanoma to the mandible mimicking benign odontogenic neoplasm. **Oral Oncology**. 2021;116:105141. https://linkinghub.elsevier.com/retrieve/pii/S1368837520305777.

Tomikawa M, Higuchi Y, Saku M, *et al*. Carcinoma of the Colon Metastatic to the Lower Gingiva. **Digestive Surgery**. 2001;18(4):333–335. https://www.karger.com/Article/FullText/50166.

Tran C, Napier S, Marley J. Diagnosis of mandibular metastatic tumour leading to findings of advanced lung carcinoma: A case report. **Oral Surgery**. 2021. https://onlinelibrary.wiley.com/doi/10.1111/ors.12657.

Tucker WM, Newman CW, Holt RT. Metastasis of Bronchogenic Carcinoma to the Maxilla: Report of a Case. **The Journal of the American Dental Association**. 1968;76(5):1047–1049. https://linkinghub.elsevier.com/retrieve/pii/S0002817768650350.

Tzanavari, K, Pettas E, Thermos G, Georgaki M, Piperi E, Nikitakis NG. Base of tongue metastasis of cutaneous malignant melanoma with rhabdoid and neuroendocrine features: report of a rare case and review of the literature. **Head And Neck Pathology**.2022. http://dx.doi.org/10.1007/s12105-022-01437-6>.

Uchiyama Y, Murakami S, Kakimoto N, *et al*. Diagnostic imaging findings for mandibular metastasis from gastric adenocarcinoma. **Oral Surgery, Oral Medicine, Oral Patholog Oral Radiology, and Endodontology**. 2009;107(6):e49–e53. https://linkinghub.elsevier.com/retrieve/pii/S1079210409001498.

Upadhyay AK, Prakash A, Rana F, Jain N. A Rare Case of Chondrosarcoma With Metastasis to the Oral Cavity. **Cureus**. 2021. https://www.cureus.com/articles/59790-a-rare-case-of-chondrosarcoma-with-metastasis-to-the-oral-cavity.

Van Hale HM, Handlers JP, Abrams AM, *et al*. Malignant fibrous histiocytoma, myxoid variant metastatic to the oral cavity. **Oral Surgery, Oral Medicine, Oral Pathology**. 1981;51(2):156–163. https://linkinghub.elsevier.com/retrieve/pii/0030422081900347.

Varadarajan VV, Pace EK, Patel V, *et al*. Follicular thyroid carcinoma metastasis to the facial skeleton: a systematic review. **BMC Cancer**. 2017;17(1):225. http://bmccancer.biomedcentral.com/articles/10.1186/s12885-017-3199-3.

Varghese G, Singh SP, Sreela LS. A rare case of breast carcinoma metastasis to mandible and vertebrae. **National Journal of Maxillofacial Surgery**. 2014;5(2):184. http://www.njms.in/text.asp?2014/5/2/184/154832.

Vasilyeva D, Peters SM, Philipone EM; *et al*. Renal cell carcinoma metastatic to the maxillary gingiva: A case report and review of the literature. **Journal of Oral and Maxillofacial Pathology**. 2018;22(4):102. http://www.jomfp.in/text.asp?2018/22/4/102/224631.

Velasco I, Aguilar L, Pastrian J, *et al*. Gingival Metastasis from a Testicular Choriocarcinoma: An Unusual Case Report and Review of the Literature. **International Journal of Morphology**. 2013;31(1):140–143. http://www.scielo.cl/scielo.php?script=sci_arttext&pid=S0717-95022013000100023&lng=en&nrm=iso&tlng=en.

Vierne C, Hardy H, Guichard B, *et al*. Métastase mandibulaire d'un mélanome cutané ou mélanome achromique primitif métachrone de la cavité orale ? À propos d'un cas et revue de la littérature. **Annales de Chirurgie Plastique Esthétique**. 2014;59(4):276–279. https://linkinghub.elsevier.com/retrieve/pii/S0294126014000053.

Vishveshwaraiah PM, Mukunda A, Laxminarayana KK, Kasim KK. Metastatic follicular thyroid carcinoma to the body of the mandible mimicking an odontogenic tumor. **Journa of Cancer Research and Therapeutics**. 2013;9(2):320. http://www.cancerjournal.net/text.asp?2013/9/2/320/113412.

Viviano M, Donati D, Lorenzini G. Metastatic carcinoma presenting as neuralgia involving the trigeminal nerve. **Journal (Canadian Dental Association)**. 2012;77:32. http://www.ncbi.nlm.nih.gov/pubmed/22507277.

Viviano M, Donati D, Viviano F, *et al*. Manifestazione neoplastiche esofagee secondarie in gengiva aderente. Un caso clinico. **Dental Cadmos**. 2012;80(1):51–56. https://linkinghub.elsevier.com/retrieve/pii/S0011852411004910.

Vrebos JER, Masson JK, Harrison EG. Metastatic carcinoma of the mandible with primary tumor in the lung. **The American Journal of Surgery**. 1961;102(1):52–57. https://linkinghub.elsevier.com/retrieve/pii/0002961061906857.

Wang AR, Paletta F, Banki M. A Unique Presentation of Oral Metastases From Hepatocellular Carcinoma. **Journal of Oral and Maxillofacial Surgery**. 2013;71(7):1298–1302. https://linkinghub.elsevier.com/retrieve/pii/S027823911300027X.

Webster K. Adenocarcinoma metastatic to the mandibular condyle. **Journal of Cranio-Maxillofacial Surgery**. 1988;16:230–232. https://linkinghub.elsevier.com/retrieve/pii/S1010518288800520.

Welch RD, Hirsch SA, Davis RG. Melanoma with metastasis to an apical periodontal cyst. **Oral Surgery, Oral Medicine, Oral Pathology**. 1985;59(2):189–193. https://linkinghub.elsevier.com/retrieve/pii/0030422085900167.

Wertheimer FW; Crayle LJ. Lymphangiosarcoma of the gingiva. **International Journal of Oral Surgery**. 1973;2(4):159–161. https://linkinghub.elsevier.com/retrieve/pii/S030097857380033X.

Win KKS, Yasuoka T, Kamiya H, Jinno T. Breast angiosarcoma metastatic to the maxillary gingiva. **International Journal of Oral and Maxillofacial Surgery**. 1992;21(5):282–283 https://linkinghub.elsevier.com/retrieve/pii/S0901502705807374.

Wolujewicz MA. Condylar metastasis from a carcinoma of the prostate gland. **British Journal of Oral Surgery**. 1980;18(2):175–18. https://linkinghub.elsevier.com/retrieve/pii/0007117X80900384.

Wu, Z, Tang J, Li Y, *et al*. Successful management of rare gingival metastasis from gastric adenocarcinoma: a case report and literature review. **World Journal of Surgical Oncology**. 2017;15(1):141. http://wjso.biomedcentral.com/articles/10.1186/s12957-017-1215-3.

Yacabucci JE, Mainous EG, Kramer HS. Hepatocellular carcinoma, diagnosed following metastasis to the mandible. **Oral Surgery, Oral Medicine, Oral Pathology**. 1972;33(6):888–893. https://linkinghub.elsevier.com/retrieve/pii/0030422072901788.

Yan B, Wu F, Yang N, *et al*. Lung squamous carcinoma involving the lip and cheek. **The Lancet Oncology**. 2018;19(12):e726. https://linkinghub.elsevier.com/retrieve/pii/S1470204518304418.

Yanagisawa S, Miyauchi E, Ichinose M. Numb Chin Syndrome: An Ominous Sign of Lung Cancer. **Journal of Thoracic Oncology**. 2017;12(8):e114–e116. https://linkinghub.elsevier.com/retrieve/pii/S1556086417302186.

Yang J, Mei K, W, C, *et al*. Angiosarcoma of the gingiva: Metastasis from a primary tumor of the scalp. **Indian Journal of Dermatology, Venereology and Leprology**. 2017;83(5):626. https://ijdvl.com/angiosarcoma-of-the-gingiva-metastasis-from-a-primary-tumor-of-the-scalp/.

Yaren A, Değirmencioğlu S, Topsakal Ş, *et al*. Tonsillar metastasis from small cell lung cancer: Rare but occurs. **Turkish Journal of Cancer**. 2009;39(1):28–30.

Yaşar F, Öz G, Dolanmaz D, *et al*. Mandibular metastasis in a patient with pulmonary adenocarcinoma. **Dentomaxillofacial Radiology**. 2006;35(5):383–385. http://www.birpublications.org/doi/10.1259/dmfr/26083958.

Yokoe H, Kasamatsu A, Ogoshi K, *et al*. Mandibular metastasis from thyroid follicular carcinoma: A case report. **Asian Journal of Oral and Maxillofacial Surgery**. 2010;22(4):208–211. https://linkinghub.elsevier.com/retrieve/pii/S0915699210000890.

Yoshiba S, Saotome T, Mikogami T, *et al*. Metastasis of Mammary Gland Malignant Phyllodes Tumor to the Mandibular Region: A Case Report and Review of the Literature. **Journal of Oral and Maxillofacial Surgery**. 2016;75(2):440.e1-440.e9. https://linkinghub.elsevier.com/retrieve/pii/S0278239116308849.

Yoshii T, Muraoka S, Sano N, *et al*. Large Cell Carcinoma of the Lung Metastatic to the Mandibular Gingiva. **Journal of Periodontology**. 2002;73(5):571–574. http://doi.wiley.com/10.1902/jop.2002.73.5.571.

Yoshitomi I, Kawasaki G, Mizuno A, *et al*. Lingual metastasis as an initial presentation of renal cell carcinoma. **Medical Oncology**. 2011;28(4):1389–1394. http://link.springer.com/10.1007/s12032-010-9596-y.

Yu S, Estess A, Harris W, *et al*. A Rare Occurrence of Hepatocellular Carcinoma Metastasis to the Mandible: Report of a Case and Review of the Literature. **Journal of Oral and Maxillofacial Surgery**. 2012;70(5):1219–1223. https://linkinghub.elsevier.com/retrieve/pii/S0278239112001012.

Yu YD, Kim DS, Jung SW, *et al*. Metastatic hepatocellular carcinoma to the parotid gland: Case report and review of the literature. **International Journal of Surgery Case Reports**. 2013;4(1):76–80. https://linkinghub.elsevier.com/retrieve/pii/S2210261212001733.

Zachariades N, Papanicolaou S. Breast cancer metastatic to the mandible. **Journal of Oral and Maxillofacial Surgery**. 1982;40(12):813–818. https://linkinghub.elsevier.com/retrieve/pii/0278239182901811.

Zachariades N, Koumoura F, Vairaktaris E,*et al*. Metastatic tumors to the jaws: A report of seven cases. **Journal of Oral and Maxillofacial Surgery**. 1989;47(9):991–996. https://linkinghub.elsevier.com/retrieve/pii/0278239189903868.

Zaubitzer L, Rotter N, Aderhold C, *et al*. Metastasis of pulmonary adenocarcinoma to the palatine tonsil. **Molecular and Clinical Oncology**. 2019. http://www.spandidos-publications.com/10.3892/mco.2018.1776.

Zhang JZ, Gu M. Malignant Phyllodes Tumor of the Breast Metastatic to the Parotid Gland Diagnosed by Fine Needle Aspiration Biopsy. **Acta Cytologica**. 2003;47(2):253–258. https://www.karger.com/Article/FullText/326512.

Zhang R, Lee CW, Basyuni S, *et al*. Mandibular swelling as the initial presentation for renal cell carcinoma: A case report. **International Journal of Surgery Case Reports**. 2020;70:96–100. https://linkinghub.elsevier.com/retrieve/pii/S2210261220302546.

Zhang S. Isolated Metastasis of the Ascending Ramus of the Mandible of Thyroid Follicular Carcinoma : A Case Report and Literature Review. **Research Square**. 2021;1:1–12.

Zoumpoulakis M, Spanakis M, Kavvalos PE, *et al*. Metastatic lung cancer in oral cavity: A case report and literature review. **Pneumon**. 2020;33(3):139–142.

Supplementary Table 4- Primary site and positive associations

	PRIMARY SITE											
	Breast	**Colum/Rectum**	**Kidney**	**Liver**	**Lung**	**Others**	**Ovarian/Uterus**	**Prostate**	**Stomach**	**Throid**	**Unknown primary site**	***P* Value**
SEX												

Female	44 (93.6%)	9 (42,9%)	19 (44.2%)	5 (14.3%)	21 (28.0%)	23 (42.6%)	17 (100%)	0 (0.0%)	4 (33.3%)	19 (79.2%)	8 (57.1%)	< .001
Male	3 (6.4%)	12 (57.1%)	24 (55.8%)	30 (85.7%)	54 (72.0%)	31 (57.4%)	0 (0.0%)	18 (100%)	8 (66.7%)	5 (20.8%)	6 (42.9%)	
KNOWLEDGE OF CANCER												
Known	42 (89.4%)	11 (64.7%)	17 (43.6%)	18 (51.4%)	20 (29.0%)	35 (67.3%)	7 (43.8%)	13 (72.2%)	7 (58.3%)	6 (25.0%)	0 (0.0%)	< .001
Unknown	5 (10.6%)	6 (35.3%)	22 (56.4%)	17 (48.6%)	49 (71.0%)	17 (32.7%)	9 (56.3%)	5 (27.8%)	5 (41.7%)	18 (75.0%)	14 (100%)	
ORAL LESION LOCATION												
Bone tissue	31 (66.0%)	10 (45.5%)	14 (32.6%)	14 (40.0%)	36 (48.0%)	28 (51.9%)	5 (29.4%)	17 (94.4%)	3 (25.0%)	21 (87.5%)	6 (42.9%)	< .001
Soft tissue	16 (34.0%)	12 (54.5%)	29 (67.4%)	21 (60.0%)	39 (52.0%)	26 (48.1%)	12 (70.6%)	1 (5.6%)	9 (75.0%)	3 (12.5%)	8 (57.1%)	
SOFT TISSUE LOCATION												
Alveolar mucosa	0 (0.0%)	0 (0.0%)	1 (3.3%)	0 (0.0%)	1 (2.4%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	
Cheek	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (2.4%)	0 (0.0%)	0 (0.0%)	1 (100%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	
Gingiva	12 (75.0%)	12 (92.3%)	17 (56.7%)	19 (90.5%)	31 (75.6%)	16 (59.3%)	11 (91.7%)	0 (0.0%)	7 (77.8%)	1 (33.3%)	6 (75.0%)	< .001
Lip	0 (0.0%)	0 (0.0%)	1 (3.3%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	
Oral mucosa	1 (6.3%)	1 (7.7%)	6 (20.0%)	1 (4.8%)	1 (2.4%)	4 (14.8%)	1 (8.3%)	0 (0.0%)	2 (22.2%)	0 (0.0%)	0 (0.0%)	
Palatine tonsils	0 (0.0%)	0 (0.0%)	1 (3.3%)	0 (0.0%)	3 (7.3%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	
Salivary gland	3 (18.8%)	0 (0.0%)	0 (0.0%)	1 (4.8%)	2 (4.9%)	2 (7.4%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	2 (66.7%)	2 (25.0%)	
Tongue	0 (0.0%)	0 (0.0%)	4 (13.3%)	0 (0.0%)	2 (4.9%)	5 (18.5%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	
PAIN												
No	4 (12.5%)	2 (16.7%)	13 (59.1%)	8 (53.3%)	17 (30.4%)	7 (22.6%)	3 (25.0%)	2 (14.3%)	4 (80.0%)	9 (52.9%)	3 (30.0%)	0 .001

Yes	28 (87.5%)	10 (83.3%)	9 (40.9%)	7 (46.7%)	39 (69.6%)	24 (77.4%)	9 (75.0%)	12 (85.7%)	1 (20.0%)	8 (47.1%)	7 (70.0%)	
PROGNOSIS (Death)												
No	18 (50.0%)	3 (21.4%)	13 (44.8%)	6 (35.3%)	9 (18.0%)	3 (7.5%)	4 (26.7%)	4 (36.4%)	2 (20.0%)	11 (68.8%)	3 (30.0%)	< .001
Yes	18 (50.0%)	11 (78.6%)	16 (55.2%)	11 (64.7%)	41 (82.0%)	37 (92.5%)	11 (73.3%)	7 (63.6%)	8 (80.0%)	5 (31.3%)	7 (70.0%)	
HYPOTHESIS OF DIAGNOSIS (Inflammatory soft tissue)												
No	35 (74.5%)	12 (54.5%)	17 (39.5%)	17 (48.6%)	43 (57.3%)	33 (61.1%)	7 (41.2%)	18 (100%)	6 (50.0%)	21 (87.5%)	7 (50.0%)	< .001
Yes	12 (25.5%)	10 (45.5%)	26 (60.5%)	18 (51.4%)	32 (42.7%)	21 (38.9%)	10 (58.8%)	0 (0.0%)	6 (50.0%)	3 (12.5%)	7 (50.0%)	
HYPOTHESIS OF DIAGNOSIS (Inflammatory bone tissue)												
No	17 (36.22%)	14 (63.6%)	38 (88.4%)	26 (74.3%)	41 (54.7%)	34 (63.0%)	13 (76.5%)	6 (33.3%)	6 (50.0%)	17 (70.8%)	10 (71.4%)	< .001
Yes	30 (63.8%)	8 (36.4%)	5 (11.6%)	9 (25.7%)	34 (45.3%)	20 (37.0%)	4 (23.5%)	12 (66.7%)	6 (50.0%)	7 (29.2%)	4 (28.6%)	
MULTIPLICITY OF METASTASIS												
Multiple metastases	36 (76.6%)	11 (64.7%)	30 (76.9%)	15 (42.9%)	43 (62.3%)	38 (73.1%)	13 (81.3%)	10 (55.6%)	9 (75.0%)	8 (33.3%)	7 (58.3%)	0.022
OMF region without confirmation	4 (8.5%)	4 (23.5%)	4 (10.3%)	13 (37.1%)	12 (17.4%)	9 (17.3%)	2 (12.5%)	4 (22.2%)	3 (25.0%)	10 (41.7%)	3 (25.0%)	
Only OMF region	7 (14.9%)	2 (11.8%)	5 (12.8%)	7 (20.0%)	14 (20.3%)	5 (9.6%)	1 (6.3%)	4 (22.2%)	0 (0.0%)	6 (25.0%)	2 (16.7%)	
AGE												
1st decade	0 (0.0%)	0 (0.0%)	1 (2.3%)	0 (0.0%)	0 (0.0%)	2 (3.7%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	< .001

	LESION LOCATION										
2nd decade	0 (0.0%)	0 (0.0%)	2 (4.7%)	0 (0.0%)	0 (0.0%)	2 (3.7%)	2 (11.8%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
3rd decade	1 (2.1%)	0 (0.0%)	1 (2.3%)	0 (0.0%)	0 (0.0%)	8 (14.8%)	3 (17.6%)	0 (0.0%)	0 (0.0%)	1 (4.2%)	1 (7.1%)
4th decade	3 (6.4%)	0 (0.0%)	1 (2.3%)	1 (2.9%)	3 (4.0%)	2 (3.7%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	2 (8.3%)	0 (0.0%)
5th decade	11 (23.4%)	2 (9.1%)	2 (4.7%)	1 (2.9%)	9 (12.0%)	10 (18.5%)	2 (11.8%)	0 (0.0%)	3 (25.0%)	1 (4.2%)	2 (14.3%)
6th decade	20 (42.6%)	4 (18.2%)	14 (32.6%)	16 (45.7%)	31 (41.3%)	17 (31.5%)	4 (23.5%)	3 (16.7%)	4 (33.3%)	10 (41.7%)	4 (28.6%)
7th decade	7 (14.9%)	8 (36.4%)	11 (25.6%)	10 (28.6%)	19 (25.3%)	11 (20.4%)	5 (29.4%)	7 (38.9%)	2 (16.7%)	6 (25.0%)	5 (35.7%)
8th decade	5 (10.6%)	4 (18.2%)	9 (20,9%)	5 (14.3%)	10 (13.3%)	0 (0.0%)	1 (5.9%)	7 (38.9%)	3 (25.0%)	3 (12.5%)	1 (7.1%)
9th decade	0 (0.0%)	4 (18.2%)	2 (4.7%)	2 (5.7%)	3 (4.0%)	2 (3.7%)	0 (0.0%)	1 (5.6%)	0 (0.0%)	1 (4.2%)	1 (7.1%)

Others: Adrenal gland (1); Arm (1); Bile duct (1); Bone marrow (1); Calf (2); Central nervous system (1); Esophagus (6); Femur (1); Heart (1); Leg (2); Omentum (1); Pancr
(8); Penis (1); Pleura (3); Sacro (1); Scalp (1); Skin (11); Testicle (3); Thigh (2); Tibia (1); Urachus (1); Vulva (1).

Supplementary Table 5- Lesion location and positive associations

	Bone tissue	Soft tissue	*P* Value
PAIN			
No	23 (16.9%)	46 (52.9%)	< .001
Yes	113 (83.1%)	41 (47.1%)	
BLEEDING			
No	164 (92.1%)	114 (72.1%)	< .001
Yes	14 (7.9%)	44 (27.9%)	
CLINICAL APPEARANCE			
Lesion	11 (6.2%)	34 (21.5%)	
Mass	39 (21.9%)	77 (48.7%)	
Necrotic bone	3 (1.7%)	0 (0.0%)	
Nodule	6 (3.4%)	23 (14.6%)	< .001
Non-healing extraction socket	4 (2.2%)	0 (0.0%)	
Swelling	88 (49.4%)	22 (13.9%)	
Symptoms only	27 (15.2%)	0 (0.0%)	
Ulcer	0 (0.0%)	2 (1.3%)	
EXTRACTION			
No	115 (64.6%)	130 (82.2%)	0.003
Yes	63 (35.4%)	28 (17.8%)	

Supplementary Table 6- Summary of risk of bias, assessed by Joanna Briggs Institute Critical Appraisal Checklist for Case Report - author's judgment for ea included study

Author(s) and year	Were the patient's demographic characteristics clearly described?	Was the patient's history clearly described and presented as a timeline?	Was the current clinical condition of the patient on presentation clearly described?	Were diagnostic tests or assessment methods and the results clearly described?	Was the intervention(s) or treatment procedure(s) clearly described?	Was the post-intervention clinical condition clearly described?	Does the case rep provide takea lessons?
Abbaszadeh-Bidokhty et al., 2014	Unclear	Yes	Yes	Yes	Yes	Yes	Yes
Adams, 2016	Unclear	Yes	Yes	Yes	No	No	No
Agarwal and Gupta, 2015	Unclear	Yes	Yes	Yes	Yes	Unclear	Yes
Agerberg and Soderstrom, 1974	Unclear	Yes	Yes	Yes	Yes	Yes	No
Agrawal et al., 2014	Unclear	Yes	Yes	Yes	No	No	Yes
Aguirre et al., 1996	Yes	Unclear	Yes	Yes	Yes	No	No
Ahuja et al., 2021	Yes	Yes	Yes	Yes	No	Unclear	Yes
Aisenberg and Inman, 1956	Yes	No	Unclear	Yes	No	Yes	Yes
Akheel et al., 2013	Unclear	Yes	Yes	Yes	Unclear	No	Yes
Akhtar et al., 1996	Unclear	Yes	Yes	Yes	No	Yes	Yes
Aksoy et al., 2014	Unclear	Yes	Yes	Yes	Yes	Yes	Yes
Albers, 1970	Yes	Yes	Yes	Yes	Yes	Yes	No
Ali and Mohamed, 2016	Unclear	Yes	Yes	Yes	Yes	Yes	Yes
Almazyad et al., 2019	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Altintas et al., 1995	Unclear	Yes	Unclear	Yes	Yes	Yes	No
Ambroggi et al., 2014	Yes	Yes	Yes	Yes	Yes	No	No
Amin et al., 2011	Unclear	Yes	Yes	Yes	Yes	No	Yes
Amro et al., 2014	Unclear	Yes	Unclear	Yes	Unclear	Unclear	No
Anil et al., 1999	Unclear	Yes	Yes	Yes	No	No	No
Araki et al.,2008	Unclear	Unclear	Yes	Yes	Unclear	Unclear	Yes
Arroyo et al., 2013	Yes	Yes	Yes	Yes	Yes	Unclear	Yes
Ashar et al., 1997	Yes	Unclear	Unclear	Yes	Yes	Yes	Yes
Aswath et al., 2017	Unclear	Yes	Yes	Yes	Yes	Unclear	Yes
Aydin et al., 2018	Unclear	Yes	Yes	Yes	Yes	Yes	Yes
Ayranci et al., 2019	Unclear	Yes	Unclear	Yes	Unclear	Unclear	Yes

Baber et al., 2008	Yes	Yes	Yes	Yes	Yes	Unclear	Yes
Baez and Collazo, 2022	Yes	Yes	Yes	Yes	Unclear	Yes	Yes
Bakeen et al., 1976	Unclear	No	Yes	Yes	Yes	Unclear	No
Baldi et al., 2017	Unclear	Yes	Yes	Yes	No	No	Yes
Barr et al., 1980	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bastian et al., 2001	Unclear	Yes	Yes	Yes	No	Yes	No
Beena et al., 2011	Unclear	Yes	Yes	Yes	Unclear	Yes	Yes
Bhadage et al., 2012	Unclear	Yes	Yes	Yes	Unclear	No	Yes
Bisht et al., 2017	Unclear	Yes	Yes	Yes	Yes	Unclear	Yes
Bluestone L.I., 1953	Yes	Yes	Yes	Yes	Yes	Yes	No
Boniello et al., 2008	Unclear	Unclear	Unclear	Yes	Yes	Yes	Yes
Branch and Norton, 1928	Unclear	Yes	Yes	Yes	No	No	No
Brook and Martin, 1980	Unclear	Yes	Yes	Yes	Yes	Yes	Yes
Brown and O'Keefe, 1928	Unclear	Unclear	Yes	Yes	Yes	Yes	Yes
Buchner and Begleiter, 1980	Yes	Yes	Yes	Yes	Yes	Unclear	Yes
Butler, 1975	Unclear	Yes	Yes	Yes	Yes	Yes	No
Butt et al., 2016	Unclear	Yes	Yes	Yes	Yes	No	Yes
Carvalho et al., 2012	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cash et al., 1961	Unclear	Yes	Yes	Yes	Yes	Unclear	Yes
Cassoni et al., 2014	Unclear	Yes	Yes	Yes	Yes	Yes	Yes
Cataldo et al., 1965	Yes	Yes	Yes	Yes	Yes	Unclear	No
Chatterjee et al., 2006	Yes	Yes	Yes	Yes	Yes	No	Yes
Chebil et al., 2020	Yes	Yes	Yes	Yes	No	No	Yes
Chiarelli et al., 2012	Unclear	Yes	Yes	Yes	Yes	Yes	Yes
Coad et al., 2013	Unclear	Yes	Yes	Yes	Yes	Yes	Yes
Colombo et al., 2005	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Corsi et al., 2017	Unclear	Yes	Yes	Yes	Unclear	Yes	Yes
Court et al., 2007	Unclear	Yes	Yes	Yes	Yes	No	Yes
Curi et al., 2017	Unclear	Yes	Yes	Yes	Yes	No	Yes
Curien et al., 2007	Unclear	Yes	Yes	Yes	Yes	No	Yes
Curtin and Radden, 1985	Unclear	Yes	Yes	Yes	Yes	Yes	No
Dashow et al., 2011	Unclear	Yes	Yes	Yes	Yes	Yes	Yes

Deeming et al., 2003	Unclear	Yes	Yes	Yes	Yes	Yes	Yes
Delfino et al., 1982	Yes	Yes	Yes	Yes	No	Unclear	Yes
Derakhshan et al., 2018	Unclear	Yes	Yes	Yes	Yes	Yes	Yes
Dhawad and Nimonkar, 2011	Unclear	Yes	Yes	Yes	Yes	Yes	Yes
Dhupar et al., 2014	Unclear	Yes	Yes	Yes	Yes	No	Yes
Dib et al., 2007	Unclear	Yes	Yes	Yes	Yes	Yes	Yes
Dikhaye et al., 2017	Unclear	Yes	Yes	Yes	Yes	No	Yes
Doykos, 1969	Unclear	Yes	Yes	Yes	Yes	Unclear	No
Eichhorn et al., 2010	Yes	Yes	Yes	Yes	Yes	No	Yes
Eisenberg et al., 2007	Unclear	Yes	Yes	Yes	Yes	Yes	Yes
El Dibany et al., 1984	Unclear	Yes	Yes	Yes	No	No	Yes
Elkhoury et al., 2004	Unclear	Unclear	Yes	Unclear	Yes	Unclear	Yes
Elledge et al., 2014	Unclear	Yes	Yes	Yes	Yes	Yes	Yes
Ellis et al., 1977	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Elo et al., 2016	Unclear	Yes	Yes	Yes	Yes	Yes	Yes
Elsherif et al., 2021	Yes	Yes	Yes	Yes	Yes	Yes	No
Enokiya et al., 2008	Yes	Yes	Unclear	Yes	Yes	Yes	No
Erickson and Hamao-Sakamoto, 2014	Yes	Yes	Yes	Yes	Yes	No	Yes
Erkilic et al., 2017	Unclear	Unclear	Unclear	Yes	Unclear	No	Yes
Eversole et al., 1972	Yes	Yes	Yes	Yes	Yes	No	No
Fantasia and Chen, 1979	Yes	Yes	Yes	Yes	Yes	Yes	No
Farahmandfar et al., 2020	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Fernández-Barriales et al., 2013	Unclear	Yes	Yes	Yes	Yes	Yes	Yes
Flores et al., 2014	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Frei et al., 2010	Unclear	Yes	Yes	Yes	Yes	Yes	Yes
Freudlsperger et al., 2012	Unclear	Yes	Yes	Yes	Yes	No	Yes
Fujihara et al., 2010	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Gallego et al., 2013	Unclear	Yes	Yes	Yes	Yes	Yes	Yes
Gallo et al., 2010	Unclear	Yes	Yes	Yes	Yes	Unclear	Yes
Gandhiraj and Subalakshmi, 2013	Unclear	Unclear	Yes	Yes	Unclear	Unclear	Yes
Gaver et al., 2002	Unclear	Yes	Unclear	Yes	Yes	No	Yes

Georgy et al., 2017	Unclear	Yes	Yes	Yes	Yes	Yes	Yes
Gholami et al., 2020	Unclear	Yes	Yes	Yes	Yes	Yes	Yes
Giugliano et al., 2013	Yes	Yes	Yes	Yes	Unclear	Yes	No
Gobbo et al., 2013	Unclear	Unclear	Unclear	Yes	Yes	Yes	No
González-Perez et al., 2012	Unclear	Yes	Unclear	Yes	Yes	Yes	Yes
Gooran et al., 2017	Unclear	Yes	Unclear	Yes	Unclear	Unclear	No
Gorris et al., 2021	Yes	No	Unclear	Unclear	Yes	Yes	Yes
Goveia and Bahn, 1978	Yes	Yes	Yes	Yes	No	No	Yes
Grace et al., 1984	Unclear	Yes	Yes	Yes	No	Unclear	No
Guarda-Nardini et al., 2017	Unclear	Yes	Yes	Yes	Unclear	Yes	Yes
Guimarães et al., 2003	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Gultekin et al., 2016	Unclear	Yes	Yes	Yes	Yes	Yes	Yes
Gumusay et al., 2016	Unclear	Yes	Yes	Yes	Yes	Yes	No
Gupta et al., 2005	Unclear	Yes	Yes	Yes	Yes	Yes	No
Hasheminasab et al., 2020	Unclear	No	Yes	Yes	Yes	No	Yes
Hashmi et al., 2011	Unclear	Unclear	Yes	Yes	No	No	Yes
Hecker et al., 1985	Yes	Unclear	Unclear	Unclear	Yes	Yes	Yes
Heslop, 1964	Unclear	Yes	Yes	Yes	No	Yes	No
Hisa and Tatemoto, 1998	Unclear	Unclear	Yes	Yes	Yes	Yes	No
Holland D.J., 1953	Unclear	Yes	Yes	Yes	Yes	Yes	Yes
Hope et al., 2017	Unclear	Yes	Yes	Yes	Yes	Yes	Yes
Hussain et al., 2020	Unclear	Yes	Yes	Yes	Yes	Yes	Yes
Hwang et al., 2007	Unclear	Yes	Yes	Yes	No	No	Yes
Ismail et al., 2009	Unclear	Yes	Yes	Yes	No	No	No
Jaffa et al., 2014	Unclear	Yes	Yes	Yes	Yes	Unclear	Yes
Jaguar et al., 2006	Unclear	Yes	Yes	Yes	Yes	Yes	Yes
Jakharia-Shah et al., 2019	Unclear	Yes	Yes	Yes	Yes	Yes	Yes
Jatti et al., 2015	Unclear	Yes	Yes	Yes	Yes	Yes	Yes
Jawanda et al., 2022	Yes	Yes	Yes	Yes	Unclear	Unclear	Yes
Johnson and Read-Fuller, 2020	Yes	Yes	Yes	Yes	Yes	No	Yes
Jones et al., 1990	Unclear	No	Yes	Yes	Yes	Unclear	Yes
Kadokura et al., 1999	Unclear	Yes	Yes	Yes	Yes	Yes	Yes

Kahn and McCord, 1989	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Kalaitsidou et al., 2015	Unclear	Yes	Yes	Yes	Yes	Yes	Yes
Kalburge et al., 2012	Unclear	Yes	Yes	Yes	Yes	Unclear	Yes
Karr et al., 1991	Unclear	Yes	Yes	Yes	Yes	Unclear	Yes
Katsnelson et al., 2010	Yes	Yes	Yes	Yes	Yes	No	Yes
Kaugars and Svirsky, 1981	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Kawakami et al., 1998	Unclear	Yes	Yes	Yes	No	Yes	Yes
Kawamura et al., 2008	Unclear	Yes	Yes	Yes	No	Yes	Yes
Kechagias et al., 2012	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Khalili et al., 2010	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Khodayari and Khojasteh, 2005	Yes	Unclear	Unclear	Unclear	Unclear	Yes	Yes
Kim et al., 2012	Unclear	Yes	Yes	Yes	No	No	Yes
Kim et al., 2013	Unclear	Unclear	Unclear	Yes	Yes	Yes	Yes
Kishore et al, 2018	Unclear	Yes	Yes	Yes	Yes	Unclear	Yes
Kizaekka et al., 2019	Unclear	Yes	Yes	Yes	Yes	Yes	Yes
Kolokythas et al., 2014	Unclear	Yes	Yes	Yes	Yes	Yes	Yes
Kostrubala et al., 1950	Unclear	Unclear	Unclear	Yes	Yes	Yes	No
Kovalski et al., 2020	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Koyama et al., 1997	Yes	Yes	Yes	Yes	Yes	Yes	No
Krishnamurthy et al., 2016	Unclear	Yes	Yes	Yes	Yes	Yes	Yes
Kuçukguven et al., 2019	Unclear	Yes	Yes	Yes	Yes	Yes	Yes
Kumar et al., 2010	Unclear	Yes	Yes	Yes	Yes	Yes	Yes
Kuttan et al., 2006	Yes	Yes	Yes	Unclear	Yes	Yes	Yes
Lansigan et al., 1973	Unclear	Unclear	Yes	Yes	No	No	Yes
Lasiter et al., 2011	Unclear	Yes	Unclear	Yes	Unclear	Unclear	Yes
Lavanya et al., 2014	Unclear	Yes	Unclear	Yes	Unclear	No	Yes
Lawes et al., 2013	Unclear	Yes	Yes	Yes	Yes	No	Yes
Lechien et al., 2015	Unclear	Yes	Yes	Unclear	Yes	No	No
Li et al., 2013	Unclear	Yes	Yes	Yes	Unclear	No	Yes
Lin et al., 2018	Unclear	Unclear	Yes	Yes	Yes	Yes	No
Liuzzi et al., 2009	Unclear	Yes	Unclear	Yes	Yes	Unclear	Yes
Lombardo et al., 2020	Unclear	Yes	Yes	Yes	Yes	Yes	Yes

Loncarevic et al., 2016	Unclear	Yes	Yes	Yes	Yes	Yes	Yes
Maestre-Rodríguez et al., 2009	Unclear	Unclear	Yes	Yes	Yes	Unclear	Yes
Maiorano et al., 2000	Unclear	Unclear	Yes	Yes	Yes	Yes	Yes
Majumdar et al., 2016	Unclear	Yes	Yes	Yes	Unclear	Unclear	Yes
Manjunath et al., 2013	Unclear	Yes	Yes	Yes	No	No	Yes
Mariano et al., 2013	Unclear	Yes	Yes	Yes	Yes	Yes	Yes
Marker and Clausen, 1991	Unclear	Unclear	Yes	Yes	Unclear	Yes	No
Martín-Moro et al., 2005	Unclear	Yes	Unclear	Unclear	Yes	Unclear	No
Masamatti et al., 2013	Unclear	Yes	Yes	Yes	Yes	Yes	Yes
Mason et al., 2005	Unclear	Yes	Unclear	Yes	Yes	Yes	Yes
Mast e Nissenblatt, 1987	Yes	Yes	Yes	Yes	Yes	Yes	No
Matsuda et al., 2017	Unclear	Unclear	Yes	Yes	Unclear	Yes	Yes
Mavili et al., 2010	Unclear	Unclear	Yes	Yes	Unclear	Yes	Yes
McGoldrick et al., 2016	Unclear	Yes	Yes	Yes	Yes	Unclear	Yes
Medina et al., 2001	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Mehra et al., 1998	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Mehta et al., 2012	Unclear	Yes	Yes	Yes	Yes	Yes	Yes
Melgaço-Costa et al., 2020	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Menezes et al., 2008	Unclear	Yes	Yes	Yes	Yes	Yes	Yes
Menezes et al., 2013	Yes	Yes	Yes	Yes	Yes	Unclear	Yes
Miles et al., 2006	Yes	Yes	Yes	Yes	Yes	Unclear	Yes
Milobsky et al., 1975	Yes	Yes	Yes	Yes	Yes	Unclear	Yes
Misir et al., 2013	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Miyake et al., 2015	Unclear	Yes	Yes	Yes	Yes	No	Yes
Moffat, 1976	Unclear	Yes	Yes	Yes	Yes	Unclear	Yes
Moharil et al., 2010	Unclear	Yes	Yes	Yes	Yes	Yes	Yes
Moraes et al., 2017	Unclear	Yes	Yes	Yes	Yes	Yes	Yes
Morita et al., 2006	Unclear	Yes	Yes	Yes	Yes	Yes	Yes
Morris et al., 2001	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Muller et al., 2022	Yes	Yes	Yes	Yes	No	Unclear	Yes
Murray et al., 2011	Unclear	Yes	Yes	Yes	Yes	No	Yes
Murugaraj et al., 2013	Unclear	Yes	Yes	Yes	No	Yes	Yes

Myall et al., 1983	Yes	Yes	Yes	Yes	Yes	Unclear	Yes
Naik et al., 2019	Unclear	No	Yes	Yes	Yes	No	Yes
Ndiaye et al., 2020	Unclear	Unclear	Yes	Yes	Yes	Yes	Yes
Nesbitt et al., 2019	Unclear	Unclear	Yes	Yes	Yes	No	Yes
Newland et al., 1985	Yes	Unclear	Yes	Yes	Yes	Yes	No
Nikitakis et al., 2016	Unclear	Yes	Yes	Yes	Unclear	No	Yes
Nishii et al., 2020	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Noor et al., 2018	Unclear	Yes	Yes	Yes	Yes	Yes	Yes
Nuyen et al., 2016	Unclear	Yes	Yes	Yes	Yes	No	Yes
O'Neil, 1964	Unclear	Yes	Yes	Yes	No	Yes	No
Oliver et al., 2021	Yes	Yes	Yes	Yes	No	No	Yes
Olsen et al., 2019	Yes	Yes	Yes	Yes	Yes	No	Yes
Otto et al., 2010	Unclear	Yes	Yes	Yes	Yes	Yes	Yes
Panossian et al., 2009	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Park et al., 2006	Unclear	Unclear	Yes	Yes	Unclear	Unclear	Yes
Patel et al., 2013	Unclear	Yes	Yes	Yes	Yes	Yes	Yes
Patel et al., 2020	Unclear	Yes	Yes	Yes	Yes	Unclear	Yes
Patricia et al., 2011	Yes	Yes	Yes	Yes	Yes	Yes	No
Patrocinio et al., 2008	Unclear	Unclear	Unclear	Yes	Yes	Yes	Yes
Pelissari et al., 2018	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Perlmutter et al., 1974	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Persad et al., 1991	Unclear	Unclear	Unclear	Yes	Yes	No	No
Pesis et al., 2014	Unclear	Yes	Unclear	Yes	Yes	Yes	Yes
Pfammatter et al., 2012	Unclear	Yes	Yes	Yes	No	Yes	Yes
Piattelli et al., 2000	Unclear	Yes	Yes	Yes	Yes	Yes	No
Pliskin et al., 1976	Yes	Yes	Unclear	Unclear	Yes	Yes	Yes
Poojary et al., 2011	Unclear	Unclear	Yes	Yes	Yes	No	Yes
Poulias et al., 2011	Yes	Yes	Yes	Yes	Yes	Unclear	Yes
Poulopoulos et al., 2001	Unclear	Yes	Yes	Yes	Yes	Yes	Yes
Poulopoulos et al., 2001	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Pozzi et al., 2008	Yes	Yes	Yes	Yes	Unclear	Yes	Yes
Prakash et al., 2012	Unclear	Yes	Yes	Yes	Yes	Yes	Yes

Prasanna et al., 2015	Unclear	Yes	Yes	Yes	Yes	Yes	Yes
Prol et al., 2018	Unclear	Yes	Yes	Yes	Yes	Yes	Yes
Pruckmayer et al., 1996	Yes	Yes	Yes	Yes	No	No	Yes
Pruckmayer et al., 1998	Unclear	Yes	Yes	Yes	Yes	Yes	Yes
Radden and Reade, 1966	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Rajini Kanth et al., 2015	Unclear	Yes	Yes	Yes	Yes	No	No
Ramirez et al., 2003	Unclear	Yes	Yes	Yes	No	Yes	Yes
Razmara et al., 2020	Unclear	Yes	Yes	Yes	Yes	Yes	Yes
Redman et al., 1983	Yes	Yes	Yes	Yes	Yes	Yes	No
Rim et al., 2003	Yes	Yes	Yes	Yes	Yes	No	Yes
Rivera et al., 2010	Unclear	Yes	Yes	Yes	Yes	Yes	No
Rocha et al., 2010	Unclear	Yes	Yes	Yes	Yes	Yes	No
Rubin et al., 1989	Yes	Yes	Yes	Unclear	Yes	Yes	No
Saha et al., 2013	Unclear	Unclear	Yes	Yes	Yes	No	No
Sahoo et al., 2013	Unclear	Unclear	Yes	Yes	Yes	Unclear	Yes
Salman and Darlington et al., 1994	Yes	Yes	Yes	Yes	No	Yes	No
Sánchez et al., 2021	Yes	Yes	Yes	Yes	Unclear	No	Yes
Santamaría et al., 1997	Unclear	Yes	Unclear	Unclear	Yes	Yes	No
Savithri et al., 2018	Unclear	Unclear	Yes	Yes	Yes	No	Yes
Sawheny et al., 2011	Unclear	Yes	Unclear	Yes	Unclear	Yes	Yes
Schwab and Lee, 2012	Yes	Yes	Yes	Yes	Yes	No	Yes
Scolozzi et al., 2012	Unclear	Yes	Yes	Yes	Yes	Yes	Yes
Selden et al., 1998	Unclear	Yes	Yes	Yes	Yes	Yes	Yes
Selvajothi et al., 2018	Unclear	Yes	Yes	Yes	Yes	Yes	Yes
Selvi et al., 2016	Unclear	Yes	Yes	Yes	Yes	Yes	Yes
Shabestari et al., 2012	Unclear	Yes	Yes	Yes	Unclear	Unclear	Yes
Shah and Mehta, 2009	Unclear	Yes	Yes	Yes	No	No	Yes
Shah et al., 2021	Yes	Yes	Yes	Yes	No	No	Yes
Shan et al., 2022	Yes	Yes	Yes	Yes	No	No	Yes
Shirazian and Bahrami, 2016	Unclear	Yes	Yes	Yes	Unclear	Yes	Yes
Sidhu et al., 1982	Unclear	Yes	Yes	Yes	No	No	Yes
Slee et al., 1989	Unclear	Yes	Yes	Yes	Unclear	No	No

Soares et al., 2011	Unclear	Yes	Yes	Yes	No	Yes	Yes
Soares et al., 2018	Unclear	Unclear	Yes	Yes	Unclear	Yes	Yes
Sohal and Moshy, 2015	Unclear	Yes	Yes	Yes	Yes	No	Yes
Sokolosky et al., 1986	Yes	Yes	Unclear	Yes	Yes	Unclear	No
Solomon et al., 1975	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Stavropoulos and Ord, 1993	Yes	Yes	Yes	Yes	Yes	No	Yes
Stecher et al., 1985	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sterling and Goldsmith et al., 1954	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Svirsky et al., 1994	Unclear	Yes	Yes	Yes	No	No	Yes
Taicher et al., 1991	Unclear	Yes	Yes	Yes	Yes	Yes	No
Tamgadge et al., 2020	Unclear	Yes	Yes	Yes	No	No	Yes
Tanwar et al., 2019	Unclear	Yes	Unclear	Yes	Yes	No	Yes
Tatlidil and Gozubuyuk, 2011	Unclear	Yes	Unclear	Yes	Yes	Yes	Yes
Terada et al., 2011	Unclear	Yes	Unclear	Yes	Unclear	Unclear	Yes
Terakado et al., 2004	Unclear	Yes	Yes	Yes	No	No	Yes
Thomas and Koshi, 2013	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Thorawat et al., 2015	Unclear	Yes	Yes	Yes	Yes	Yes	Yes
Tideman et al., 1986	Yes	Unclear	Yes	Yes	Yes	Yes	Yes
Titinchi et al., 2021	Unclear	Yes	Yes	Yes	Yes	Yes	Yes
Tomikawa et al., 2001	Unclear	Yes	Unclear	Yes	Yes	Yes	Yes
Tran et al., 2021	Yes	Yes	Yes	Yes	Unclear	Yes	Yes
Tucker et al., 1968	Yes	Yes	Yes	Yes	No	Yes	Yes
Tzanavaris et al., 2022	Yes	Yes	Yes	Yes	Yes	Unclear	No
Uchiyama et al., 2009	Unclear	Yes	Yes	Yes	Yes	Yes	No
Upadhyay et al., 2021	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Van Hale et al., 1981	Unclear	Yes	Yes	Yes	Yes	Unclear	No
Varadarajan et al., 2017	Unclear	Yes	Unclear	Yes	Yes	Yes	Yes
Varghese et al., 2014	Unclear	Yes	Yes	Yes	No	No	Yes
Vasilyeva et al., 2018	Unclear	Yes	Yes	Yes	Unclear	No	Yes
Velasco et al., 2013	Yes	Yes	Yes	Yes	No	Yes	Yes
Vierne et al., 2014	Unclear	Yes	Yes	Yes	Yes	Yes	Yes
Vishveshwaraiah et al., 2013	Unclear	Unclear	Yes	Yes	Unclear	No	Yes

Viviano et al., 2012	Unclear	Yes	Yes	Yes	Yes	Yes	Yes
Viviano et al., 2012	Yes	Yes	Yes	Yes	Yes	No	Yes
Vrebos et al., 1961	Yes	Yes	Yes	Yes	Yes	No	Yes
Wang et al., 2013	Unclear	Yes	Unclear	Yes	Yes	No	Yes
Webster, 1988	Unclear	Yes	Yes	Yes	Unclear	No	Yes
Welch et al., 1985	Yes	Yes	Yes	Yes	No	Unclear	Yes
Wertheimer and Crayle, 1973	Unclear	Yes	Yes	Yes	No	No	Yes
Win et al., 1992	Unclear	Yes	Yes	Yes	Yes	Yes	Yes
Wolujewicz, 1980	Unclear	Yes	Yes	Yes	Yes	Unclear	No
Wu et al., 2017	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Yacabucci et al., 1972	Yes	Yes	Yes	Yes	No	Yes	Yes
Yan et al., 2018	Unclear	Yes	Yes	Yes	Yes	No	Yes
Yanagisawa et al., 2017	Unclear	Yes	Yes	Yes	Yes	No	Yes
Yang et al., 2017	Yes	Yes	Yes	Yes	Yes	No	Yes
Yaren et al., 2009	Unclear	Yes	Yes	Yes	Yes	Unclear	Yes
Yasar et al., 2006	Unclear	Yes	Yes	Yes	Unclear	No	Yes
Yokoe et al., 2010	Unclear	Unclear	Yes	Yes	Yes	Yes	Yes
Yoshiba et al., 2016	Unclear	Yes	Yes	Yes	Yes	Yes	No
Yoshii et al., 2002	Unclear	Yes	Yes	Yes	Yes	Yes	Yes
Yoshitomi et al., 2011	Unclear	Yes	Yes	Yes	Yes	Yes	No
Yu et al., 2012	Unclear	Yes	Yes	Yes	Yes	Yes	Yes
Yu et al., 2013	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Zachariades and Papanicolaou, 1982	Yes	Yes	Yes	Yes	Yes	Unclear	Yes
Zachariades et al., 1989	Unclear	Yes	Yes	Yes	Yes	Unclear	No
Zaubitzer et al., 2019	Unclear	Yes	Unclear	Yes	Yes	Unclear	Yes
Zhang and Gu, 2003	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Zhang et al., 2020	Unclear	Yes	Yes	Yes	Yes	Yes	Yes
Zhang et al., 2021	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Zoumpoulakis et al., 2020	Yes	Yes	Yes	Yes	Yes	No	Yes

Supplementary Table 7-Summary of risk of bias, assessed by Joanna Briggs Institute Critical Appraisal Checklist for Case Series - author's judgment for ea included study

Author(s) and year	Were there clear criteria for inclusion in the case series?	Was the condition measured in a standard, reliable way for all participants included in the case series?	Were valid methods used for identification of the condition for all participants included in the case series?	Did the case series have consecutive inclusion of participants?	Did the case series have complete inclusion of participants?	Was there clear reporting of the demographics of the participants in the study?	Was there clear reporting of clinical information of the participants?	Were the outcomes or follow up results of cases clearly reported?	Was there clear reporting of the presenting site(s)/clinic(s) demographic information?	Was s an appr
Bedogni et al., 2007	No	Yes	No	No	No	Unclear	Yes	Yes	Yes	
Carroll et al., 1993	No	No	Yes	No	No	Yes	Yes	Unclear	No	
Heera et al., 2018	No	Yes	Yes	No	No	Unclear	Yes	Unclear	Yes	
Kruse et al., 2010	Unclear	Yes	Yes	Yes	Unclear	Unclear	Yes	Yes	Yes	
Markman et al., 2018	No	No	No	No	No	Unclear	Yes	Yes	No	
Rusthoven et al., 1984	No	No	No	No	No	Yes	Yes	Yes	No	
Salama et al., 2009	Yes	Yes	No	No	No	Yes	Yes	Unclear	No	
Schaffner et al., 1982	No	Yes	No	No	No	Unclear	Yes	Unclear	Yes	

Supplementary Table 8-Summary of risk of bias, assessed by Joanna Briggs Institute Critical Appraisal Checklist for Cross-Sectional Studies - author's judgme for each included study

Author(s) and year	Were the criteria for inclusion in the sample clearly defined?	Were the study subjects and the setting described in detail?	Was the exposure measured in a valid and reliable way?	Were objective, standard criteria used for measurement of the condition?	Were the outcomes measured in a valid and reliable way?	Was appropr statistical ana used?
Cai et al., 2016	Yes	Yes	Yes	Yes	Yes	No
Chen et al., 2020	Unclear	Yes	Yes	Yes	Yes	No
Fukuda et al., 2002	Yes	Yes	Yes	Unclear	Yes	No

The PRISMA Statement

Section and Topic	Item #	Checklist item	Location where item is reported

Section and Topic	Item #	Checklist item	Location where item is reported
TITLE			
Title	1	Identify the report as a systematic review.	1
ABSTRACT			
Abstract	2	See the PRISMA 2020 for Abstracts checklist.	2
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of existing knowledge.	3
Objectives	4	Provide an explicit statement of the objective(s) or question(s) the review addresses.	3
METHODS			
Eligibility criteria	5	Specify the inclusion and exclusion criteria for the review and how studies were grouped for the syntheses.	4
Information sources	6	Specify all databases, registers, websites, organisations, reference lists and other sources searched or consulted to identify studies. Specify the date when each source was last searched or consulted.	4
Search strategy	7	Present the full search strategies for all databases, registers and websites, including any filters and limits used.	4
Selection process	8	Specify the methods used to decide whether a study met the inclusion criteria of the review, including how many reviewers screened each record and each report retrieved, whether they worked independently, and if applicable, details of automation tools used in the process.	4
Data collection process	9	Specify the methods used to collect data from reports, including how many reviewers collected data from each report, whether they worked independently, any processes for obtaining or confirming data from study investigators, and if applicable, details of automation tools used in the process.	4-5
Data items	10a	List and define all outcomes for which data were sought. Specify whether all results that were compatible with each outcome domain in each study were sought (e.g. for all measures, time points, analyses), and if not, the methods used to decide which results to collect.	5
	10b	List and define all other variables for which data were sought (e.g. participant and intervention characteristics, funding sources). Describe any assumptions made about any missing or unclear information.	5
Study risk of bias assessment	11	Specify the methods used to assess risk of bias in the included studies, including details of the tool(s) used, how many reviewers assessed each study and whether they worked independently, and if applicable, details of automation tools used in the process.	5
Effect measures	12	Specify for each outcome the effect measure(s) (e.g. risk ratio, mean difference) used in the synthesis or presentation of results.	-
Synthesis methods	13a	Describe the processes used to decide which studies were eligible for each synthesis (e.g. tabulating the study intervention characteristics and comparing against the planned groups for each synthesis (item #5)).	-
	13b	Describe any methods required to prepare the data for presentation or synthesis, such as handling of missing summary statistics, or data conversions.	5
	13c	Describe any methods used to tabulate or visually display results of individual studies and syntheses.	5
	13d	Describe any methods used to synthesize results and provide a rationale for the choice(s). If meta-analysis was performed, describe the model(s), method(s) to identify the presence and extent of statistical heterogeneity, and software package(s) used.	5

Section and Topic	Item #	Checklist item	Location where item is reported
	13e	Describe any methods used to explore possible causes of heterogeneity among study results (e.g. subgroup analysis, meta-regression).	
	13f	Describe any sensitivity analyses conducted to assess robustness of the synthesized results.	
Reporting bias assessment	14	Describe any methods used to assess risk of bias due to missing results in a synthesis (arising from reporting biases).	
Certainty assessment	15	Describe any methods used to assess certainty (or confidence) in the body of evidence for an outcome.	
RESULTS			
Study selection	16a	Describe the results of the search and selection process, from the number of records identified in the search to the number of studies included in the review, ideally using a flow diagram.	6
	16b	Cite studies that might appear to meet the inclusion criteria, but which were excluded, and explain why they were excluded.	6
Study characteristics	17	Cite each included study and present its characteristics.	6
Risk of bias in studies	18	Present assessments of risk of bias for each included study.	9
Results of individual studies	19	For all outcomes, present, for each study: (a) summary statistics for each group (where appropriate) and (b) an effect estimate and its precision (e.g. confidence/credible interval), ideally using structured tables or plots.	
Results of syntheses	20a	For each synthesis, briefly summarise the characteristics and risk of bias among contributing studies.	9
	20b	Present results of all statistical syntheses conducted. If meta-analysis was done, present for each the summary estimate and its precision (e.g. confidence/credible interval) and measures of statistical heterogeneity. If comparing groups, describe the direction of the effect.	6-9
	20c	Present results of all investigations of possible causes of heterogeneity among study results.	
	20d	Present results of all sensitivity analyses conducted to assess the robustness of the synthesized results.	
Reporting biases	21	Present assessments of risk of bias due to missing results (arising from reporting biases) for each synthesis assessed.	
Certainty of evidence	22	Present assessments of certainty (or confidence) in the body of evidence for each outcome assessed.	
DISCUSSION			
Discussion	23a	Provide a general interpretation of the results in the context of other evidence.	9-14
	23b	Discuss any limitations of the evidence included in the review.	13-14
	23c	Discuss any limitations of the review processes used.	13-14
	23d	Discuss implications of the results for practice, policy, and future research.	13-14
OTHER INFORMATION			
Registration and protocol	24a	Provide registration information for the review, including register name and registration number, or state that the review was not registered.	14
	24b	Indicate where the review protocol can be accessed, or state that a protocol was not prepared.	14

Section and Topic	Item #	Checklist item	Location where item is reported
	24c	Describe and explain any amendments to information provided at registration or in the protocol.	
Support	25	Describe sources of financial or non-financial support for the review, and the role of the funders or sponsors in the review.	
Competing interests	26	Declare any competing interests of review authors.	
Availability of data, code and other materials	27	Report which of the following are publicly available and where they can be found: template data collection forms; data extracted from included studies; data used for all analyses; analytic code; any other materials used in the review.	

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