

Myositis Ossificans of the temporalis muscle. Case report

Damián Manzano ¹, Angel Silván ², Javier Saez ³, José Carlos Moreno ⁴

(1) Resident. Department of Oral Maxillofacial Surgery

(2) Attending Surgeon. Department of Oral Maxillofacial Surgery

(3) Attending Pathologist. Department of Histopathology

(4) Attending Surgeon and Chief. Department of Oral Maxillofacial Surgery. Hospital Los Naranjos. Badajoz. Spain

Correspondence:

Dr. José C. Moreno

Instituto Neofacial.

Paseo Condes de Barcelona, 19

06010 - Badajoz. Spain.

E-mail: josecarlosmoreno@neofacial.com

Received: 2-05-2006

Accepted: 30-03-2007

Manzano D, Silván A, Saez J, Moreno JC. Myositis ossificans of the temporalis muscle. Case report. *Med Oral Patol Oral Cir Bucal* 2007;12: E277-80.

© Medicina Oral S. L. C.I.F. B 96689336 - ISSN 1698-6946

Indexed in:

-Index Medicus / MEDLINE / PubMed
-EMBASE, Excerpta Medica
-SCOPUS
-Índice Médico Español
-IBECS

ABSTRACT

The authors report an unusual case of myositis ossificans in the temporal muscle manifesting as grave opening limitation of the mouth and a hard firm mass in the right temporal fossa. CT scan examination revealed a bone density mass located in the region of the right temporal fossa, that fused the right temporal bone with the right coronoid process and a joint-like image in the middle portion of this mass. Traumatic myositis ossificans is a pseudotumor-like benign disease most frequently found in extremities of young population. Cases in the craneofacial skeleton are rare. The masseter and sternocleidomastoid muscles are most commonly affected in this location. The clinicopathological features of scalp myositis ossificans may mimic other soft tissue tumors, requiring care for the differential diagnosis. Histologically, osteoblastic activity is sometimes observed, similar to an osteosarcoma. Then differential diagnosis between both entities must be established.

Key words: *Myositis ossificans, temporalis muscle, acute trauma.*

RESUMEN

Los autores presentan un caso poco frecuente de miositis osificante del músculo temporal en un paciente varón de 51 años que se manifiesta con limitación de la apertura oral, con masa firme y dura en la fosa temporal derecha. La tomografía axial computerizada (TC) reveló una masa de densidad ósea localizada en la región temporal derecha, que unía el hueso temporal derecho con la apófisis coronoides y una imagen de pseudo-articulación en su porción media. La miositis osificante traumática es un tumor benigno que se localiza frecuentemente en las extremidades de los adolescentes. Los casos en el esqueleto craneofacial son raros. En esta localización, los músculos masetero y esternocleidomastoideo son los más frecuentemente afectados. Las características clínico patológicas de la miositis osificante pueden imitar otros tumores de los tejidos blandos, por lo que se requiere un cuidadoso diagnóstico diferencial. Histológicamente, la actividad osteoblástica asemeja a veces a un osteosarcoma, que requiere establecer el diagnóstico diferencial entre ambas entidades. En nuestro caso, el tratamiento quirúrgico, mediante abordaje combinado retromolar y hemicoronal, fue el elegido.

Palabras clave: *Miositis osificante, músculo temporal, traumatismo agudo.*

INTRODUCTION

Traumatic myositis ossificans (MOT) is an unusual benign disease most frequently found in extremities of young population, in the third decade of life. MOT is an infrequent disease in the maxillofacial region. Only a few cases are located in the temporal muscle(1-3) with just 6 cases described. The acute traumatic antecedent appears in all of them. Histologically, a differential diagnosis between MOT, benign soft tissue tumours and osteosarcoma must be established. A case of a long evolution myositis ossificans of the temporalis muscle with an important degree of mouth opening limitation is described. A slight mandibular mobility was conserved due to a joint-like adaptation of the bony mass between the mandibular coronoid process and temporal bone.

CASE REPORT

A 51-years-old man, with a severe mobility of his teeth and grave opening limitation of his mouth, came to our Department. He suffered from a severe trauma 25 years ago, that required a prolonged hospital stay. He has had a progressive diminution of the mouth opening since the moment of the accident. Physical examination revealed a limited mouth opening with a 13 mm interincisal distance and right deviation. A hard firm mass was touched in his right temporal fossa. An ortopantomography (OPG) study showed a bone density opacity in the region of the right coronoid process, with an irregular hypodense horizontal line in the central region of the bony block (Fig 1).

CT scan examination revealed a bone density mass located in the region of the right temporal fossa, that fused the right temporal bone with the right coronoid process (Fig 2). A joint-like image in the middle portion of this mass was present. The right mandibular condyle appeared slightly downwards displaced. The patient underwent surgical intervention under general anesthesia with fiberoptic naso-tracheal intubation. Through both hemicoronal and retromolar approaches, an intra-extraoral resection of the bony block was performed. It was extracted in two separated fragments that were related one to each other through an irregular joint-like fibrocartilaginous surface. In the same operative time a comprehensive extraction of all mobile or destroyed teeth was performed. Early in the postoperative period the patient started a forced mechanical therapy regimen with a TherabiteR device (TherabiteR Corporation, PA, USA). When the mouth opening was enough for dental impressions a temporary denture was made. After a 12 months follow up, the patient presents a normal mouth opening (38 mm prosthetic interincisal distance) without deviation. He is planned for osseointegrated implants placement and fixed prosthesis rehabilitation. Pathologic examination of the surgical specimen showed a central nucleus of a loose connective tissue with abundant extended spindle-shaped and stellate fibroblasts with occasional figures of mitoses. Peripherally to the fibroblastic central nucleus, abundant mature bony tissue without histologic alterations was observed. Focally, cartilaginous tissue plates with areas of endochondral ossification, rounded by striated muscle tissue, were found (Fig. 3).

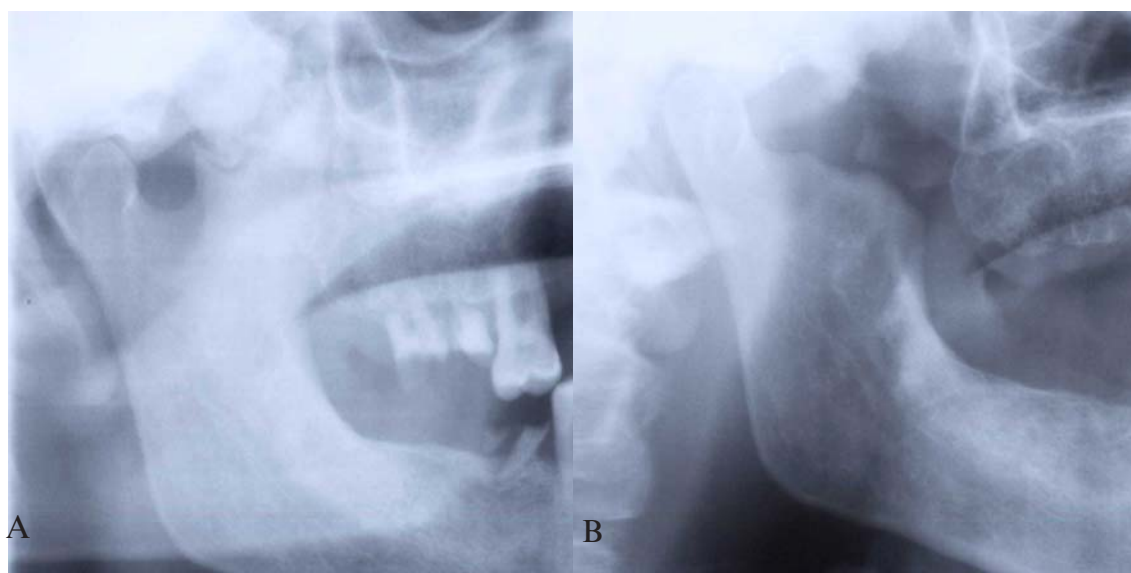


Fig. 1.

A) Detail of the preoperative panoramic film showing enlargement of the right coronoid process and calcified temporalis muscle.

B) Detail of the postoperative panoramic film showing the extent of the resection of the coronoid process and calcified temporalis muscle.

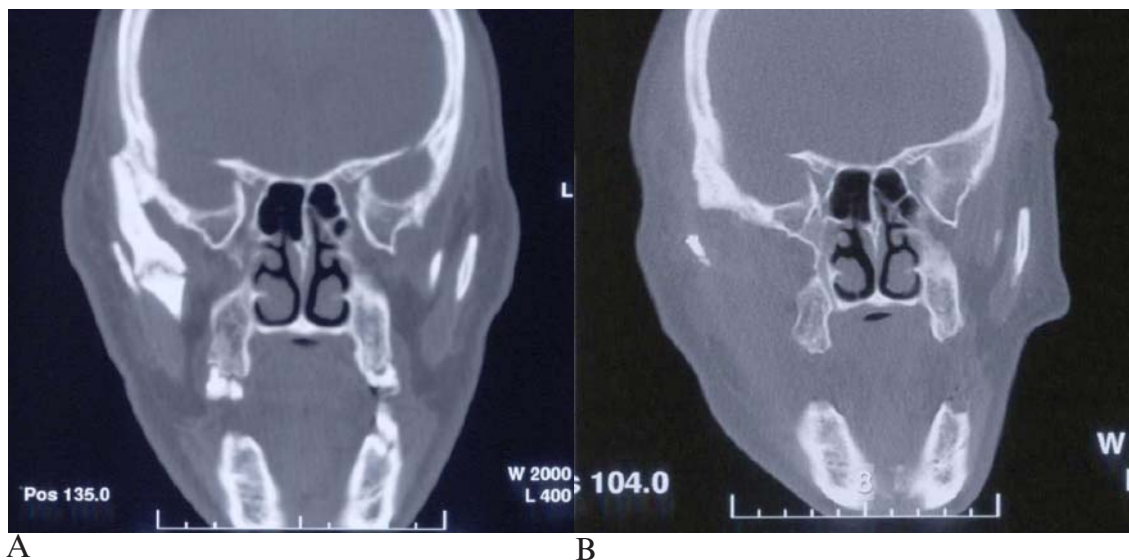


Fig. 2.

A) Preoperative CT scan examination showing a bone density mass located in the region of the right temporal fossa, that fused the right temporal bone with the right coronoid process
 B) Postoperative CT scan examination showing the extent of the resection.

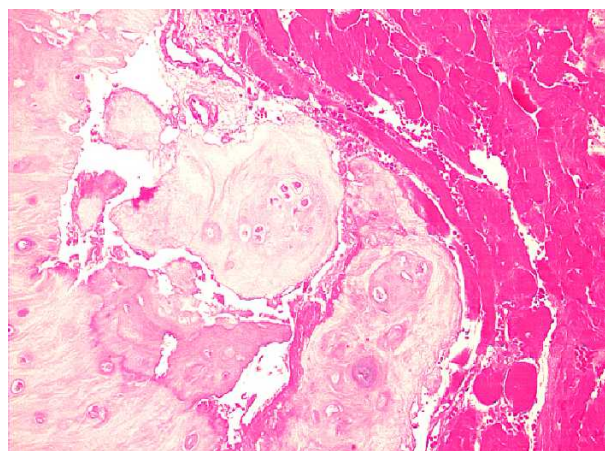


Fig. 3. Microphotograph from the pathologic examination of the surgical specimen showing cartilaginous tissue with areas of endochondral ossification, rounded by striated muscle tissue (hematoxylin-eosin; x200).

DISCUSSION

Broadly, ossificans diseases of the muscle may be seen in either of two different forms: the myositis ossificans progressiva (MOP) and the myositis ossificans circumscripta, called by others traumatic myositis ossificans (TMO), localized myositis ossificans, or fibrodysplasia ossificans circumscripta. In European literature, Sarac et al (4) distinct three forms of myositis ossificans (MO): the congenital myositis ossificans progresiva; atraumatic myositis ossificans circumscripta; and traumatic myositis ossificans circumscripta. On the other hand, Steiner et al (5) encompass the different MO with four distinct clinical situations: Traumatic MO,

when a trauma event is present; MO progressiva, above cited as a symetric congenital malformations of the hands and feet an a progressive heterotopic ossifications of the soft connective tissues; form of MO associated with paraplegia, where tissue atrophy and degeneration may promote metaplastic ossification; finally, pseudomalignant MO is used when the history of trauma is absent. Traumatic myositis ossificans is a pseudotumor-like benign disease most frecuently found in extremities of young population. Cases in the craneofacial skeleton are rare. The masseter and sternocleidomastoid muscles are most commonly affected in this location(6-8). Only three cases affected the temporalis muslce only (1-3); three more cases reported involved temporalis with others masticatory muscles (8-10). Fewer cases are described in which medial pterigoid and lateral pterigoid muscles are involved (1,9,10). TMO is a benign condition and its fisiopathologic mechanism is an intramuscular inflammatory reparative process. Nevertheless, the reason as bone is formed is unknown (7). Traumatic record, single or multiple, is usually present, although interval between trauma and first detection of the disease is variable; Arima et al (7) found a period ranging from 3 weeks to more than 20 years. The clinically established disease presents as a radiologically smooth opacity. The diagnosis of TMO is based on the probable history of trauma, although traumatic injury is reported in only 70% of the cases; with supportive clinical, radiographic and microscopic features (5). Plain film radiographic examination may often show ectopic bone formation. As described, additional imaging modalities that may be helpful include CT, MRI (Magnetic Resonance Imaging) and bone scan. The pathological findings of the myositis ossificans show ossification of the interfascicular connective tissue within the muscle (3). Ackerman (11) recognized and

described the “zone phenomena” with inner, middle and outer zones, with peripheral ossification and a central cellular region. The central zone contains undifferentiated cells and hemorrhagic and necrotic muscular tissue; it is composed of loose fibrovascular tissue with fibroblastic proliferation and abundant mitosis containing spindle cells and prominent giant mesenchymal cells; the middle zone, with active osteoblasts and immature osteoid, cartilage or woven bone tissue developing; and peripheral outer zone, with mature lamellar bone with active osteoclasts and collagenous fibrous stroma. In our described case are observed cartilage tissue areas and endochondral ossification areas surrounded by striated muscle. Histologically, osteoblastic activity is sometimes observed, similar to an osteosarcoma. Then differential diagnosis between both entities must be established. MO must be included in the differential diagnosis of benign lesions such as osteoma, nodular fasciitis, rhabdomyomas, chondromas and osteochondromas. Special attention to osteoid changes that are observed in sarcomas is mandatory (1,12).

In maxillofacial region, treatment of MOT is generally surgical excision of the ossified lesion. It is accepted since Thorndike (12), that surgical treatment should not be attempted until bone mass is mature and bone scan activity has diminished, usually between 6 and 12 months, so to prevent the recurrence. However, many authors believe that many lesions will regress over time, until 35% of the cases. So, it is recommended that surgery be attempted when the lesion does not regress or it becomes a functional handicap (7). Alternative non-surgical treatment in combination with surgical excision of the calcified mass, may be useful in some instances (10). In addition, low-dosis radiation, as non steroid antiinflammatory drugs, bisphosphonates, corticosteroids, indometacin, warfarine and retinoids are other alternatives attempted in MO treatment (9).

REFERENCES

1. Uematsu Y, Nishibayashi H, Fujita K, Matsumoto H, Itakura T. Myositis ossificans of the temporal muscle as a primary scalp tumor. Case report. *Neurol Med Chir (Tokyo)* 2005;45:56-8.
2. Mevio E, Rizzi L, Bernasconi G. Myositis ossificans traumatica of the temporal muscle: a case report. *Auris Nasus Larynx* 2001;28:345-7.
3. Saka B, Stropahl G, Gundlach KKH. Traumatic myositis ossificans (ossifying pseudotumor) of temporal muscle. *Int J Oral Maxillofac Surg* 2002;31:110-1.
4. Sarac A, Sennaroglu L, Hosal A, Sozeri B. Myositis ossificans in the neck. *Eur Arch Otorhinolaryngol* 1999;256:199-201.
5. Steiner M, Gould AR, Kushmer GM, Lutchka B, Flint R. Myositis ossificans traumatica of the masseter muscle. Review of the literature and report of two additional cases. *Oral Surg Oral Med Oral Pathol* 1997;84:703-7.
6. Lello GE, Makek M. Traumatic myositis ossificans in masticatory muscles. *J Oral Maxillofac Surg* 1986;14:231-7.
7. Arima R, Shiba R, Hayashi T. Traumatic myositis ossificans in the masseter muscle. *J Oral Maxillofac Surg* 1984;42:521-6.
8. Myoken Y, Sugata T, Tanaka S. Traumatic myositis ossificans of the temporal and masseter muscle. *Br J Oral Maxillofac Surg* 1998;36:76-7.
9. Kim DD, Lazow SK, Har-El G, Berger JR. Myositis ossificans traumatica or masticatory musculature: A case report and literature review. *J Oral Maxillofac Surg* 2002;60:1072-6.
10. Aoki T, Naito H, Ota Y, Shiiki K. Myositis ossificans traumatica of the masticatory muscles: Review of the literature and report of a case. *J Oral Maxillofac Surg* 2002;60:1083-8.

11. Ackerman LV. Extra-osseous localized non-neoplastic bone and cartilage formation (so-called myositis ossificans). *J Bone Joint Surg Am* 1958;49:279-98.

12. Woldenberg Y, Nash M, Bodner L. Peripheral osteoma of the maxillofacial region. Diagnosis and management: a study of 14 cases. *Med Oral Patol Oral Cir Bucal* 2005;10:E139-42.