

End-to-Side Interposed Donor Grafting as a Facial Nerve Reinforcement Technique After Vestibular Schwannoma Surgery

Erika Celis-Aguilar, MD; Luis Lassaletta, MD; José M. Roda, MD; Javier Gavilán, MD

Objectives: This retrospective case review was performed to determine the facial function outcome of an end-to-side interposed donor grafting technique in patients who had a nonresponsive and partially injured facial nerve during a translabyrinthine approach for vestibular schwannoma resection.

Methods: The study included patients with silent electrophysiological tests after partial injury of the facial nerve during translabyrinthine schwannoma resection surgery in a tertiary referral hospital. The patients underwent end-to-side interposed donor grafting as a facial nerve reinforcement technique, and we evaluated their facial function after 1 year of follow-up.

Results: Four cases with intact preoperative facial function were included (3 men and 1 woman). All patients had a lack of electrical response from the facial nerve and partial anatomic injury after a translabyrinthine approach. An end-to-side interposed donor grafting technique was performed. The donor grafts used were the sural nerve (2 patients), superior vestibular nerve (1 patient), and greater auricular nerve (1 patient). All patients achieved a good House-Brackmann grade. Ocular adjuvant procedures were performed in all patients.

Conclusions: Immediate repair of the facial nerve with an interposed donor graft may provide better facial function in patients who have no electrical response from a partially injured facial nerve after vestibular schwannoma surgery.

Key Words: end-to-side neurotaphy, facial paralysis, facial reanimation technique, nerve graft, translabyrinthine surgery, vestibular schwannoma.

INTRODUCTION

Vestibular schwannoma (VS) surgery carries the risk of facial nerve damage. The rate of preservation of the facial nerve during VS resection is 90% to 98% of total cases.^{1,2} In addition to anatomic preservation, electrical stimulation of the proximal portion of the nerve has become one of the most reliable prognostic factors for long-term facial function. Excellent postoperative facial function (House-Brackmann [HB] grades I and II) has been related to low intraoperative nerve stimulus thresholds (less than 0.05 mA), and a lack of response on intraoperative stimulation has been related to poorer outcomes.³ In spite of efforts to preserve an intact facial nerve, some patients with anatomic continuity of the nerve do not retain acceptable facial function after surgery. An observation period of about 10 to 12 months is usually needed. If facial recovery does not occur, the patient will probably require another surgical procedure.⁴

A surgical technique described by Samii et al⁵ could provide a better way to approach a facial

nerve with partial damage and/or no electrical response. This technique uses an end-to-side donor graft interposition that bypasses the damaged area of the facial nerve. It also reduces the need for another surgical procedure. To our knowledge, there are no other publications supporting the use of this technique. We describe the use of the facial nerve reinforcement technique during a translabyrinthine approach in 4 cases of an intact but nonresponsive facial nerve after VS resection. Good results were obtained in all patients.

MATERIALS AND METHODS

This retrospective study was conducted in the Otolaryngology–Head and Neck Surgery department of a tertiary referral hospital. We included 4 patients with VS resection via a translabyrinthine approach whose facial nerve was partially injured during the operation. Partial injury to the facial nerve implies that the nerve is not disrupted but shows an irregular anatomic area with no electrical stimulation proximal to this area. The facial nerve was reinforced by an interposed donor graft based on the surgical tech-

From the Department of Otolaryngology, Center for Research and Education in Health Sciences, Independent University of Sinaloa, Culiacán, Mexico (Celis-Aguilar), and the Department of Otolaryngology La Paz, University School of Medicine, Hospital La Paz Institute for Health Research IdiPAZ (Lassaletta, Gavilán), and the Department of Neurosurgery La Paz, University Hospital (Roda), Madrid, Spain.

Presented in part at the Sixth International Conference on Acoustic Neuroma, Los Angeles, California, June 28–July 6, 2011.

Correspondence: Luis Lassaletta, MD, Servicio de ORL, Hospital La Paz, Pº de la Castellana, 261, 28046 Madrid, Spain.