Sterno-omohyoid Muscle Transfer for Smile Reanimation in Congenital Facial Palsy

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Introduction

- 38 year old female presented with right congenital facial palsy, interested in smile improvement
- Sterno-omohyoid free muscle transfer was performed to provide a dual-vector smile without introducing additional bulk into the face

Surgical Interventions

- Sterno-omohyoid flap was transferred from the right neck to the right face
- Omohyoid replaced the levator labii superioris and the sternohyoid replaced the zygomaticus major
- One neurovascular pedicle supported both muscles
- Ansa cervicalis was sewn to both the masseteric nerve and a cross-face nerve graft
- Superior thyroid artery and vein were coapted to the facial vessels
- Eyelid weight and fascia sling to the nasolabial fold

Evaluation

- Facial Clinimetric Evaluation Scale (FaCE), eFACE app-based grading system, and Emotrics facial measurement software
- FaCE scale
  - Validated self-assessment of the impact of facial paralysis on quality of life
- eFace
  - Measures individual facial features and regional function at rest and with voluntary and involuntary movement
  - Smile, static, dynamic, and midface-smile domains were selected for analysis
- Emotrics
  - Automated measurement app that compares facial landmark positions and symmetry at rest and with movement, before and after surgery

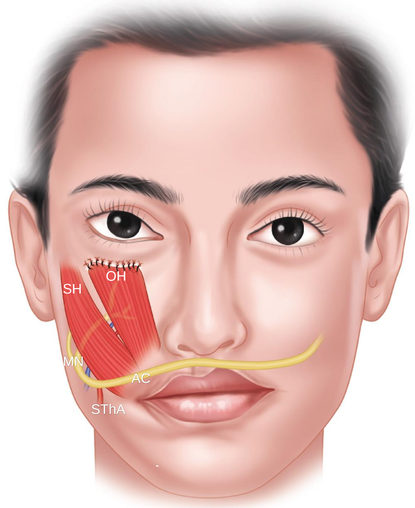

Figure 1. Anatomy of the sterno-omohyoid flap after transfer to the face. The omohyoid replaced the levator labii superioris and the sternohyoid replaced the zygomaticus major muscle. Coaptation of the ansa cervicalis to the masseteric nerve (power and reliability) with a cross face graft (as well as spontaneity and symmetry). Microvascular anastomosis of the superior thyroid artery and vein to the facial vessels. SH, sternohyoid; OH, omohyoid; SThA, superior thyroid artery; AC, ansa cervicalis; MN, masseteric nerve .

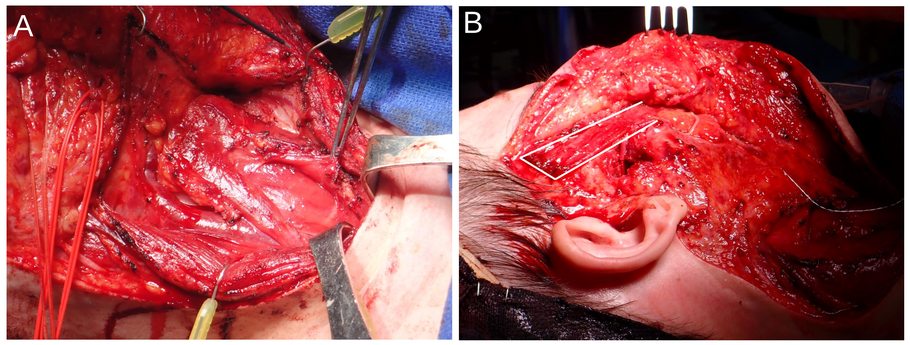

Figure 2. Intraoperative exposure of sterno-omohyoid flap (A) and flap inset to the face (B). The white box outlines the position of the sternohyoid in the face.

Figure 4. Pre- and postoperative photos.(A) Preoperative appearance of a smile. (B) Postoperative appearance of a smile.

Results

- Flap weighed 15 g
- Movement was first seen at 3 months
- FaCE score improved by 37 points
- eFACE improvements:
  - Smile domain: 13 points
  - Static: 25 points
  - Dynamic: 14 points
  - Midface-smile: 29 points
- Emotrics improvements:
  - Resting oral commissure symmetry: 7.1 mm
  - Smile excursion: 7.5 mm
  - Smile symmetry: 7.7 mm
  - Smiling dental show: 5.7 mm

Conclusion

- The sterno-omohyoid flap was used successfully for reanimation in congenital facial palsy
- Produced a natural, synchronous, spontaneous, dual-vector smile with dental show
- Additional cases are needed to detail the advantages of this technique relative to traditional reanimation, particularly regarding smile spontaneity.

References

Vincent AG, Bevans SE, Robitschek JM, Groom KL, Herr MW, Hohman MH. Sterno-omohyoid Free Flap for Dual-Vector Dynamic Facial Reanimation. Ann Otol Rhinol Laryngol. 2020 Feb;129(2):195-200. doi: 10.1177/0003489419875473. Epub 2019 Oct 3. PMID: 31578078.