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Case Report

Myositis Ossificans Traumatica of Masseter Muscle: A Case Report

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ABSTRACT

Myositis ossificans traumatica is a condition generally caused by calcification and progressive ossification of an intramuscular hematoma after trauma. This study was to assess the effectiveness of surgical intervention in cases of Myositis Ossificans Traumatica. The surgical excision is the recommended treatment if the patient has pain or restricted motion. Excision is considered when the lesion reaches maturity, usually at six to 12 months to avoid recurrence.

Introduction

Existing as a rare entity, Myositis Ossificans Traumatica as the name depicts has indeed devastating affliction on the patients. Myositis ossificans traumatica (myositis ossificans circumscripta, ossifying hematoma, calcified hematoma, parosteal bone formation) was initially described by Thoma [1] in 1958 as a condition generally caused by calcification and progressive ossification of an intramuscular hematoma after trauma. [2,3] Very few cases have been reported in the head and neck region. Arima et al.[4] reviewed the literature and discovered 26 cases involving the head and neck. The muscles most commonly affected, in decreasing order of involvement, are the masseter (75%), temporalis, genioglossus, buccinator, and medial pterygoid.[4,5] Only few cases have been reported with bilateral involvement.[2] Myositis ossticans traumatica (MOT) should be differentiated from its related counterpart myositis ossificans progressiva (MOP). MOP is a rare hereditary connective tissue disorder of unknown origin occurring primarily in children.[6-8] The condition is autosomal dominant, with variable expressivity. MOP is characterized by progressive ossification of

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any and all skeletal muscles of the body unrelated to trauma. Ossification of skeletal muscle, fascia, tendons, and ligaments occurs with seemingly no definitive pattern.[9,10] Many theories have been proposed. Carey'l[11] summarized these as 1) displacement of bony fragments into the soft tissue and hematoma with subsequent proliferation, 2) detachment of periosteal fragments into the surrounding tissue with proliferation of osteoprogenitor cells, 3) "leakage" of subperiosteal osteoprogenitor cell into surrounding soft tissue through periosteal perforations suffered via trauma, and 4) differentiation of extraosseous cells exposed to bone morphogenic protein (BMP). Most clinicians adhere to the last theory. According to this theory, bone fragmentation during trauma may result in autolysis and release of BMP into the soft tissue mass; BMP induction of cellular differentiation with progressive ossification then occurs.[4,5]

Aims & Objective

This study was intended to assess the effectiveness of surgical intervention to evade the odds of recurrence in cases of Myositis Ossificans Traumatica.

Case Report

A 20 year old female presented to Dept. of Oral & Maxillofacial Surgery, Saraswati Dental College & Hospital, Lucknow, Uttar Pradesh, with the chief complaint of inability to open mouth since last 6 months. There was history of trauma on facial region. Patient was apparently alright 6 months back she was hit by her husband on face. There was history of bilateral swelling on lower facial region. No treatment was taken at that time. Over a period of six month time she gradually developed inability to open mouth. She reported no significant past medical history and was on no medications. There was no history of drug allergy. Her family history was noncontributory.

Fig. 1 Preoperative

Physical examination revealed a young well-nourished woman without any obvious developmental abnormality. Clinical examination revealed no obvious facial asymmetry. Maximum incisal opening was approx. 4 mm (Fig.1). Masseter region shows some bony prominence when palpated.

On radiographic examination PA mandible (Fig. 2) shows some calcified mass in the masseter region in left side near angle & in right side in high ramus region of mandible. Lateral oblique of mandible (Fig. 3) shows some hyper cortical obliquely linear area between first & second molar on left side.

Diagnosis of Myositis Ossificans of Masseter muscle of both sides was formulated.

Skin incision was placed (Risdon's approach). Blunt & sharp dissection was done to reach the lower border of mandible. Periosteum was incised & bone exposed. A finger like osseous process was identified in the region of left (Fig. 4).

Intra-operative from 4mm mouth opening 26mm was achieved which was reached to 23mm one week post-operatively (Fig. 5).

Fig. 2 PA mandible

Fig. 3 Lateral oblique of mandible

Fig. 4 Calcified mass

During follow up periods there was no history of recurrence or reduction in inter-incisal mouth opening when examined at 3rd, 6th week and 6th month post-operatively.

Discussion

Myositis ossificans traumatica (MOT) is a rare clinical entity in the maxillofacial region and few cases have been reported in the literature [4] MOT was described initially by Thoma in 1958 as a condition generally caused by calcification and progressive ossification of

Fig. 5 Postoperative

an intramuscular hematoma after trauma.[4,12,13] MOT is a benign, self-limiting and localized lesion characterized by ossification of fibrous connective tissue within and between skeletal muscle bundles after multiple traumatic episodes with muscle bleeding.[13-15] MOT rarely affects the head and neck muscles. Not more than 30 cases have been reported in the maxillofacial region.[13] Acute trauma, including tooth extraction and injection of local anesthetic, has been cited as the cause in some cases of MOT in the masticatory muscles.[15] Other factors include chronic infection such as pericoronitis, and surgery involving muscles. The highest incidence of MOT involving the masticatory muscles was in the masseter, but case reports have described occurrence in temporal, medial and lateral pterygoid muscles.[14,15] Only three cases affecting the unilateral medial pterygoid muscle have been reported in the English literature.[13] When affecting the masticatory muscles, MOT can be asymptomatic and often produces severe trismus.[15] It has also been reported that MOT can affect other muscles of the head and neck region, including the soft tissues associated with the chin and buccinator, genioglossus, platysma and sternocleidomastoid muscles.[4,12,13] It typically presents with pain,

tenderness, and limited movement of the affected muscle, with a soft swelling of the skeletal muscle after injury. Subsequently, the swelling subsides, and a hard and tender mass develops within 1 to 2 months.[16] The differential diagnosis for MOT that should be taken into discussion can be non-neoplastic disorders such as calcified fibromatosis, phleboliths, local infections (post-traumatic periostitis, osteomyelitis) and malignant tumors such as osteosarcoma, osteochondroma and rhabdomyosarcoma. MOT, since long, was confused with osteosarcoma by many clinicians and is usually misdiagnosed as osteosarcoma because of its clinical presentation and microscopic examination. Between these two entities, there are few differences: In MOT the pain tends to decrease in time, whereas in osteosarcoma the pain tends to increase; and in MOT the calcification begins at the periphery and progresses toward the center, while in osteosarcoma it begins at the center and continues to the periphery. However, 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 with supportive clinical, radiographic and microscopic features.[17,18] Booth and Westers identified three important criteria to consider when diagnosing MOT, which includes: (1) A history of significant local injury; (2) Clinical and radiological evidence of ossification within two months of the initial injury and (3) The location of the lesion.[19]

Nonsurgical treatment of MO has been proposed by some authors but this procedure remains controversial.

Conclusion

The initial management of myositis ossificans depends on the stage of development. The surgical excision is the recommended treatment if the patient has pain or restricted motion. Excision is considered when the lesion reaches maturity, usually at six to 12 months to avoid recurrence. So, surgical intervention in the management of cases of Myositis Ossificans Traumatica demonstrates as a viable and effectual treatment modality to elude the probability of recurrence.

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