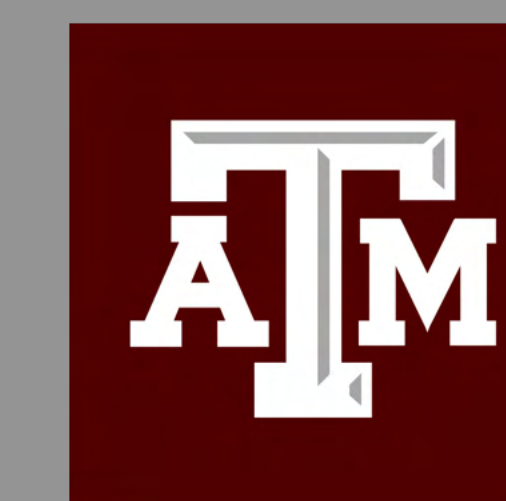


Temporoparietal Fascia Grafts in Rhinoplasty

Emily Newstrom¹, Megha Chandna¹, Rishi Suresh¹, Eugene Alford^{1,2,3}

¹Texas A&M University College of Medicine; ²Department of Clinical Otolaryngology, Houston Methodist Academic Institute, Houston, TX; ³Institute for Reconstructive Surgery, Houston Methodist Hospital, Houston, TX



TEXAS A&M UNIVERSITY
College of Medicine

Introduction

A **graft** is a living tissue surgically transplanted to a recipient site without retaining connection to its original vascular supply. An **autogenous graft** is a graft of which the donor and recipient is the same individual. Autogenous grafts using fascial tissue were first described in the early 1900s for reconstruction of tendons but are now used in a multitude of procedures including rhinoplasty, usually for filling in minor defects, nasal contouring, or camouflaging underlying bone or cartilage^{1,2,3}.

Temporoparietal fascia (TPF) is a thin pliable tissue in the parietal region of the scalp that sits just below the subcutaneous fat overlying the temporalis muscle, housing the superficial temporal vessels⁴. It has been increasingly preferred in rhinoplasty over allogenic (synthetic) materials due to its lower cost and lower infection rates⁵. It is also often used over autogenous grafts from other regions due to its greater mobility, vascularity, location within the same operative field, and well-concealed donor site scar^{2,3}.

Indications for TPF Graft Use in Rhinoplasty

Discussion

Saddle Nose Deformity

- “Pug nose,” “boxer’s nose”
- Usually caused by trauma, prior septal surgery, or conditions that break down septal cartilage⁶
- Challenge: functional and cosmetic issues (loss of internal septal support and mid-dorsal height)⁶
- **54 y/o F:** prior sinus surgery and dorsal nasal implant; presented with loss of smell, crooked nose

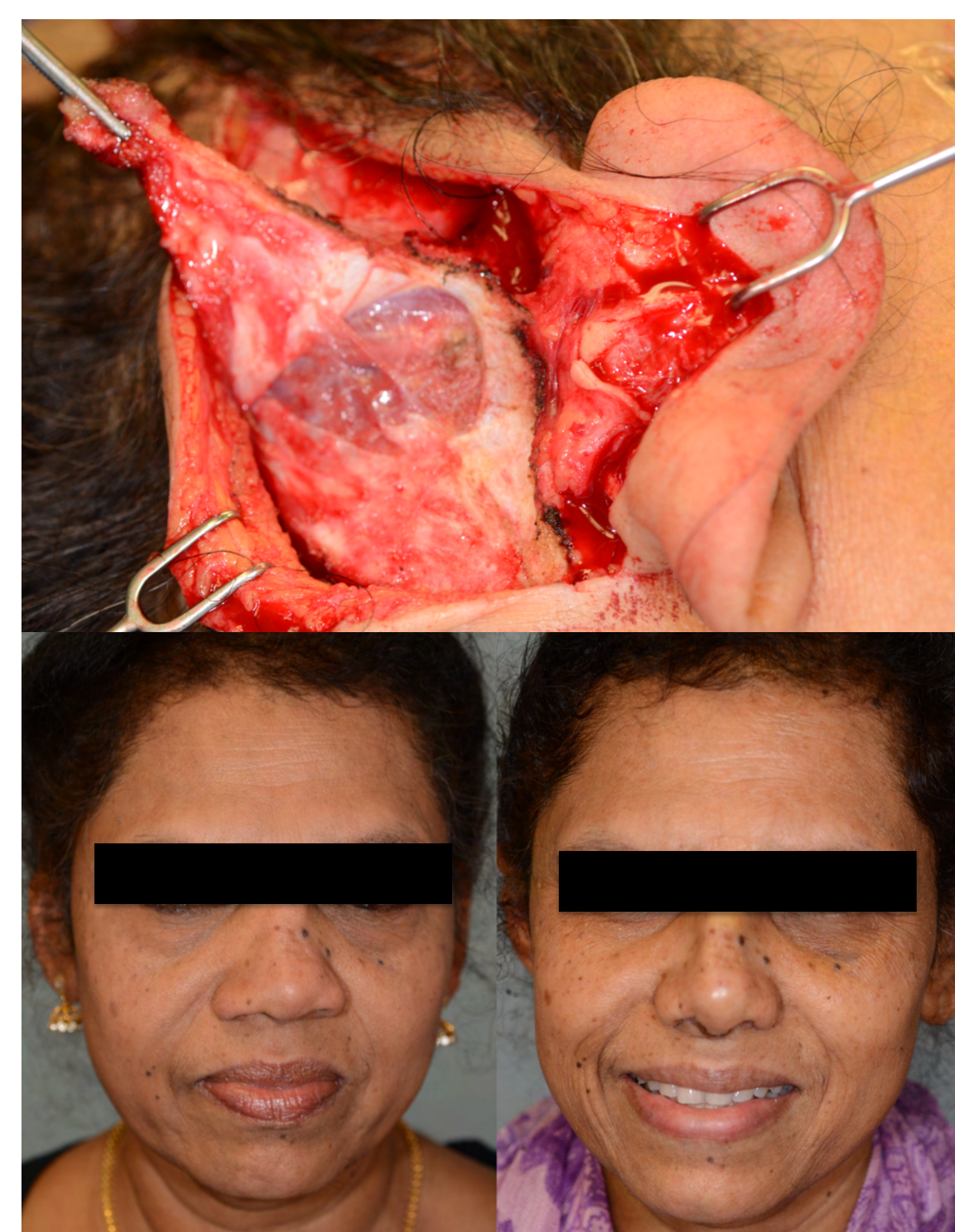


Fig. 1: TPF harvest. **Fig. 2:** rebuilt septum and lateral cartilages, implant wrapped in TPF

Thin Skin

- Genetic or resulting from prior surgery
- Natural warping/fibrous contraction of cartilage grafts visible under skin¹
- **49 y/o F:** 1 year s/p tertiary rhinoplasty, previously overresected; presented with impending extrusion of cartilage graft visible under thin skin at nasal tip

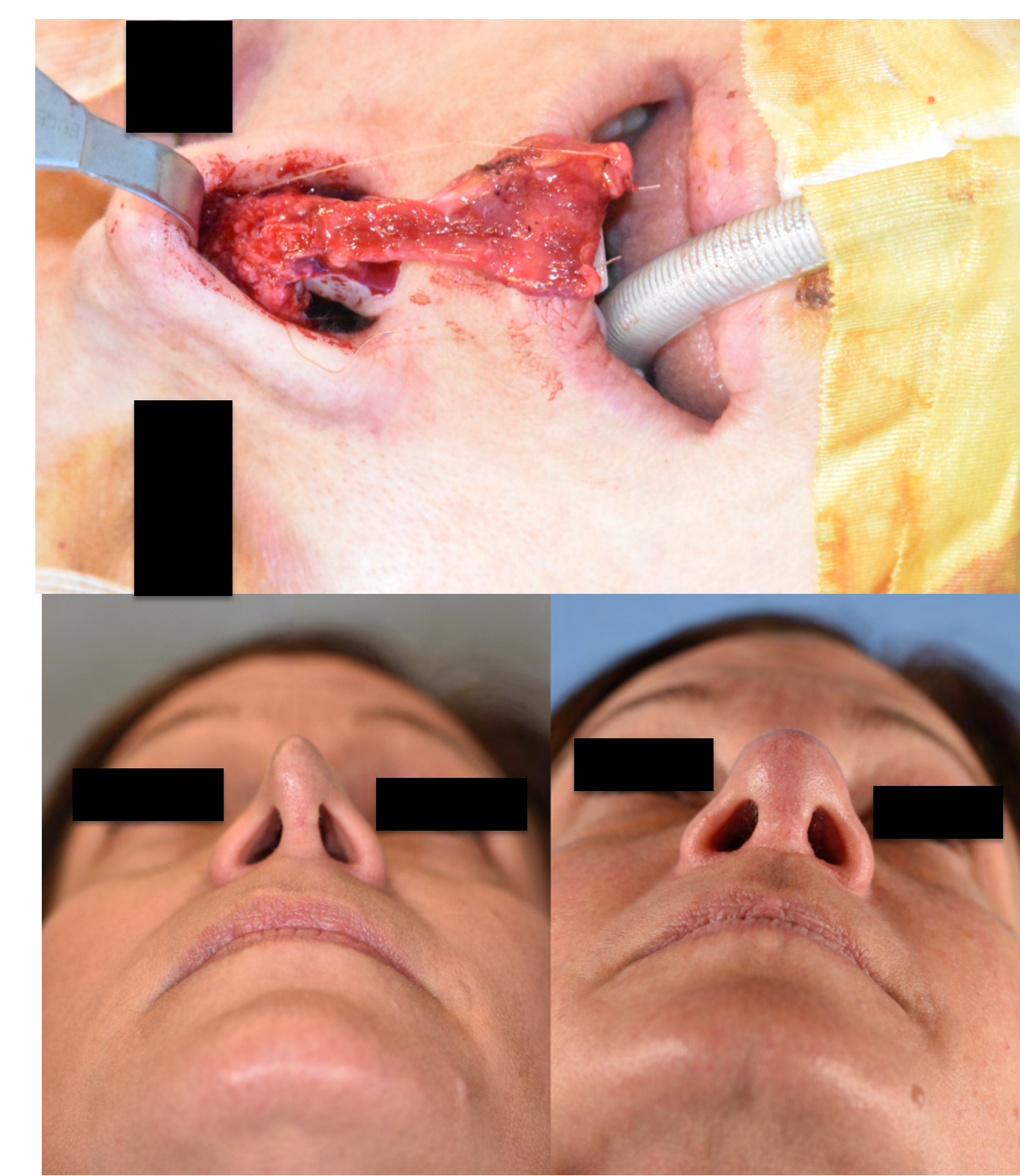


Fig. 3: TPF dorsal placement. **Fig. 4:** TPF attached at tip to camouflage cartilage graft and support thin skin

- Rhinoplasty is considered one of the most difficult aesthetic surgery procedures with a particularly high rate of revision (up to 21%)^{10,11}
- TPF is useful for revision rhinoplasty (corrects subtle defects, provides vascularity to scarred areas)
- Inherent properties of TPF make it ideal for surrounding allogenic material or cartilage
- Literature limited regarding TPF graft use specifically (compared to TPF flap use or temporalis graft use), consists mainly of case studies/series

Teaching Points

1. TPF is an extremely versatile tissue well suited for use as a free graft in rhinoplasty
2. More studies regarding TPF graft utilization in rhinoplasty, particularly larger cohorts with long-term outcome data, are needed

Citations

1. Miller TA. Temporalis Fascia Grafts for Facial and Nasal Contour Augmentation. *Plastic and Reconstructive Surgery*. 1988;81(4):524-533.
2. Guerrero-Santos J. Nose and paranasal augmentation: autogenous, fascia, and cartilage. *Clin Plast Surg*. 1991;18(1):65-86
3. Guerrero-Santos J. Temporoparietal Free Fascia Grafts in Rhinoplasty. *Plastic and Reconstructive Surgery*. 1984;74(4):465-474.
4. Tellioglu AT, Tekdemir I, Erdemli EA, Tuccar E, Ulusoy G. Temporoparietal Fascia: An Anatomic and Histologic Reinvestigation with New Potential Clinical Applications. *Plastic and Reconstructive Surgery*. 2000;105(1):40-45.
5. Karaaltn MV, Batoglu-Karaaltn A, Orhan KS, Demirel T, Guldikem Y. Autologous Fascia Lata Graft for Contour Restoration and Camouflage in Tertiary Rhinoplasty. *Journal of Craniofacial Surgery*. 2012;23(3):719-723.
6. Chen YY, Jang YJ. Refinements in Saddle Nose Reconstruction. *Facial Plast Surg*. 2018;34(04):363-372.
7. Bohilui B, Varedi P, Bagheri SC, Rezaeade M. Nasal radix augmentation in rhinoplasty: suggestion of an algorithm. *Int J Oral Maxillofac Surg*. 2017;46(1):41-45.
8. Robotti E, Leone F, Leonardo I. “Radix Pillow” Constructs with Fascial Extension for Radix Augmentation in Primary Rhinoplasty. *Aesth Plast Surg*. Published online July 6, 2020.
9. Mizuno T. A New Technique for Augmentation Rhinoplasty Using Hybrid Autologous Grafts with Septal Extension Grafts in Asian Patients. *Facial plast Surg*. 2019;35(01):058-064.
10. Bouaoud J, Loustau M, Belloc J-B. Functional and Aesthetic Factors Associated with Revision of Rhinoplasty. *Plast Reconstr Surg Glob Open*. 2018;6(9).
11. Bussi M, Palonta F, Toma S. Grafting in revision rhinoplasty. *Acta Otorhinolaryngol Ital*. 2013;33(3):183-189.

Acknowledgments

Patient consent obtained for use of all photos. Thank you to the Burroughs-Wellcome Fund and Academy of Physician Scientists.

Radix Repair

- Low nasal starting point creates illusion of dorsal hump or nasal defect
- Common mistake: rasp (file down) dorsal “hump” causing overresection^{7,8}
- Augmentation at starting point “lengthens” dorsum and contours bridge^{7,8}
- **36 y/o F:** nasal obstruction, desire for smaller nose with less obvious dorsal hump



Fig. 5: Mild rasping of bony dorsal hump combined with rolled TPF graft for radix augmentation; RESULTS: functional/cosmetic improvement, no complications or re-operation

Dorsal Augmentation

- Common after over-resection of a dorsal hump^{1,2,3}
- Used to raise bony nasal dorsum in Asian patients⁹
- TPF alone or overlaying cartilage graft^{2,3,9}
- **44 y/o F:** 2 prior rhinoplasties s/p trauma; presented with collapse of internal nasal structures and small external dorsal concavity



Fig. 6: Augmentation with ear cartilage + TPF dorsal onlay. RESULTS: functional/cosmetic improvement, no complications or re-operation