



## SURGICAL CORRECTION OF TRUE MACROGLOSSIA

## Dental Science

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## ABSTRACT

**Macroglossia** is a volumetric and morphological alteration of the tongue, caused by muscular hypertrophy, vascular malformation, metabolic diseases and idiopathic causes; usually associated with Down's and Beckwith-Wiedemann syndrome. This alteration can cause dental-muscular-skeletal deformities, orthodontic instability, masticatory problems and variation in taste and speech. In this article, we present a case of true macroglossia diagnosed in a male patient of age 25 years, with no significant family history, but he had a history of relapse of orthodontic treatment for the correction of open bite, proclined upper and lower anterior teeth. He further had a complaint of difficulty in phonation. We have performed partial glossectomy under general anaesthesia using the "Modified clove shape" technique, with an objective of reducing the length and width of the tongue. The patient had successfully extricated with no signs of paraesthesia at the apex of his tongue and has recovered without any alterations in his taste or motor sensation.

## KEYWORDS

## INTRODUCTION

The term, **Macroglossia** means "large tongue". The most common causes of macroglossia are muscular hypertrophy, vascular malformation, congenital hyperthyroidism, chromosomal abnormalities such as Beckwith-Wiedemann syndrome and Down's syndrome etc.<sup>8</sup>. Macroglossia was first reported by Galen. Macroglossia is classified as 1) generalized (or) localized: describing the extent of involvement. Based on etiology, Vogel classified macroglossia into True (or) pseudo.<sup>1,6</sup>

## True macroglossia

True macroglossia occurs from histologic enlargement of tongue musculature and may occur either in isolation or due to conditions, such as, hypothyroidism (or) amyloidosis.<sup>3</sup> Signs and symptoms of macroglossia are tongue protrusion; which often traumatizes the tongue. This exposure of trauma also leads to mucosal drying and recurrent infection in the upper respiratory tract. Additional symptoms include speech impediment, swallowing difficulties, airway obstruction leading to obstructive sleep apnoea, mandibular deformities, drooling and failure to thrive.<sup>4,5,6,7</sup> Recurrent upper respiratory tract infection deteriorates the general health while uncontrolled drooling of saliva predisposes to angular cheilitis and supra added bacterial or fungal infection. Accompanied by these, the patient's psychological and social wellbeing and interaction are often affected. When an accurate underlying cause; such as an endocrine abnormality (or) neoplasia is identified, the preliminary step will be to treat the underlying cause. In case of macroglossia associated syndromes and genetic conditions, the only treatment that could be provided is surgery for aesthetic and functional purpose.<sup>1,8</sup>

## Case Report

The 25-year-old, male patient was referred to the Department of Oral and maxillofacial surgery by the Department of orthodontics and dento-facial orthopaedics, at Meghna Institute of Dental sciences, with a chief complaint of inability and difficulty in speech, also carried a history of orthodontic treatment, for correction of anterior open bite that resulted in complete recurrence. There is no history of systemic diseases, drug allergies or family history revealed. Local examination revealed increased tongue both in length and in width with an anterior open bite and interposition of the tongue, indentations of the lingual surface by mandibular molars on the edges of the tongue with diagnosis of **true Macroglossia**. This required multidisciplinary treatment that involved surgery, orthodontics and a speech therapy.

The technique that was chosen for reduction glossectomy was "The Modified clove shape" technique that would successfully reduce the

tongue in its width and length. Under general anaesthesia, following aseptic precautions naso-tracheal intubation done and then tongue was pulled out of the oral cavity after tying it with three stay sutures of 3-0 silk, fixed to the surgical field (1 suture in central and 2 on the lateral margins) to maintain the symmetry between the sides and facilitate the demarcation of the incisions which was performed with methylene blue in elliptical wedge shape. After infiltration of lidocaine 2% with epinephrine 1:80,000; A partial thickness elliptical wedge incision was made on dorsum of the tongue, 5mm away from tip of the tongue using the electrocautery, following which excision of excess tissue done. Haemostasis was achieved using electrocautery.

The anterior portion of the design was approximated along the midline. This helped in reducing the width of the tongue. The posterior margin was approximated to the anterior portion in midline. The approximation at the posterior margin then helped in reducing the length of the tongue.

As the bulk was adequate, no trimming was performed. This choice of design helped in preserving the tip from any damage.

The closure was done in layers using 3-0 vicryl. In the immediate, postoperative period there was slight swelling in the floor of the mouth and on the dorsum of anterior tongue, an exiguous hypoesthesia was observed which disappeared after a week without any taste or motor alteration along with a good tissue repair. Further it provided a perfect symmetry and no tongue interposition. The patient was referred to orthodontist for the correction of open bite, proclined upper and lower anterior teeth.

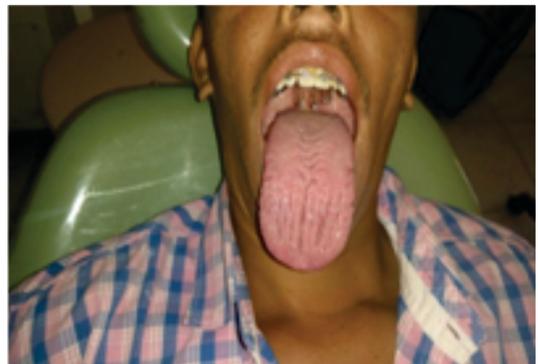
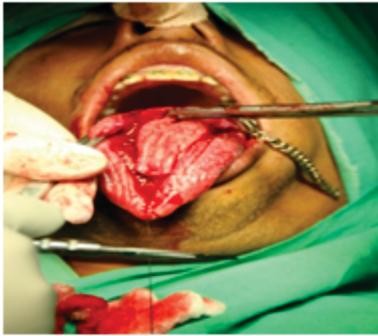


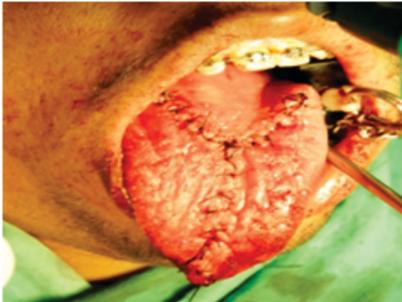
Figure 1: Macroglossia preoperative view



**Figure 2: Tongue Reduction Procedure using modified clove technique.**



**Figure 3: Resected area of tongue.**



**Figure 4: The surgical site after reapproximation and primary closure of tongue**

## DISCUSSION

The treatment of macroglossia is contentious due to the absence of commonly accepted criteria and longitudinal studies. Also it comes with a long period of results and techniques to correct the condition. The important indications for partial glossectomy are: morphology (size discrepancy between tongue and oral cavity), tongue protrusion, dento-skeletal problems like (mandibular prognathism, anterior open bite, excessive proclination of lower incisors) and functional deficit (difficulty in swallowing, breathing (or) articulating, constant drooling).

Aesthetic or psychological problems are also taken into consideration when determining whether the therapy is imperative. From the general euphony of literature, it is known that preserving the tip and lateral borders of tongue yields better results as these areas are of vital importance. Moreover, in most instances, the postoperative shape of the tip of the tongue plays a vital role in fulfilling the patient's consent. Preservation of natural tip ensures cosmetic acceptance along with retention of the taste sensation, preservation of lateral borders and preventing the abnormal fibrosis in tongue musculature. There is no any other ideal tongue resection procedure; rather the procedure needs to be customized considering the etiology, dimension and postoperative form/dimension as desired. Such an individual approach provides a more pleasing result.

In case of extreme enlargement, anterior wedge reduction and central resection can be done under greater caution. The V-shape incision positioned in the midline of the tongue reduce the length but not the width of the tongue, elliptical incision positioned in the midline,

without reaching the apex of the tongue contribute in reducing the width having a little influence in its length. In clove or modified clove technique, combined characteristics of elliptical and V-shaped incision indicated when the reduction of the width and length of the tongue is required. Its design can be altered in accordance with the specific needs in each case<sup>10,11,12</sup>.

## CONCLUSION

Surgical reduction of the tongue is a rare procedure, as indicated in each specific case. The modified clove technique allows anterior and median partial resection. It is a technically simple procedure with minimal morbidity and yields a good result.

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