

# Recipient superficial temporal system: a minimally invasive option for head and neck free flap reconstruction

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## Introduction

- Recipient vessel selection for head and neck free flaps is crucial for flap success, and some patients may not already have ready access to their cervical vessels at the time of flap reconstruction.
- Controversy exists regarding the use of the **superficial temporal (ST)** system for free flap reconstruction [1].
- The ST system can be **less invasive** than cervical vessel access while providing reliable recipient vasculature [2,3].
- We present a series of patients undergoing **head and neck free flap reconstruction** with ST recipient vessels.

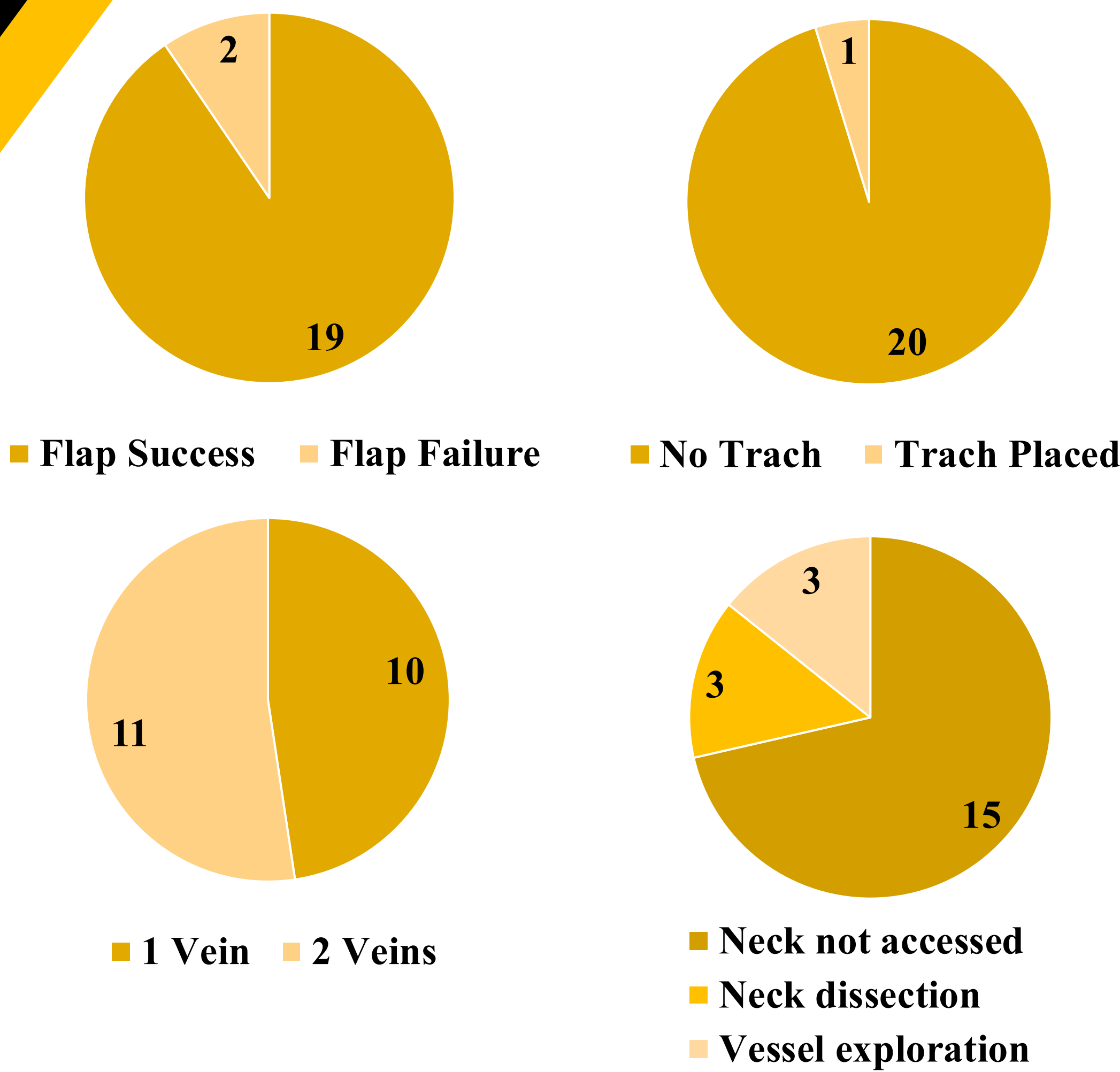
## Methods

- Patients undergoing ST recipient free flap reconstructions from 2017 until 2024 at a single institution were assessed via retrospective chart review.
- Included patients underwent free flap reconstruction with the ST artery recipient site, were over the age of 18, and had follow up with our institution for at least 3 months.
- Demographics, medical history, surgical details, inpatient course, and outpatient follow up were collected for each patient and analyzed.
- 21 patients (15 male, mean age 69.8±10.3 years) were identified fitting inclusion criteria (Table 1).

	Demographics
Total, n	21
Male, n (%)	15 (71.4)
Age, mean ± std dev.	69.8 ± 10.3
Race, n (%)	
White	19 (90.5)
Black	1 (4.8)
Other	1 (4.8)

**Table 1.** Demographics of included patients.

## Results



**Figure 1.** Comparison of characteristics and outcomes within the study cohort.

	Failure 1	Failure 2
Age	78	77
Sex	M	M
Tobacco use	Former	Current
Defect location	Vertex Scalp	Parietal Scalp
Defect etiology	Mohs - SCC	SCC WLE
Flap type	RFFF	ALT
Vein anastomosis	STV	STV
Revision in OR?	Arterial	Arterial
Failure point	Venous	Arterial
Day of failure	POD 1	POD 0
Salvage attempted	POD 1	N/A
Flap explanted	POD 3	POD 0
Closure plan	Wound Vac	Wound Vac

**Table 2.** Information regarding the 2 cohort free flap failures.

- 15 patients avoided extension of surgery into the neck**, while 6 patients had neck involvement (2 neck dissections, 3 neck explorations for vessels, 1 trach with neck dissection). All patients without neck dissection safely avoided tracheostomy (Figure 1).
- Average **hospital stay was 5.8±1.5 days**, excluding an outlier of 106 days due to administration of inpatient adjuvant therapy.
- There were 2 flap failures** (Table 2) and one flap which required return to the OR for successful salvage and re-anastomosis to the facial vessels after ST venous compromise.

## Conclusions & References

- This cohort demonstrates that free flap reconstruction with the **ST system is a viable and less invasive** option for head and neck defects. The use of the ST system prevented more invasive surgery such as neck dissection in 71.4% of cases.
- Interestingly, **both flap failures had a single vein anastomosis**, making flap failure rate with one anastomosis 20% compared to two anastomoses at 0%.
- Our data show a relatively low flap failure rate of 9.5%, with one successful salvage. This is similar to rates of total head and neck flap failures reported at 7.7% [4].
- With appropriate patient selection and surgical technique, ST outcomes can be comparable to other recipient vessels, while **minimizing the negative effects associated with more invasive surgery**.

### References:

- [1] Jeong WS, Jeong W. *Microsurg*. 2024 Nov;44(8):e31255.
- [2] Sousa BA et al. *Braz J Otorhinolaryngol*. 2023 Aug 25;89(4):101271.
- [3] Li J et al. *J Oral Maxillofac Surg*. 2018 Aug 1;76(8):1786-93.
- [4] Kwok AC, Agarwal JP. *Microsurg*. 2017 Sep;37(6):531-8.