

Myositis Ossificans Traumatica of the Right Masseter Muscle: A Rare Case Report

Dr. Neelikattu Aathira Tess Thomas¹, Dr. Kalpana Rajiv Kumar²

¹Third Year Resident, ²Professor

^{1,2}Authors Are Affiliated in the Department of Otorhinolaryngology, MGM Medical College And Hospital, Navi Mumbai

Corresponding Author - Dr. Kalpana Rajiv Kumar

Professor and Head of Department of Department of Otorhinolaryngology, MGM Medical College And Hospital, Navi Mumbai

Corresponding Author: Dr. Kalpana Rajiv Kumar

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I. Introduction

Myositis ossificans traumatica (MOT) is a non-neoplastic bone formation within muscle or fascia, presumably due to acute trauma or repeated injury. Myositis ossificans traumatica (synonym: myositis ossificans circumscripta, ossifying hematoma, calcified hematoma, parosteal bone formation) was described by Thoma⁽¹⁾ in 1958 as a condition generally caused by calcification and progressive ossification of an intramuscular hematoma after trauma⁽²⁾. Reported cases in the head and neck muscle is rare. The muscles most commonly affected in descending order of involvement, are the masseter (75%), temporalis, genioglossus, buccinator and medial pterygoid^(3,4).

Myositis ossificans traumatica should be differentiated from Myositis ossificans progressiva (MOP), which is an autosomal dominant condition mainly affecting children⁽⁵⁾. This condition progress to extensive ossification of all the skeletal muscle eventually leading to the individual being handicap.

Many theories have been proposed over the years which has been summarized by Carey¹⁽⁶⁾:

- 1) Displacement of bony fragments into the soft tissue and hematoma with subsequent proliferation.
- 2) Leaking of subperiosteal osteoprogenitor cell into surrounding soft tissue through periosteal perforations suffered during trauma.
- 3) Detachment of periosteal fragments into surrounding tissue and proliferation osteoprogenitor cells.
- 4) Differentiation of extraosseous cells exposed to bone morphogenic protein (BMP).

Most widely accepted is the last theory, in which the bone fragmentation that occur during trauma results in autolysis and releases BMP into soft tissue which leads to cellular differentiation and progressive ossification^(3,4).

II. Case Report

- A 32 year old male presented to our E.N.T OPD of MGM Medical College and Hospital, Kamothe, Navi Mumbai, with chief complaints of progressive painless restricted mouth opening over a period of 3 years.
- History of trauma to the right side of the face while he was working at his farm. The patient had complaints of swelling along with pain over the right cheek for initial 2-3 months. For which only symptomatic treatment was taken. Gradually he developed inability to open his mouth
- Patient was a tobacco chewer for the past 7 years.
- The patient reported no significant past history of hospital admission or surgeries
- He reported no drug allergies or contributory family history.

On Examination:

- A young moderately nourished male without any obvious facial deformity.
- Clinical examination showed maximum incisinal opening of approximately 1mm.
- On the right zygomatic area there was a palpable hard mass felt which was non-tender with no step deformity.



Fig.1: Preoperative pictures

CT FACE:

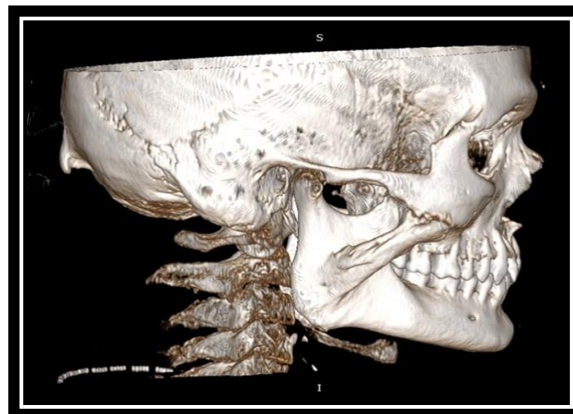


Fig. 2: CT Face images showing hyperdense right masseter muscle

- Showed extensive calcification of masseter muscle attached to the adjacent bone by a broad calcified stalk seen in (Fig. 2).
- An old malunited right zygomatic arch fracture

Diagnosis: Based on clinical examination and radiological findings a provisional diagnosis of myositis ossificans of right masseter muscle was made.

TREATMENT:

The patient was posted for total excision of the calcified mass. Skin incision was taken extending from the right infra auricular region to 2 cm below the right submandibular region.



Fig. 3: Intra-operative Pictures

Skin, subcutaneous tissue was separated; blunt dissection was done to identify and expose the superficial head of masseter muscle from its insertion at the angle of mandible to its origin at the zygomatic arch. Osteotomy was done (Fig.3), and the whole calcified right masseteric muscle was removed in piecemeal. On further intra-op examination, deep head of masseter muscle was found normal hence as left intact. Right coronoidectomy was done. Intraoperative mouth opening of 36 mm was achieved (Fig.3).



Fig. 4: Post Op Pic.

The patient had approximately 28 mm mouth opening on the 6th postoperative day (Fig: 4). Regular facial physiotherapy with mouth opening exercise was prescribed to the patient.

III. Discussion

Myositis ossificans traumatica is a benign and localized lesion characterized by ossification of fibrous connective tissue forming between the skeletal muscle bundles after multiple traumatic episodes with muscle bleeding^(7,8). MO affects the larger muscles of the lower limbs mainly the quadriceps femoris, brachialis anticus⁽⁹⁾. MOT affecting the masseter muscle being a rare condition leads to misdiagnosis of the patient. For long clinicians have confused MOT with osteosarcoma due to similar presentations of both the conditions. They can be differentiated by pain which in osteosarcoma tends to progress, while in MOT decreases with time. The diagnosis of MOT is based on the history of trauma, usually a blunt injury, although trauma is reported in only 70% of the cases⁽¹⁰⁾. History of acute trauma including tooth extraction and injection of local anaesthetic has been cited as the cause in some cases of myositis ossificans in masticatory muscles⁽⁸⁾. When affecting the masticatory muscles, MOT can be asymptomatic and often produces severe trismus⁽⁸⁾.

Booth and Westers identified three important criteria for diagnosis MOT

- 1) A history of significant local injury;
- 2) Clinical and radiological evidence of ossification within two months of initial injury,
- 3) The location of the lesion⁽¹¹⁾.

Surgery is considered as a definitive treatment of choice. Some authors propose drugs such as etidronate disodium (a bisphosphonate) which is used as a prophylaxis for treatment of Paget's disease. It causes inhibition of aggregation and calcification of calcium crystals^(4,7). Although the results have not been proven to be effective.

IV. Conclusion

The surgical excision is the most accepted treatment, as the patient affected has restricted mouth opening limiting their daily activity. Excision is considered when the lesion reaches maturity, usually at 6 to 12 months to avoid recurrence. Post-surgery adequate physiotherapy plays a significant role. A close monitoring of the patient is essential due to the difficulty to establish the most effective treatment as there are only a limited number of published literature on myositis ossificans traumatica affecting the masseter muscle and its appropriate management.

Ethical Considerations: Institutional Ethical Clearance was received from the ethical committee of MGM Medical College and Hospital, Kamothe, Navi Mumbai.

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