Endoscopic Septoplasty: The Open Book Method

N.Prepageran · O.R.Lingham

Abstract The advent of endoscopes has revolutionized rhinology and the traditional headlight based surgeries have largely been replaced by endoscopes. Septoplasty for deviated nasal septum or Sluder's neuralgia have been conventionally performed with the aid of headlight. This can be technically challenging as visualization of the nasal cavity, particularly the posterior portion is rather limited as the procedure is performed via the nostrils. In addition, with headlights for illumination, teaching this procedure can be difficult as only the surgeon who is wearing the headlights has direct vision of the surgical field.

Endoscopic septoplasty is an accepted alternative to traditional headlight approach to septoplasty. This approach provides a direct-targeted route to the anatomic deformity, improved visualization, and magnification of the surgical field. Our experience in endoscopic septoplasty is highlighted in this paper, excluding septoplasties performed as part of exposure to the sinuses. We use the open book method that to best of our knowledge has not been described in literature before.

Keywords Endoscopic septoplasty · deviated nasal septum

Endoscopic Septoplasty: The Open Book Method

The advent of endoscopes has revolutionized rhinology and the traditional headlight based surgeries have largely been replaced by endoscopes. Septoplasty for deviated nasal septum or Sluder's neuralgia have been conventionally performed with the aid of headlight. This can be technically challenging as visualization of the nasal cavity, particularly the posterior portion is rather limited as the procedure is performed via the nostrils. In addition, with headlights for illumination, teaching this procedure can be difficult as only the surgeon who is wearing the headlights has direct vision of the surgical field.

Endoscopic septoplasty is an accepted alternative to traditional headlight approach to septoplasty. This approach provides a direct-targeted route to the anatomic deformity, improved visualization, and magnification of the surgical field. Our experience in endoscopic septoplasty is highlighted in this paper, excluding septoplasties performed as part of exposure to the sinuses. We use the open book method that to best of our knowledge has not been described in literature before.

We found that this approach provides a direct-targeted route to the anatomic deformity, improved visualization, and magnification of the surgical field. It allows improved evaluation of the posterior nasal septal deformities and precise controlled resection of the deviated septum or bony cartilage. Deviated maxillary crest can also be chiseled under endoscopic guidance with this approach.

A prospective review of cases undergoing therapeutic endoscopic septoplasty with the open book method was performed between January 2002 and December 2007. Only cases undergoing endoscopic septoplasty for symptomatic deviated nasal septum were included and patients who had endoscopic septoplasty for approach as part of endoscopic sinus surgery were excluded. These cases were performed in University Malaya Medical Center by the author. A total of 42 cases were performed in this period. Their records were

N. Prepageran
Dept. of Otolaryngology
University Malaya Medical Center
50603 Kuala Lumpur
Malaysia

N.Prepageran (✉)
E-mail: prepageran@yahoo.com

reviewed for surgical indications, intraoperative technique and findings, and post operative complications.

Material and Method

The patient is positioned, draped and prepared as for standard endoscopic sinus surgery. The nasal cavity is packed with ribbon gauze soaked in 2 ml of cocaine 10% and 3 ml of saline after induction. The nasal cavity is then examined endoscopically and the site, severity of the deviation or septal spurs is noted.

Lignocaine 1% and adrenaline 1:100000 is injected subperichondrially along the septum.

The incision is placed vertically just anterior to the point of maximal deviation on the convex side (Killians incision). The mucoperichondrium is raised on this side under direct visualization using a 0 degree endoscope until the deviated portion is exposed. The raised flap is then divided horizontally along the horizontal axis of maximal deviation and the flaps are opened like a book (hence the open book technique) as required (Fig. 1). This exposes the entire deviated segment very clearly with excellent visualization and evaluation. It also enables complete exposure of the septum from anterior-posterior (bony septum) and superior-inferior (maxillary crest) (Fig 2). This technique has been modified by the author from standard normal incision and to the best of our knowledge has not been described in literature before. The septal cartilage is then incised and stair stepped a few millimeters posterior to the initial mucosal incision. The contralateral mucoperichondrial flap is then raised. Flap elevation is continued bilaterally until the deviated segment is completely exposed. The open book method is only performed on one i.e.; the convex side.

The deviated segment is now excised with endoscopic scissors or punches. Deviated portions of bone from vomer and the perpendicular plate of ethmoid are removed if required. Maxillary crest are chiseled if required. This entire procedure is performed with endoscopic visualization and only the required septum is removed to achieve a patent airway. The flaps are then replaced back to their original position and often they are well opposed, thus suturing is not required (Fig 3). In some cases quilting sutures are used in with vicryl across the septal flaps.

Thirty four cases have been reviewed. Their age range from 18 to 70 years and their predominant symptom was nasal obstruction (100%) and facial pain/pressure (21.4%). Nine patient (21.4%) had mainly cartilaginous deviation while 15 (35.7%) had cartilaginous and bony deviation and 18 (42.9%) had cartilage, bony and maxillary crest deviation. All patients have significant improvement in their presenting symptoms.

The followup period for these patients during this study range from 18–36 months.

Fig. 1

Fig. 2

Fig. 3

Complications with this procedure were minimal due to direct visualization. Two patients had a 2mm tear on the contralateral mucoperichondrium during the surgery but healed well post operatively. There were no septal hematoma or septal perforation till date. On follow up the mucoperichondrium had healed completely, back to the pre-surgery form on both sides.

Discussion

The traditional approach to septoplasty involves head light illumination, visualization through a nasal speculum and surgical instruments that are different from standard endoscopic sinus procedures. This can be sub optimal when treating a narrow nose, posterior deviations, requiring frequent changing from headlight to endoscope [1].

Furthermore, impaired visualization could predispose to nasal mucosa trauma and unnecessary bleeding.

Recent literature has already embraced the topic of endoscopic septoplasty, with several published articles on the subject [1,2,3]. Endoscopic septoplasty is an attractive alternative to traditional headlight approaches to septoplasty. This approach provides a direct-targeted route to the anatomic deformity, improved visualization, and magnification of the surgical field. The endoscopes definitely provide a significantly improved view especially in posterior dissection of the septum [4, 5]. It allows improved evaluation of the posterior nasal septal deformities, identification of the degree of mucosal involvement of the posterior ends of the inferior turbinates and concomitant assessment of the middle meatus. It permits objective documentation of the cause of nasal obstruction with possible use in outcome assessment. The endoscope can be passed easily under the septal flaps, minimal retraction of the flap is required to gain excellent visualization. In addition, because the incision can be placed more posteriorly in the nose just anterior to the deviation, the extent of mucosal elevation anteriorly in the nose is markedly reduced. Post operative edema is therefore reduced. The primary advantage of the technique is the ability to reduce morbidity and postoperative swelling in isolated septal deviations by limiting the dissection to the area of the deviation. This ability to markedly reduce the extent of subperichondrial dissection is particularly valuable in patients who have undergone prior septal cartilage resection. Furthermore unlike nasal examination

with speculum, endoscopic evaluation of the nasal airway permits visualization without physical distortion of nasal anatomy. Thus improvements in critical areas of obstruction such as ‘nasal valve’ area can be better assessed during surgery [1].

Endoscopic septoplasty is a valuable teaching tool. Learning septoplasty in the conventional headlight manner is difficult due to limited visualization. The use of video monitor to demonstrate steps and techniques of mucosal flap elevation offers significant learning opportunities to surgical assistants, trainees and operating room staff compared to the conventional headlight [1].

The open book method gives an excellent exposure to a large area of the septum and is particularly effective in the treatment of markedly deviated septums. Thus it is much easier to evaluate and excise the deviated area compared to working between 2 raised flaps in the usual endoscopic septoplasty. This exposure is adequate to even chisel spurs and deviated maxillary crest endoscopically as shown in this study. The flaps are replaced back quite easily and usually oppose well. Minimal or no complication were noted with this technique and the mucosal flaps heal back to its presurgery state within a 2 weeks.

References

1. Hwang PH, McLaughlin RB, Lanza DC, Kennedy DW (1999). Endoscopic septoplasty: indications, technique, and results. *Otolaryngol Head Neck Surg.* May;120 (5):678-82.
2. Stammberger H. (1991). *Functional Endoscopic Sinus Surgery; the Messerklinger Technique.* Philadelphia. B.C. Becker p. 432-3
3. Lanza DC, Rosin DF, Kennedy DW (1993). Endoscopic septal spur resection. *Am. J. Rhinology.* 7;213-6
4. Sindwani R, Wright ED (2003) Role of endoscopic septoplasty in the treatment of atypical facial pain. *J Otolaryngol.* Apr;32 (2): 77-80
5. Durr DG. (2003) Endoscopic septoplasty: technique and outcomes. *J Otolaryngol.* Feb;32 (1): 6-11.
6. Nayak DR, Balakrishnan R, Murthy KD (1998). An endoscopic approach to the deviated nasal septum - a preliminary study. *J Laryngol Otol.* Oct;112 (10): 934-9