



Minerva Access is the Institutional Repository of The University of Melbourne

Author/s:

Sokolovska, S;Grinsell, DG;Shayan, R

Title:

Microsurgical reconstruction using the middle temporal vein: a case report

Date:

2019-09-01

Citation:

Sokolovska, S., Grinsell, D. G. & Shayan, R. (2019). Microsurgical reconstruction using the middle temporal vein: a case report. ANZ Journal of Surgery, 89 (9), pp.E420-E421. <https://doi.org/10.1111/ans.14698>.

Persistent Link:

<https://hdl.handle.net/11343/285098>

Title

Microsurgical Reconstruction using the Middle Temporal Vein:
A case report

Authors

Sonja Sokolovska MD (Distinction) BSc (Hons) ¹

Damien G. Grinsell MBBS FRACS PLAS¹

Ramin Shayan MBBS Ph.D PGDip Surg Anat. FRACS PLAS²

¹: Department of Plastic and Reconstructive Surgery
St Vincent's Hospital Melbourne, 41 Victoria Parade
Fitzroy VIC Australia

²: Royal Melbourne Hospital, Department of Plastic and Reconstructive Surgery
Grattan St, Parkville, Melbourne, AUS 3050

Keywords

Microsurgery, Free Tissue Flaps

Corresponding Author

Dr Sonja Sokolovska

St Vincent's Hospital Melbourne, 41 Victoria Parade

Fitzroy VIC Australia

sonja.sokolovska@gmail.com

Ph: +61 423 353 696

Fax: (03) 9231 3489

I am not a recipient of a research scholarship.

Total Figures: 3

Total Tables: 0

Main Text Word Count: 750

Supporting Documents: Doc S1, Doc S2
(Doc S1)

CASE REPORT

This is the author manuscript accepted for publication and has undergone full peer review but has not been through the copyediting, typesetting, pagination and proofreading process, which may lead to differences between this version and the Version of Record. Please cite this article as doi: [10.1111/ans.14698](https://doi.org/10.1111/ans.14698)

Case One

A 58 year old female presented with multiple ulcerative squamous cell carcinomas of the scalp, having undergone prior radiotherapy to this area. Bony and dural invasion of the squamous cell carcinoma into the cranium was removed at the time of resection, using stealth bifrontotemporal craniotomies. The bony defect was reconstructed with a titanium mesh cranioplasty, and the dural reconstruction was achieved with fascia lata free grafting. Subsequently, the left temporoparietal scalp defect measuring 30 x 15 cm was reconstructed with an immediate free latissimus dorsi myocutaneous flap and skin graft. The left thoracodorsal artery supplying the free flap was anastomosed with the left superficial temporal artery. The left superficial temporal vein (STV) was deemed unsuitable due to an insufficient diameter of 0.4 mm, hence the left middle temporal vein (MTV), ie vein of the temporal fat pad; was dissected and anastomosed to the recipient thoracodorsal vein of the donor flap using a 2.0mm Synovis™ venous coupler. On the twenty fourth postoperative day, this patient returned to the operating theatre for debridement and re-advancement of the latissimus dorsi flap, secondary to exposure of the dura and cranioplasty plates. The distal part of the latissimus dorsi flap was found to have marginal perfusion at this time.

On the twenty ninth postoperative day, the patient underwent a second debridement of the latissimus dorsi flap. This was warranted after finding the left occipital aspect of the flap had dehisced with secondary infection in the setting of exposed titanium mesh, with frank pus drained intraoperatively. The combination of poor marginal perfusion of the distal aspect of the latissimus dorsi flap and the subsequent complications necessitated another free flap reconstruction, as no local options were available.

The following day (day 30 post initial left free latissimus dorsi flap), a third debridement was carried out, after which the secondarily exposed cranial defect was reconstructed with a right anterolateral thigh (ALT) free flap (**Case Two**). The perforating donor vessels of the lateral femoral circumflex artery were anastomosed with the right superficial temporal artery. The right STV was absent, warranting venous anastomosis of the donor vein with the left MTV with a 1.5mm coupling device (Figure 1). The patient's recovery after the second free flap reconstruction remained uneventful.

(Doc S2)

DISCUSSION

Yano et al² first described the usability and efficiency of the MTV as a suitable alternative to the STV with respect to microsurgical skull base reconstruction in the temporal region. They argued the use of the MTV as particularly advantageous because it negates the requirement for vein grafting to optimize pedicle length, hence decreasing the incidence of venous thrombosis and flap failure by design. These authors concluded the mean caliber of the MTV in all 12 cases was significantly greater than that of the STV, supporting the consistent use of the MTV in microsurgical reconstruction.

Their surgical dissection of the MTV was able to be reproduced in all four of our cases, using the external auditory canal, the zygomatic arch, and the lateral canthus as consistent bony surface landmarks. Yano³ et al outlined a method of using a line between a point 52mm lateral from the bony lateral canthus and a point 12mm medial from the external auditory canal, and making an incision along this line to the superficial layer of the deep temporal fascia. The middle temporal vein can then be dissected in the temporal fat pad immediately deep to this incision. The temporal branch of the facial nerve also passes upwards and anterior to the middle temporal vein (Figure 2). Although the superficial layer of the deep temporal fascia lies deep to the temporal branch of the facial nerve and superficial to (and hence protecting) the MTV, great care should be taken to avoid inadvertent damage to the temporal branch of the facial nerve as the MTV is dissected. The anatomical location of the middle temporal vein may be further

understood by viewing the anatomy of the temporal region in cross section (Figure 3). The plane in which the middle temporal vein lies is located deep to the anterior lamella of the temporal fascia, and superficial to the posterior lamella of the temporal fascia. It lies superior and parallel to the zygoma. Therefore, the anterior lamella must be incised in order to find the middle temporal vein.

Figure Legends

Figure 1

Case One: Left MTV (2.0mm) used as recipient for free latissimus dorsi flap

Figure 2

FN (TB): Facial Nerve (Temporal Branch)

MTV: Middle Temporal Vein

STVF: Superficial Temporal Vein (Frontal branch)

STVP: Superficial Temporal Vein (Parietal branch)

EAM: External Auditory Meatus

LC: Lateral Canthus

Figure 3

TF: Temporal fascia

STA: Superficial temporal artery

TM: Temporalis muscle

M: Middle temporal vein

Z: Zygoma

AL: Anterior lamella

PL: Posterior lamella

PF: Parotid fascia

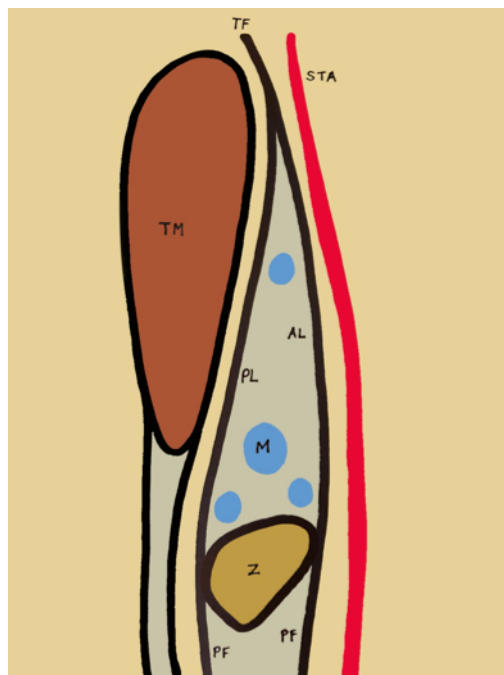
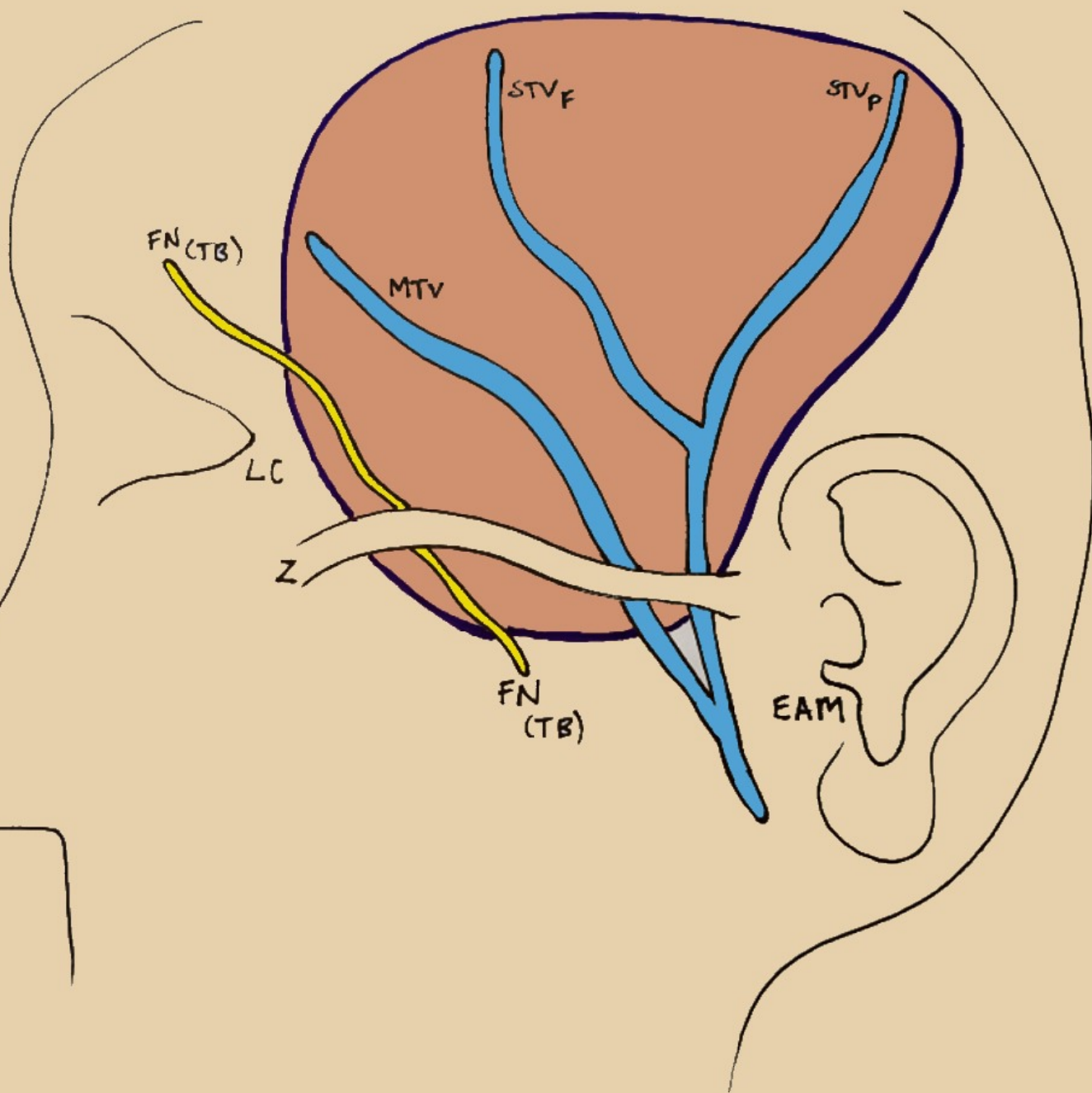


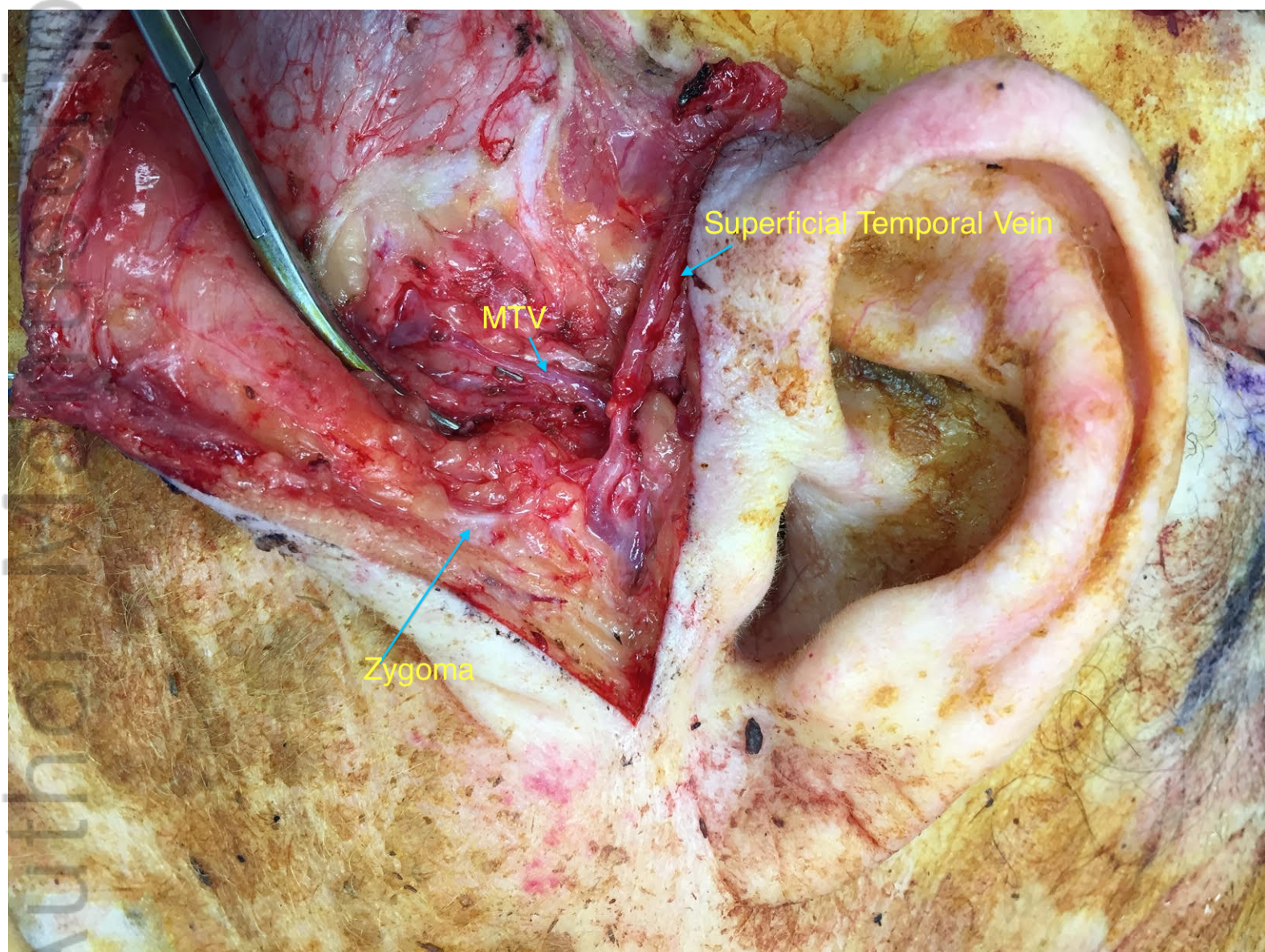
Figure S3 anzjs tiff.tiff

References:

1. Hansen SL, Foster RD, Dosanjh AS, Mathes SJ, Hoffman WY, Leon P. Superficial Temporal Artery and Vein as Recipient Vessels for Facial and Scalp Microsurgical Reconstruction. *Plastic and Reconstructive Surgery*. 2007;**120**: 1879-1884.
2. Yano T, Tanaka K, Iida H, Kishimoto S, Okazaki M. Usability of the Middle Temporal Vein as a Recipient Vessel for Free Tissue Transfer in Skull-Base Reconstruction. *Annals of Plastic Surgery*. 2012;**68**: 286-289.
3. Yano T, Okazaki M, Yamaguchi K, Akita K. Anatomy of the Middle Temporal Vein. *Plastic and Reconstructive Surgery*. 2014;**134**: 92e-101e.



sketch-1522392018239.jpg



temporal_fat_pad_vein anzjs.tiff

Title

Microsurgical Reconstruction using the Middle Temporal Vein:
A case report

Authors

Sonja Sokolovska MD (Distinction) BSc (Hons) ¹

Damien G. Grinsell MBBS FRACS PLAS¹

Ramin Shayan MBBS Ph.D PGDip Surg Anat. FRACS PLAS²

¹: Department of Plastic and Reconstructive Surgery
St Vincent's Hospital Melbourne, 41 Victoria Parade
Fitzroy VIC Australia

²: Royal Melbourne Hospital, Department of Plastic and Reconstructive Surgery
Grattan St, Parkville, Melbourne, AUS 3050

Keywords

Microsurgery, Free Tissue Flaps

Corresponding Author

Dr Sonja Sokolovska

St Vincent's Hospital Melbourne, 41 Victoria Parade
Fitzroy VIC Australia

sonja.sokolovska@gmail.com

Ph: +61 423 353 696

Fax: (03) 9231 3489

I am not a recipient of a research scholarship.

Total Figures: 3

Total Tables: 0

Main Text Word Count: 750

Supporting Documents: Doc S1, Doc S2