

# THE USE OF SPLIT TEMPORALIS MUSCLE FLAP TO PREVENT TEMPORAL HOLLOWING

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## OBJECTIVE

The Temporalis Muscle (TM) Flap is a reliable, versatile flap with adequate bulk and flexibility. However, temporal hollowing is the most common post-operative complication after harvesting the flap. We describe a surgical modification for harvesting the TM flap to prevent post-operative temporal hollowing and report two cases with long-term follow-up.

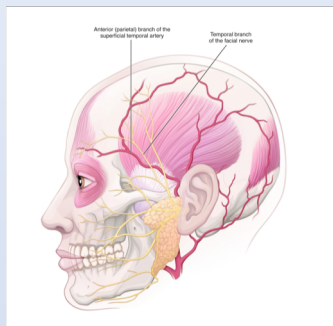


Figure 1: surgical anatomy of the temporal region

## BACKGROUND

The TM flap has a unique vascular supply that allows the flap to be divided into an anterior two-thirds and posterior one-third. These characteristics allow it to be easily mobilized to adjacent defects by splitting the flap or combining it with bone or skin as a composite flap. By using the anterior one third to reconstruct an adjacent defect and mobilizing the posterior flap anteriorly, we can prevent temporal hollowing. [1,2,3]

## CASE 1

49 year old female with history of cT4aN0M0 Squamous Cell Carcinoma of the floor of mouth and anterior mandible, presenting 6 months after resection, neck dissection, and reconstruction with right anterior lateral thigh flap. She presented with 2 cm x 1 cm recurrent SSC in the left retromolar trigone. A split temporalis muscle flap was used to prevent temporal hollowing.

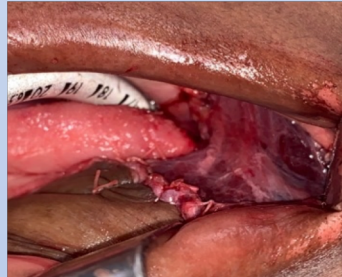


Figure 2 and 3: Intraoral picture of the recurrent SSC in the left retromolar area and TM flap reconstruction

## CASE 2

A 63 year old male with a 3-year history of bilateral preauricular pain and progressive left-sided deviation of the mandible. MRI imaging showed a 3 cm diameter right TMJ mass that erodes through the skull base. CT showed a soft tissue mass with erosion of the glenoid fossa. During surgery the lesions were noted to be adherent to the disc and separation was not possible. Arthroplasty and discectomy were preformed and the disc was replaced with a split TM flap.

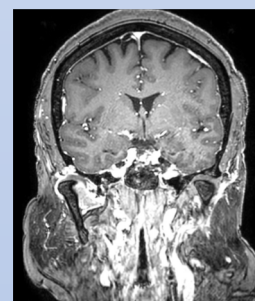
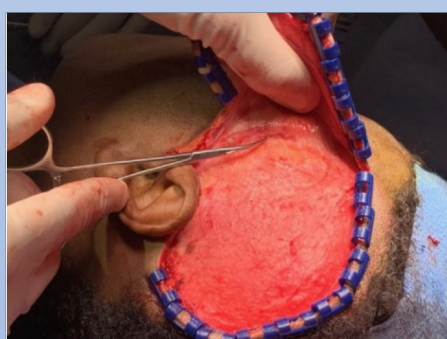


Figure 4 and 5: CT and MRI showing invasion of lesion

## SURGICAL TECHNIQUE



The TM flap is accessed with coronal incision with preauricular extension. The incision is made through the skin, through the temporoparietal fascia until the temporalis fascia is identified. The skin flap with the TPF is elevated from superior to inferior. The superficial temporal artery is identified and serves as a landmark that should not be crossed to avoid injury to the facial nerve's frontal branch. (Figure 6) Once the muscle is exposed a handheld doppler is used to identify the ADTA and PDTA (Figure 7) and the muscle can be divided into anterior one third and posterior two thirds based on distribution of the blood supply (Figure 9). [4,5]



Figure 9: one year post op from case 1

## CONCLUSION

The TM flap is an excellent flap for the reconstruction of multiple craniofacial defects. The use of the posterior two-thirds of the TM flap is a viable technique to prevent the flap's harvest's temporal hollowing.



Figure 10: one year post op case 2

### References

1. Wong TY, Chung CH, Huang JS et al. (2004) the inverted temporalis muscle flap for intraoral reconstruction: its rationale and the results of its application. J Oral Maxillofac Surg 62:667–675
2. Wang Y, Cheng J, Yuan C, et al.: Reconstruction of palatomaxillary defects following cancer ablation with temporalis muscle flap in medically compromised patients: A 15-year single institutional experience. Clin Oral Investig 18:1663–1670, 2014
3. Lam D, Carlson ER. The temporalis muscle flap and temporoparietal fascial flap. Oral Maxillofacial Surg Clin N Am 26 (2014) 359- 369
4. Mani V, Panda AK (2003) Versatility of temporalis myofascial flap in maxillofacial reconstruction—analysis of 30 cases. Int J Oral Maxillofac Surg 32:368–372
5. Cheung LK. The vascular anatomy of the human temporalis muscle: implications of surgical splitting techniques. Int J Oral Maxillofac Surg 1996;25: 414–21.