Masseter Muscle Inserted in the Temporomandibular Joint Discocapsular Complex, a Case Report

Inserción del Músculo Masétero en el Complejo Discocapsular de la Articulación Temporomandibular, Reporte de un Caso

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ABSTRACT: The presence of muscle insertions in the temporomandibular joint disc have a great importance in the dynamic joint. This article presents a case of bilateral insertion of deep fascicle of the masseter muscle in the temporomandibular joint capsule and disc in a spain corpse, describes the microscopic and macroscopic appearance of variation and a brief review of the functional implications.

KEY WORDS: temporomandibular joint, muscle-disc apparatus, masseter muscle.

INTRODUCTION

Normal functioning of the temporomandibular joint depends of its morphological components harmony (articular surfaces, disc, ligaments, muscles). Several authors have indicated the functional importance of muscle-disc apparatus (Bade et al., 1994; Bade, 1999; Alomar et al., 2007), establishing an intimate relationship that exists between the pterygoideus lateralis muscle and disc (Le Toux al., 1989, Murray et al., 2007), involved in the pathogenesis of temporomandibular disorders (Lafreniere et al., 1997). In addition, Dauber (1987) indicated the role of pterygoideus lateralis muscle in the muscle-disc apparatus, also involved the deep fascicle of the masseter muscle and the temporalis muscle, playing a role in the disk stabilizing during the function.

Histological and anatomical studies have described the insertion of the masseter muscle in the temporomandibular joint capsule and articular disc (Couly et al., 1975; Griffin et al., 1975; Schmolke, 1994; Bravetti et al., 2004)

Due to the importance of understanding the muscular relations with the components of temporomandibular joint for the interpretation of the temporomandibular disorders (Kieser & Herbison, 2000), in this work is analyzed and described macroscopic and microscopically a case of masseters muscle insertion on the disc and capsule of the temporomandibular joint.

RELATE OF CASE

In this study was used an adult male corpse, 55 year old, Spanish nationality, donated to the Universidad de Talca from the Universidad Cardenal Herrera de Valencia, Spain. The corpse was preserved through intravascular injection of fixative conservative based on formaldehyde and its arterial territory replete with red coloured latex.

Macroscopy. Was conducted a dissection of the region by planes in the left and right temporomasseteric regions, for it was made a pre-auricular skin incisions elongated to the basilar edge of mandible, removed the surface flat the masseteric fascia was is desinserted.
from the zygomatic arch. The masseters fascicles were dissected, the superficial fascicle has complied with the classical provision with fibers oriented obliquely to its insertion into the zygomatic bone. In the deep fascicle of the masseter muscle their fibers disposed in vertical orientation, originating mainly from the middle third of the mandibular ramus inserting in the lower margin and the lateral face of zygomatic arch, fixing firmly from anterior zygomatic tubercle and extends posterorly to the posterior zygomatic tubercle of the temporal bone. From the posterior third insertion, the deep masseter muscle creates a flat triangular band whose fibers diverge toward superior and posterior, that perforated the posterolateral segment of the temporomandibular joint capsule, inserted in it and ending in the posterolateral segment of joint disc (Fig. 1).

Histology. Once the dissection of the joints, was conducted in block section of the temporomandibular joint region, 0.5cm exceeding the limits defined by the joint capsule, obtained the pieces were put in buffered formalin for 72 hours and descalcificated with Nitric acid 5% for 7 days. Then the pieces were included in paraffin and were seriated sections microtomed at a thickness of 20 mm, stained with hematoxylin eosin, each slides was observed using an optical microscope ZEISS, model 0.25 Standard (Germany). In Figure 2, a human ATM coronal cut can be seen articular disk (D), capsule (CA) whit disgregated fibrous tissue and striated muscle fiber (MF) projecting obliquely towards the lower end of the joint capsule. Details of muscle fibers can be seen in Fig. 3.

DISCUSSION

The role of the muscles in the movement that makes the articular disc in mandibular movement has been discussed by many authors (Iwasaki et al., 2003, Dargaud & Vinkka-Puhakka, 2004).
In this paper presents a corpse with bilateral of deep fascicle of masseter muscle in the temporomandibular joint capsule and articular disc, this case can be regarded as an anatomical variation, as the classical authors do not consider insertions of masseter at this level (Testut, 1981; Rouvière & Delmas, 1999; Figún & Garino, 2001; Latarjet & Ruiz-Liard, 2004), but this disposition has been reported by some authors (Coulé et al.; Bravetti et al.), which have indicated that the activity of the muscles inserts in the lateral side of the disc establishes a balance with the forces that carried out the pterygoideus lateralis muscle.

For Itoh & Hayashi (2000) coordinated activity of masseters and anterior temporal muscle can minimize tensions in the middle joint disc, while for Baba et al., (2005) altered masseter activity during sleep can be related with the emergence of signs and symptoms of temporomandibular disorders. Variations as presented in this report justify a proper clinical analysis of muscle-disc apparatus of the temporomandibular joint.

RESUMEN: La presencia de inserciones musculares en el disco de la articulación temporomandibular tiene gran importancia en la dinámica de la articulación. En este artículo se presenta un caso de la inserción bilateral del fascículo profundo del músculo masétero en la cápsula y disco de la articulación temporomandibular en un cadáver español, se describe el aspecto macroscópico y microscópico de la variación y se realiza una breve revisión de las implicancias funcionales.

PALABRAS CLAVE: Articulación Temporomandibular, Aparato Disco Muscular, Músculo Masetero.

REFERENCES


