**Technical Note**

**Temporalis myofascial flap transfer into the oral cavity without zygomatic arch osteotomy**

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**ABSTRACT**

Among plethora of options, the temporalis myofascial flap remains a workhorse for the maxillofacial reconstruction. The inherent advantages include reliable vascularity, adequate size, and proximity to the defect. Although contemporary surgical techniques provide fair surgical results with low rate of complications, their intraoral transposition involve additional surgical trauma by intentional fracturing of the zygomatic arch. We have proposed herein a simpler technique of temporalis myofascial flap transposition into the oral cavity without zygomatic arch osteotomy.

**Key words:** Osteotomy, temporalis myofascial flap, zygomatic arch

**INTRODUCTION**

Temporalis myofascial flap was first used by Golovine more than 100 years ago, and it remains a very reliable regional flap for the reconstruction of the maxillofacial defects. The proximity of the oral cavity, palate, oropharynx, and the middle third of the face in addition to the reliable vascular pedicle makes the temporalis myofascial flap valuable for reconstruction.¹

The anatomy and surgical technique of the temporalis myofascial flap has been well documented.²⁻⁵ Most of the contemporary techniques require intentional fracture of zygomatic arch and its refixation once the temporalis myofascial flap is harvested through the defect created by fracture of the zygomatic arch. Although the intentional fracture of the zygomatic arch facilitates intraoral transposition of the flap, it results in additional surgical trauma. Furthermore, this procedure requires hardware for refixation that ultimately increases overall duration and cost of the surgery. We have proposed a new method of intraoral transposition of the temporalis myofascial flap without zygomatic arch osteotomy.

**DESCRIPTION OF THE TECHNIQUE**

The temporalis fascia overlying the temporalis muscle is exposed through a hemicoronal incision. The flap is elevated and it includes temporal and frontal branches of the facial nerve. The periosteal elevation is made in continuity with the myofascial flap in whole of the temporal fossa maintain a close contact with the bone to preserve the vessels. The temporal fascia is freed from its insertion on the upper border of the zygomatic arch. This increases the arc of rotation of the flap. If required, one can perform coronoidotomy through intraoral access to further increase the arc of rotation and the length of the flap.

Two long silk sutures (anterior and posterior) are secured to the myofascial flap at its thickest portion that is just above the zygomatic arch [Figure 1]. A 1-inch width malleable retractor is inserted from above, lateral to the temporalis fascia and medial to the zygomatic arch, to reach the intraoral region [Figure 2]. Antero-posterior sweeping of the malleable retractor creates a tunnel...
medial to the zygomatic arch. Two long and narrow beak hemostats are then clamped to the oral end of the malleable retractor, and the temporal end of the malleable retractor is then pulled out gently, bringing the hemostats along with it [Figure 3]. Once the beaks of hemostats exit through the temporal region, the anterior and posterior silk sutures are clamped to the hemostats [Figure 4]. Then, both the hemostats are pulled simultaneously intraorally. Gentle traction applied to the sutures that bring the thickest portion of the myofascial flap intraorally. Occasionally, an assistant can do gentle manipulation with the fingers at the thickest portion of the flap to facilitate the intraoral transposition of the flap. Now, rest of the portion of the flap can easily be transposed intraorally with the help of the traction sutures [Figure 5]. In this way, whole of the flap can easily be transposed intraorally through a tunnel created medial to the intact zygomatic arch and sutured to fill the defect [Figure 6].

**Discussion**

Of the various regional flaps, the temporalis muscle provides one of the best options because of its reliability, vascularity, adequate bulk, and proximity to the defects in the oral and maxillofacial region.\[^{[6]}\]

It has been used for reconstruction of defects in the oral and maxillofacial region, including the base of skull, orbit and eyelids, cheek, chin, tongue, maxilla, palate, and mandible.\[^{[2,4,7-9]}\]

The popularity of the temporalis flap is due to the success of the flap, the minimal complications at the donor site, and the adaptability at the recipient site.

Abubaker and Abouzgia reviewed 11 published case series in the English literature between 1987 and 2000 on the use of this flap for reconstruction of intraoral defects. They showed that the flap failure rate was very low (1.6%) and the incidence of complications associated with the technique was minimal and mostly transient.\[^{[6]}\]

Undoubtedly, it is the technique responsible for the success of any flap. There seems no flaw in the inherent characteristics of temporalis myofascial flap; it is the surgical technique which can be further improved to
further reduce the failure rates and complications. There has been consistent improvement in the surgical techniques to harvest the temporalis myofascial flap, mostly practice fracture, and refixation of the zygomatic arch for transposition of the flap. The disadvantages of this conventional technique include additional surgical trauma during exposure of the zygomatic arch and its intentional fracture, increased risk of facial nerve damage during exposure of the zygomatic arch, and an overall increase in the cost factor due to increased surgical time and hardware required for the fixation of the zygomatic arch.

We practiced a relatively newer and simpler technique for transposition of temporalis myofascial flap into the oral cavity without fracturing the zygomatic arch, thereby eliminating all the possibilities of complications and disadvantages of the conventional technique that involve intentional fracture of the zygomatic arch.

Another technique that does not involve the intentional fracture of the zygomatic arch is rotation of the flap over the arch, but it causes unaesthetic bulk in the region of the zygomatic arch and also results in temporomandibular joint movement difficulty. In addition, there might be a risk of strangulation of the vascular pedicle that can lead to flap necrosis. In contrast, these problems are not seen with the technique we have advocated.

CONCLUSION

The temporomyofascial flap is a versatile flap for the maxillofacial reconstruction as far as the proximity, size, reliability of vascularity, and the technical ease are concerned. Although currently existing techniques provide surgical ease with low rate of complications, search for better and easier techniques should always be welcomed and practiced. We feel that technique explained in this text would help surgeons to harvest the temporalis myofascial flap in a more prudent way.

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