Endoscopic open book septoplasty as an adjunct technique in addressing sharp septal spur

Darshini Nadarajah,[1] Jeyasakthy Saniasiaya,[1] Budi Sutikno,[2] Rodante Roldan,[3] Baharudin Abdullah[1]

[1]Department of Otorhinolaryngology-Head & Neck Surgery, School of Medical Sciences, Universiti Sains Malaysia Health Campus, 16150 Kota Bharu, Kelantan, Malaysia.

[2]Department of Otorhinolaryngology-Head & Neck Surgery, Universitas Airlangga, School of Medicine/ Dr Soetomo General Hospital, Surabaya, Indonesia.

[3]Department of Otorhinolaryngology-Head & Neck Surgery, Rizal Medical Center, Manila, Philippines.

Corresponding address is to: Prof Dr Baharudin Abdullah

E-mail: baharudin@usm.my
Mobile No.: +6097676416

Pan Arab Journal of Rhinology
2018, 8:25-27

Nasal obstruction secondary to deviated nasal septum is a common condition which almost always requires surgical correction. Septal deformity has also been linked to sinus disease, notably ostiomeatal disease. Thus, it is one of the most common procedures being done alone or in combination with other endoscopic procedures. Albeit the conventional techniques and approaches are still being practiced, endoscopic septoplasty has emerged as the preferred technique. However, the presence of sharp septal spur causes difficulty during surgery which usually results in tearing of the mucoperichondrial flap. We present our technique of an endoscopic open book septoplasty in order to overcome this problem.

Keywords: Deviated nasal septum; septal spur; endoscopic septoplasty

Pan Arab Journal of Rhinology 2018, 8:25-27

Introduction

Septoplasty is defined as a surgical procedure addressing the nasal septum to straighten, along with reshaping, scoring, morselizing, crushing and removing the deviated portion of the septum. [1] In previous years, a more traditional septoplasty technique was employed which involves usage of head light for illumination and visualization. The drawback of this procedure is the limited surgical view of the narrowed nose particularly of posterior deviations due to the restricted space. Moreover, impaired visualization during this procedure leads to trauma and bleeding.

With the development of the nasal endoscope and endoscopic instrumentation, endoscopic septoplasty has steadily grown in popularity with otorhinolaryngologists worldwide. [2] Endoscopic septoplasty is a minimally invasive technique that provides a direct targeted route to the anatomic deformity along with improved visualization during surgery especially with a septal spur. This article describes our endoscopic open book technique in addressing sharp septal spurs.

Technique

The patient's positioning and draping is similar to standard endoscopic sinus surgery. The nasal cavity is initially packed with patty soaked with Moffatt's solution. This is followed by re-examining the nasal cavity endoscopically to visualise the site of the septal deformity **(Fig. 1)**. Lidocaine with epinephrine is injected at approximately 1 cm in front of the spur subperichondrially along the septum. Standard Freer incision **(Fig. 2)** is made and as the mucoperichondrium is raised under direct visualization using rigid nasoendoscopy, the sharp septal spur is addressed via an open book technique. A horizontal incision is made along the sharp border of the spur **(Fig. 3)** and the mucoperichondrial flap is deflected superiorly and inferiorly as an open book **(Figs. 4,5)**. This enables visualization of the entire deviated site. This is then followed by flap elevation on the contralateral site. The septal spur is now excised **(Fig. 6)**. Subsequently, the flap is put back and the septal flap is apposed with absorbable vicryl 3/0 suture **(Fig. 7)**. No packing is required postoperatively and the patient is usually discharged the next day without any complications. Alternatively, if nasal packing is desired, either non-resorbable or resorbable packing may be used. When nasal packing is used, suturing of the septal flap may be omitted. However, nasal packing must be inserted carefully so as to avoid displacing the superior and inferior mucoperichondrial flap from its original position.

Fig 1 Endoscopic view demonstrating the sharp septal spur

Fig 2 Freer incision anterior to septal spur

Fig 3 Horizontal incision along the septal spur

Fig 4 Superior mucoperichondrial flap raised by freer elevator

Fig 5 Inferior mucoperichondrial flap raised by freer elevator

Fig 6 Deviated septal cartilage removed by forceps

Fig 7 Superior and inferior flap apposed together after removal of deviated segment

Discussion

Deviated nasal septum (DNS) is common and occurs in nearly 80 % of the general population worldwide. [3] DNS may develop early and late during the growing up process and often arises from a combination of etiological sources amongst which includes failure of development during embryological stage, trauma during childbirth and prolonged intrauterine pressure. [4] Other causes include genetic influences, mechanical injuries, congenital malformations, infections or neoplasia. There are several proposed classifications for deviated nasal septum. [5-10] The earlier and widely used classification method was proposed by Mladina. [8] According to this classification, there are three types of DNS with vertical crest, one type with bilateral deformity, two types with horizontal deformity and another type with atypical deformity. The DNS type with vertical crest tends to have sharp septal spur and contributes to mucoperichondrial flap tearing during surgery.

Endoscopic septoplasty has become the favourite approach of the ENT surgeon nowadays as compared to traditional 'headlight' approach as it provides magnified visualisation and direct targeted route to the surgical field especially in posterior dissection of the septum. [11] Use of endoscopic technique to correct septal deviation was first described in 1991 by Lanza et al [12] and Stammberger [13]. Endoscopic septoplasty is not only used to treat patients with nasal obstruction, but also plays a role in complex septal deformities and as an adjunct to endoscopic sinus surgery.

Several advantages can be identified in this endoscopic method. [11] Firstly, the ease of improved visualization is gained as the endoscopes can transit smoothly under the septal mucosal flap, and crucial areas like nasal valves with minimal retraction. Limited septal resection reduces the morbidity and hospital stay of the patient in terms of minimal or without nasal packing and antibiotics usage. Secondly, endoscopic septoplasty plays an important role in teaching centres with the help of video monitors. This device helps to demonstrate the surgical anatomy and techniques used in patients. Thus, endoscopic technique provides greater learning abilities for the future rhinologist. In addition, endoscopic technique plays an important role in revision septoplasties. Placing the incision area immediately anterior to the area of residual elevation endoscopically, the need to raise a flap with no underlying cartilage will be minimized. Thus, it is a significant advantage for the patient with a history of septal perforation.

Endoscopic septoplasty has less complications despite its limitation such as frequent tip cleaning, loss of binocular vision and need expertise to perform. [14] Hwang et al [15] showed endoscopic septoplasty has only a 5% complication rate as compared to conventional surgery while Harley et al [16] described significant improvement of symptoms and quality of life amongst patients who underwent endoscopic septoplasty as compared to the conventional group. Park et al [17] revealed that post-operative complications including synechiae were reduced in patients of endoscopic septoplasty.

Nevertheless, one of the most difficult step during endoscopic septoplasty is elevating mucoperichondrial flap around a sharp septal spur area. Thus, an endoscopic open book septoplasty technique [18] is a useful adjunct to the various endoscopic technique to address the deformed septal area. Endoscopic open book method avoids tearing of the contralateral septal flap and enables easy route to the deviated or spur site. Other than that, exposure provided via this technique also enables spur or the deviated maxillary crest to be chiselled. Importantly, use of endoscopic tools is encouraged as it passes under septal flaps easily with minimum retraction of flaps. This results in reduced mucosal elevation interiorly and reduced post-operative edema. In addition, endoscopic open book septoplasty is proven to be useful for patients with prior septal cartilage resection history. Finally, this new procedure also causes minimal or no complication for the patients after the surgery as mucosal flaps have been observed to completely heal within 1 week. [18]

Conclusion

Endoscopic open-book septoplasty is an adjunct technique to address the sharp septal spur with good outcomes. Hence, incorporation of this technique as a part of the routine endoscopic septoplasty is beneficial for our patients.

Financial support and sponsorship

Nil.

Conflicts of interest

The authors declare no conflicts of interest.

References

1. Stewart MG, Smith TL, Weaver EM, Witsell DL, Yueh B, Hannley MT, Johnson JT. Outcomes after nasal septoplasty: results from the Nasal Obstruction Septoplasty Effectiveness (NOSE) study. Otolaryngol Head Neck Surg. 2004;130:283-90.

2. Kulkarni SV, Kulkarni VP, Burse K, Bharath M, Bharadwaj C, Sancheti V. Endoscopic Septoplasty. A Retrospective Analysis of 415 Cases. Indian J Otolaryngol Head Neck Surg. 2015;67:248-54.

3. Aramani A Karadi RN, Kumar S. A Study of Anatomical Variations of Osteomeatal Complex in Chronic Rhinosinusitis Patients-CT Findings. J Clin Diagn Res. 2014;8:KC01–4. doi: 10.7860/JCDR/2014/9323.4923.

4. Buyukertan M, Keklikoglu N, Kokten G. A morphometric consideration of nasal septal deviations by people with paranasal complaints; a computed tomography study. Rhinology. 2003;41:21-4.

5. 5. Baumann I, Baumann H. A new classification of septal deviations. Rhinology. 2007;45:220-3.

6. Buyukertan M, Keklikoglu N, Kokten G. A morphometric consideration of nasal septal deviations by people with paranasal complaints; a computed tomography study. Rhinology. 2003;41:21-4.

7. Guyuron B, Uzzo CD, Scull H. A practical classification of septonasal deviation and an effective guide to septal surgery. Plast Reconstr Surg. 1999;104:2202-12.

8. Mladina R. The role of maxillary morphology in the development of pathological septal deformities. Rhinology. 1987;25:199-205.

9. Mladina R, Cujic, E, Subaric M, Vuković K. Nasal septal deformities in ear, nose, and throat patients: an international study. Am J Otolaryngol. 2008;29:75-82.

10. Rao JJ, Kumar EC, Babu KR, Chowdary VS, Singh J, Rangamani SV. Classification of nasal septal deviations-relation to sinonasal pathology. Indian J Otolaryngol Head Neck Surg. 2005;57:199-201.

11. Sathyaki DC, Geetha C, Munishwara GB, Mohan M, Manjuanth K. A Comparative Study of Endoscopic Septoplasty Versus Conventional Septoplasty. Indian J Otolaryngol Head Neck Surg. 2014;66:155–61.

12. Lanza DC, Kennedy DW, Zinreich SJ. Nasal endoscopy and its surgical applications. In: Lee KJ Essential Otolaryngology: Head and Neck Surgery. 5th ed New York; Medical Examination Publishing Co. 1991:373-87.

13. Stammberger H. Functional Endoscopic Sinus Surgery, the Messerklinger Techique. B. C. Decker (Inc), Philadelphia. 1991;156-68.

14. Suligavi SS, Darade MK, Guttigoli BD. Endoscopic Septoplasty: Advantages and Disadvantages. Clinical Rhinology. 2010;3:27-30.

15. Hwang PH, McLaughlin RB, Lanza DC, Kennedy DW. Endoscopic septoplasty: indications, technique, and results. Otolaryngol Head Neck Surg. 1999;120:678-82.

16. Harley DH, Powitzky ES, Duncavage J. Clinical outcomes for the surgical treatment of sinonasal headache. Otolaryngol Head Neck Surg. 2003;129:217-21.

17. Park DH, Kim TM, Han DG, Ahn KY. Endoscopic assisted correction of the deviated nose. Aesthet Plast Surg. 1998;22:190-5.

18. Prepageran N, Lingham OR. Endoscopic septoplasty: The open book method. Indian J Otolaryngol Head Neck Surg. 2010;62:310-2.