

Surgical Management of Masseter Muscle Hypertrophy – A Case Report

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Abstract

Masseter muscle hypertrophy (MMH) is considered to be a very rare entity with no known cause. The swelling can be seen in the mandibular angle region where the muscle is inserted. The cause of MMH includes several factors, for which several treatment modalities are mentioned in the literature. Botulinum toxin type A injection is the most commonly used for the treatment because of its less invasive features as well as low-risk index. However, the pharmacological treatment modality has low prognosis than the surgical treatment. The combination of pharmacological and surgical treatment has been mentioned in the literature. This article emphasizes on the surgical treatment aspect.

Key words: Angle of mandible, Hypertrophy, Masseter muscle

INTRODUCTION

Masseter hypertrophy (MH) is associated with nursing uncommon condition that may cause aesthetic and purposeful issues. Aesthetic issues carry with it distinguished facial muscle within the face, rectangular face form, and wide jaw angle. Patients could suffer psychological problems thanks to associate in nursing unattractive look.^[1] Medical diagnosis needs clinical history and physical examination and should even embody complementary imagination resources such as resonance (magnetic resonance [MR]) and computed tomography (CT) scans to exclude different disorders. Medical diagnosis should include secretory organ disorders, intrinsic facial muscle pathology, parotitis, salivary gland tumor, lipoma, benign or malignant muscle tumors, benign, and malignant jaw

tumors. Because the facial muscle is inserted within the jaw angle region, it causes the overgrowth of this region thanks to torsional forces. It is essential to create the medical diagnosis of head and neck mass, unilateral mass placed within the cheek. The potential underlying pathologic factors ought to be assessed fastidiously with elaborated patient history and imaging techniques before picking treatment.^[2] A hypertrophied facial muscle can alter facial lines, generating discomfort, and negative cosmetic impact in several patients. Treatment of MH is disputed. Various degree of success is reported for a few of the treatment choices for MH that vary from easy pharmacotherapy to a lot of invasive surgery. Reduction of the masticatory muscle, osteotomy, neurotoxin, and splint medical aids measure choices for managing this problem.^[3] Injection of neurotoxin A into the facial muscle is taken into account as a less invasive modality and has been reportable to be with success used for cosmetic sculpting of the lower face.^[4] The normal methodology of treatment for MH is the partial surgical excision of the muscle and osteotomy of the jaw angle region and reshaping the curvature of the bone under general anesthesia.^[5] The employment of associate in nursing intraoral approach was first advised by Wood. He suggested the removal of bone enlargement of

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www.ijss-sn.com

Month of Submission : 08-2020

Month of Peer Review : 09-2020

Month of Acceptance : 09-2020

Month of Publishing : 10-2020

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the jaw angle with none muscle manipulation. Tabrizi *et al.* advocated an intraoral approach together with facial muscle reduction and part monocortical and bicortical osteotomy within the jaw angle in the treatment of MH.^[6]

CASE REPORT

A 14-year-old female reported with a chief complaint of swelling on the right lower border of the jaw since 6 months [Figure 1a and b]. The history of the patient revealed the absence of any parafunctional habits, mouth opening was adequate and no recent history of trauma. There was no relevant medical history or family history. On palpation, the swelling was hard, non-tender, and temperature, which was not raised, firm in consistency and no associated lymph nodes were palpable. Temporal mandibular joint examination revealed no abnormal finding. The patient's concern was limited only to her facial asymmetry and she desired to have more attractive facial appearance.

Ultrasonography (USG) and panoramic radiographs were taken to make a differential diagnosis [Figure 2a and b]. USG report revealed enlargement of the right masseter muscle. There was also no pathological formation in the muscle and significant bone deposition seen on the right gonial notch on the panoramic view. The patient was diagnosed with the right masseter muscle hypertrophy (MMH).

Following all aseptic conditions and precautions, an intraoral incision was made using 15 number blade supraperiostally, slightly lateral to the external oblique line, and extending up to mandibular first molar region [Figure 3a]. The muscle was reduced and small amount of muscle mass resected on the right side [Figure 3b]. At the same time, bone enlargements on the right side of the angulus of the mandible were reshaped. Satisfactory results have been achieved after 3 weeks follow-up [Figure 4a and b].



Figure 1: Pre-surgical photographs; (a) frontal and (b) worms view

DISCUSSION

There are many factors within the etiology of MH, like tensions and clenching caused by emotional stress and parafunctional habits. A congenital variety also exists, but acquired MH is more common. Unilateral occurrence is often seen when patients chew or clench totally on one side. Muscle function can also be impaired, thus causing conditions such as trismus, protrusion, and bruxism. Numerous factors, such as malocclusion, bruxism, clenching, or temporomandibular joint disorders, have been cited.^[7] According to Teixeira *et al.*, there are two types of MMH, congenital or familial and acquired due to functional hypertrophy.^[8]

The best diagnostic assay is to palpate the masseter muscle with fingers, while the patient clenches his/her teeth; therefore, the muscle is more prominent during contraction. It is observed that none of the etiologic factors within the literature are present in our patient like dental attrition, and thus, we will point out this condition as idiopathic MH. Especially within the diagnosis of the clinical situation in unilateral hypertrophy, the medical diagnosis of head and neck soft-tissue pathologies should be made.^[2] Before deciding on the treatment plan, advanced

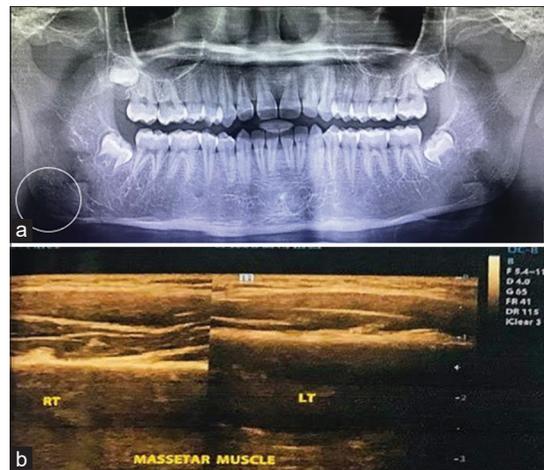


Figure 2: (a) Panoramic radiograph showing prominent right gonial notch (b) ultrasonography image showing hypertrophy of masseter muscle

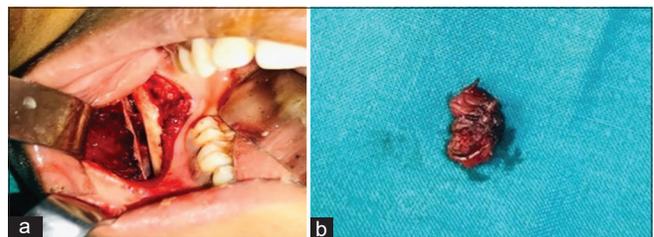


Figure 3: (a) Incision line and exposure of bone and masseter muscle (b) resected masseter muscle mass



Figure 4: Follow-up after 1 month (a) post-operative frontal and (b) post-operative worms view

imaging such as MR and CT should be used to exclude possible pathologies such as muscle tumors, exocrine gland disorders, parotid tumors, parotid inflammatory diseases, and intrinsic masseter myopathy.^[9]

USG images of the patient in our case showed that the masseter muscle and surrounding soft tissues had a regular structure, but the right masseter muscle was significantly larger than the left side. In orthopantomogram of the patient, hyperactive bone formation and significant asymmetry compared to the left side were observed in response to the abnormal activity of the masseter muscle within the mandibular angular region on the right side. The various treatment modalities for the management of MH are categorized into nonsurgical and surgical. Treatment of the idiopathic MH is based on psychological counseling, use of mouth guards, muscle relaxant, anxiolytic drugs, analgesics, physiotherapy, dental restorations, and occlusal adjustments to correct premature contacts.^[2,3]

Honest result is often achieved within the patients with mild hypertrophy, but there is no reliable report on the literature on the success rates of isolated clinical therapy. In the literature, injection of botulinum toxin A into the masseter muscle is typically considered a less conservative modality and has been used for cosmetic purposes^[4] Botox type A into the masseter muscle was first introduced by Smyth, Moore, and Wood in 1994 and thought of a conservative treatment of muscle hypertrophy.^[10]

Botox A, when injected into a muscle, causes interference with the neurotransmitter mechanism producing selective

paralysis and subsequent atrophy of the muscle. Perhaps, the foremost important disadvantage of neurotoxin therapy is that the treatment effect wears away and reverts to the primary condition in 6 months. According to some authors, the partial removal of the masseter muscle is enough to correct the hypertrophy. The insertion of hyperactive muscle causes an abnormal growing mandibular angle. Hence, authors confirmed that, to achieve satisfactory results, a mandibular angle resection is the appropriate treatment.

CONCLUSION

In case of facial deformities, the patient's expectations and physical findings should be evaluated thoroughly. It becomes important to make the differential diagnosis of head and neck mass, particularly unilateral mass located in the face area. In cases where MH causes appositional changes within the bone, the success rate with neurotoxin treatment alone is low, and therefore, the surgical option should be considered.

ACKNOWLEDGMENT

None.

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How to cite this article: Warade P, Kshirsagar R, Mishra P, Sane V, Bhende R, Banerjee P, Singh V. Surgical Management of Masseter Muscle Hypertrophy – A Case Report. *Int J Sci Stud* 2020;8(7):7-9.

Source of Support: Nil, **Conflicts of Interest:** None declared.