The Laryngoscope
Lippincott Williams & Wilkins, Inc., Philadelphia

How I Do It

Head and Neck and Plastic Surgery

A Targeted Problem and Its Solution

Preservation of the Integrity of the Infraorbital Nerve in Facial Translocation

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INTRODUCTION

The infraorbital nerve represents the largest cutaneous branch of the maxillary nerve to supply the area of skin derived from the embryonic maxillary prominence.[1] It emerges from the infraorbital foramen on a line that runs almost vertically through the pupil to supply sensation to the cutaneous surfaces of the lateral aspect of the nose, upper lip, and lower eyelid. It is important to positively identify this nerve and preserve it, whenever possible, during all midfacial osseous procedures. This nerve is quite sensitive to traction injuries, often leaving patients with prolonged hypoesthesia and dysesthesia.

During the past two decades skull base surgeons have greatly expanded the resectability of a number of lesions of the skull base, chiefly as a result of improved exposure, allowing for safer and more complete removal. Modular disassembly of the facial skeleton along esthetic facial subunits is the basis of facial translocation or disassembly approaches. Improvement in accessibility at the level of the skull base is often coupled to diminished function of less vital neural elements anteriorly. In extensive facial translocation approaches to the skull base, a number of surgeons have espoused elective transection of the infraorbital nerve (and occasionally the frontal branch of the seventh cranial nerve) with anastomosis at the completion of the procedure.[2,3] This was performed in an effort to avoid the troublesome dysesthesias associated with the prolonged nerve traction often required during resection and reconstruction of skull base tumors and defects. In fact, simple midfacial degloving is associated with alterations in sensation over the distribution of the infraorbital nerve in nearly all patients undergoing the procedure.[4] Hypoesthesia, once present, often lasts for 3 to 6 months after surgery and may, rarely, be permanent. This brief article outlines my approach to routinely preserving the function of the infraorbital nerve (without any significant postoperative sensory deficit) while improving access for facial translocation procedures.

TECHNIQUE

The access incision utilized to gain transfacial exposure of the skull base will be determined by the particular location of the target lesion as well as the type of facial osteotomies that will be required. Most access incisions are either a modified lateral rhinotomy or a degloving approach. In either case, once the incision has been made in the standard fashion, subperiosteal dissection along the anterior maxilla is carried out with periosteal elevators to the level of the inferior orbital rim. Positive identification of the infraorbital nerve is accomplished in all cases. Next, a Freer elevator is utilized to protect the nerve while a 703 burr on a Stryker drill with good irrigation serves to drill a trough two thirds of the diameter of the infraorbital foramen (Fig. 1). The trough extends from the infraorbital foramen up to the level of the inferior orbital rim. This distance is usually less than 1.5 cm. Once the trough is completed, a Freer elevator is used to gently tease the infraorbital nerve out of the foramen, releasing it completely into the orbit (Figs. 2 and 3).

DISCUSSION

The described technique has been used in 18 patients, releasing a total of 28 nerves. Six cases were performed via facial degloving approach and 12 cases through

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Editor's Note: This Manuscript was accepted for publication May 2, 2000.

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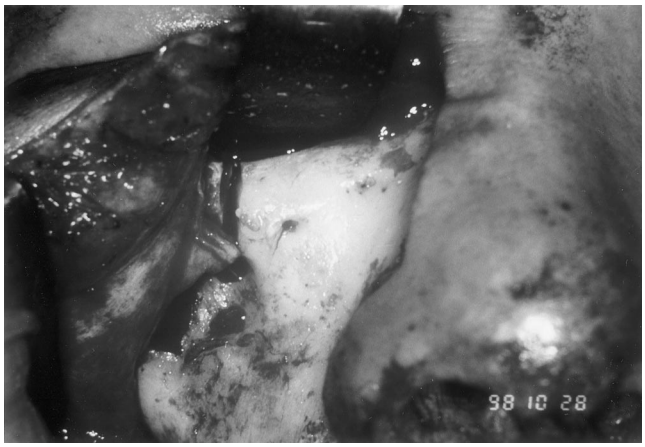

Fig. 1. Trough has been drilled with a 703 burr from the level of the infraorbital foramen to the inferior orbital rim. Note that the width of the trough is two thirds the maximal dimension of the infraorbital foramen.

a lateral rhinotomy approach. No patients experienced any facial anesthesia, hypoesthesia, or paresthesia over the distribution of the infraorbital nerve after surgery

Fig. 2. Nerve is being released with a Freer elevator.

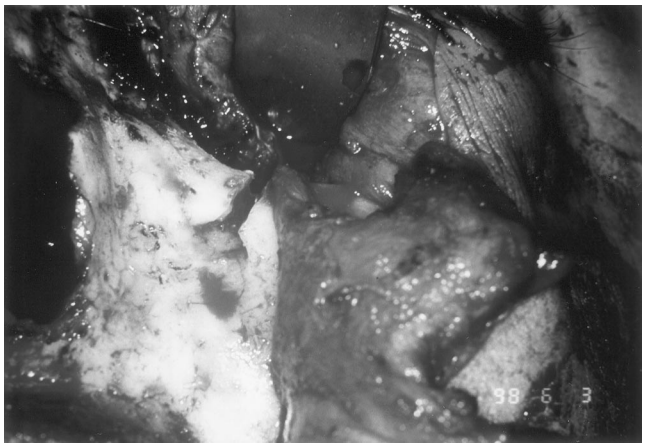

Fig. 3. Nerve release into the orbit is completed.

(subjectively or objectively when tested with light touch, brush stroke, and two-point discrimination). The procedure was simple to perform, taking approximately 5 to 10 minutes per side. Once nerve release is accomplished, there is a significant improvement in the retraction that may be safely performed on the overlying skin flap, as well as not having to be concerned with the possibility of traction nerve injury.

CONCLUSION

This article presents a novel approach to dealing with the infraorbital nerve during transfacial approaches to the skull base. It appears to be effective in preventing traction injuries to this nerve that may be quite troublesome to the patient in the postoperative period. It also obviates the need for elective transection and allows for an improvement in exposure secondary to increased cheek flap mobility.

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