Otolaryngology–Head and Neck Surgery (2008) 138, 531-532

CLINICAL TECHNIQUES AND TECHNOLOGY

A novel approach allowing binostril work to the sphenoid sinus

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Surgical approaches to the sphenoid sinus began in the early 20th century as sellar tumors gained recognition because of advances in neurology, pathology, and radiology. Developments in the field of endoscopic surgery have prompted surgeons to attempt endoscope-assisted surgery of the pituitary gland and to use endoscopes in surgery for pituitary tumors and anterior skull base lesions, which have been particularly successful.[1]

Access to the sphenoid sinus is the first step in surgery and classically has been described in three ways: transnasal direct, transseptal, and transnasal with removal of the posterior nasal septum. The transnasal direct is preferable when the lesion is unilateral. The transseptal approach is more conservative and leaves the anatomy of the nasal cavity intact. The transnasal approach with removal of the posterior nasal septum may be preferable when the patient has undergone previous septum surgery; this approach also allows concomitant binostril work.[2-4] However, to enable the binostril work, the posterior septal portion must be removed, a procedure that results in a large posterior septal perforation. Septal perforations can cause significant morbidity; associated symptoms include nasal congestion or obstruction, nasal crusting and drainage, and recurrent epistaxis, among other problems.

We describe a novel endoscopic transseptal approach using a posterior nasal septal mucosal flap, which allows the surgeon to perform binostril work, cover the skull base defects, and avoid posterior nasal septal perforation. This technique was submitted to and approved by the ethical committee of our institution.

SURGICAL TECHNIQUE

The surgery is performed under general anesthesia. The patient is in the supine position, with the dorsum elevated approximately 30 degrees. The nasal cavity is decongested with cottonoids soaked in a vasoconstrictor solution.

The surgery begins with an infiltration of the nasal septum with a lidocaine 2 percent epinephrine 1:100.000 solution. A classic anterior incision for septoplasty is made, generally at the right side of the nose. A mucoperichondrial/mucoperiosteal dissection is made at both sides. The posterior part of the nasal septum is removed, saving the inferior portion as a landmark for midline. The sphenoid rostrum and anterior wall of the sphenoid sinus are exposed.

The next step is the creation of the flap at one side of the nasal septal mucosa. We perform three incisions: 1) vertical: 2 to 3 cm anterior to the sphenoid rostrum; 2) superior horizontal: 1 to 2 cm below the most superior aspect of the nasal septum; 3) inferior horizontal: 0.5 cm above the nasal floor.

These incisions can be completed with scissors or other sharp instruments as necessary, making a mucosal flap that is displaced on the nasal floor (Fig 1). This nasal septal flap preserves the posteriolateral neurovascular pedicle in the sphenopalatine neurovascular bundle.[5] The other side of the

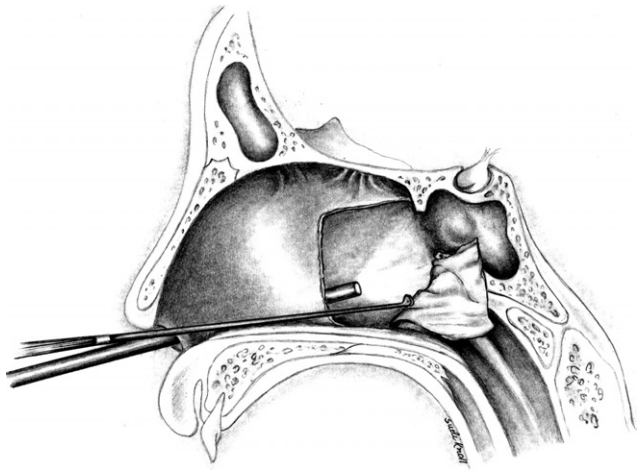

Figure 1 Nasal septum mucosal flap. Surgical instrument enters through one nostril and the endoscope through the septum; the other side of the septal mucosa is left intact and preserved.

Received October 16, 2007; revised November 8, 2007; accepted November 27, 2007.

doi:10.1016/j.otohns.2007.11.031

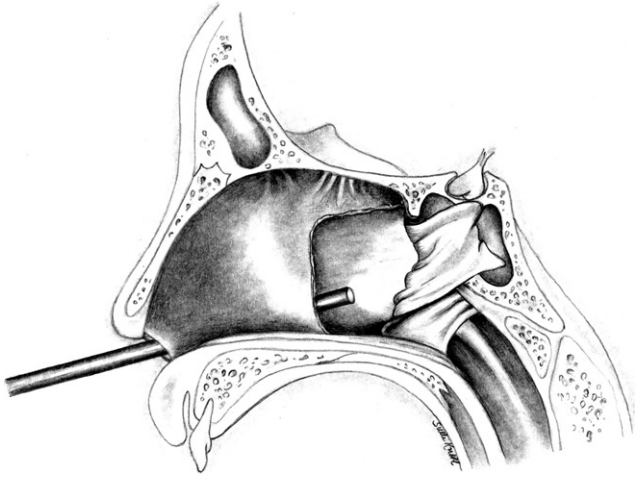

Figure 2 Repositioning of nasal septal mucosal flap. This step allows a more robust pediculated tissue to help in the closure of the skull base defect.

nasal septal mucosa is preserved. Multiple modifications regarding length and width are possible, and the flap should be sketched according to the size and shape of the anticipated skull base defect. After the skull base procedure, this procedure can be performed simultaneously by two surgeons. The posterior nasal septal mucosal flap is then repositioned, allowing a robust pediculated tissue to help in the closure of the skull base defect (Fig 2).

We used this technique in 20 patients who underwent surgery for pituitary tumors; this group of patients included 12 males and 8 females, ranging in age from 24 to 76 years. Compared with the classic transseptal transsphenoidal approach, the operating time did not change with this technique. There were no perioperative surgical complications, and no infectious or wound complications, such as partial or total loss of the flap, were encountered. One patient experienced retraction of the flap, with no complications or treatment needed. Another patient presented a posterior nosebleed from the nasal septal artery. The bleeding was controlled with electrocautery, and the flap blood supply was preserved. Minor asymptomatic synechiae were noted in several patients, but no treatment was required. The donor site on the nasal septum became mucosalized within several weeks, and no septal perforations were noted.

CONCLUSION

The advantages of this technique include the following: it allows a binostril approach that allows two surgeons to manipulate surgical instruments simultaneously; a robust pediculated tissue to help in the closure of the skull base defect; and preservation of one side of the nasal septum mucosa, avoiding nasal septal perforation.

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FINANCIAL DISCLOSURE

This study was not financially supported from external sources.

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