

Original Research Article

Endoscopic septoplasty without nasal packing: our technique and outcomes

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ABSTRACT

Background: Septoplasty is one of the common procedures performed in otorhinolaryngology practice for treatment of nasal obstruction caused by deviated nasal septum. Septoplasty is traditionally performed using a headlight and nasal speculum. However Endoscopic technique using rigid endoscopes has gained widespread popularity in recent years. Traditionally after correction of septal deviation the mucosal flaps are opposed and held together by some kind of nasal packing to prevent bleeding and septal hematoma. But the nasal pack causes significant morbidity in the post-operative period and also bleeding and pain while pack removal. In the present study we describe our technique of endoscopic septoplasty without nasal packing, in terms of patient comfort and complications.

Methods: It was a descriptive study, conducted at Subbaiah institute of medical sciences, Shimoga from January 2017 to December 2020 on 50 subjects and the results were analyzed.

Results: All 50 patients included in the study had reduced NOSE scores on the 2nd post-operative day itself. None of the patients had septal hematoma, reduced oxygen saturation or post-op sinusitis. 3 out of 50 patients had minimal bleeding in the post-operative period. 12 out of 50 patients had crusting post operatively on 2nd day but none had at 2 weeks. One patient had synechiae and one patient had residual septal deviation.

Conclusions: Endoscopic septoplasty is preferred over conventional septoplasty. Trans septal quilting sutures has less complication rate, good quality of life and can be practiced easily and hence a valid alternative to intranasal packing following septal surgery.

Keywords: Deviated nasal septum, Endoscopic septoplasty, Nasal packing, Trans-septal sutures

INTRODUCTION

Septoplasty is one of the common procedures performed in Otorhinolaryngology practice for treatment of nasal obstruction caused by deviated nasal septum. It is also done while performing functional endoscopic sinus surgery and endoscopic dacryocystorhinostomy (in order to improve the access), inferior turbinoplasty, for the treatment of contact point headaches caused by septal spur impinging on turbinate's and in conjunction with rhinoplasty. Modern septoplasty techniques were initially described by Killian and Freer at the turn of the twentieth century and these techniques remained largely unchanged

through the century.^{1,2} Septoplasty is traditionally performed using a headlight and nasal speculum, but because of the narrow field of view and limited illumination the posterior septum is particularly difficult to visualize with this technique. However endoscopic technique using rigid endoscopes has gained widespread popularity in recent years.³⁻⁵ Endoscope provides well illuminated close up and magnified view of the surgical field that allows surgeons to appreciate the tissue planes better while elevating the flaps and endoscopic approach makes it an excellent teaching and training tool. Endoscopic septoplasty was initially described by Lanza and colleagues and Stamberger in 1991.^{4,6}

Traditionally after correction of septal deviation the mucosal flaps are opposed and held together by some kind of nasal packing such as paraffin-soaked ribbon gauze, Vaseline gauze, bismuth iodoform paraffin paste, glove finger pack, silastic sheets, gel foam, merocel and pneumatic balloons which will be kept in the nose for at least 24 hours to prevent bleeding and septal hematoma. But the nasal pack causes significant discomfort to the patient in the post-operative period and also bleeding and pain while pack removal. Nasal packs are also blamed as they might cause mucosal trauma, watering of eyes, dryness of mouth, headache, difficulty in swallowing, disturbance of sleep, reduced saturation of oxygen, post-operative synechiae and toxic shock syndrome.⁷ There are other different ways to keep the septal flaps in place during healing period without the use of nasal packing such as mattress sutures, quilting or splinting allowing the patient to breathe through the nose in post-operative period there by avoiding discomfort and pain associated with nasal packing.⁸ Considering complications of nasal packing, several studies have been conducted to evaluate the usefulness of nasal packing. In the present study we describe technique of “pack less endoscopic septoplasty” in terms of patient comfort and complications.

Aims and objectives

Aims and objectives of the study was to analyze the results of endoscopic septoplasty without nasal packing in terms of patient's comfort complications.

METHODS

Place of study

The present study was conducted at Subbaiah institute of medical sciences, Shimoga from Jan 2017- Dec 2020.

Type of study

The type of study was descriptive study.

Study population

The 30 patients who have undergone endoscopic septoplasty without nasal packing were included in the study after getting approval from local ethical committee.

Inclusion criteria

Patients having deviated nasal septum with nasal obstruction and patients undergoing septoplasty as an adjunct to FESS/endoscopic DCR/rhinoplasty were included in the study.

Exclusion criteria

Patients with, trauma to nose with fracture in past 3 months, nasal valve collapse and adenoid hypertrophy were excluded from the study.

Patients were properly informed regarding the nature of the disease process, proposed surgical procedure including expected outcomes, potential complications and alternative treatments. Written informed consent was taken. A detailed pre-operative workup was done which included history, clinical examination of ear, nose and throat, diagnostic nasal endoscopy, plain computerized tomography (CT) scan of paranasal sinuses, routine laboratory investigation required for anesthetic fitness (complete blood count (CBC), blood sugars, renal and liver function tests, coagulation profile, HIV and hepatitis B serology, urine examination, chest X-ray and ECG). Patients were admitted 1 day prior to surgery and operative procedure was performed after getting anesthesia fitness.

Procedure

Endoscopic septoplasty was performed using 4 mm, zero-degree rigid endoscope under local or general anesthesia. Two percentage xylocaine with one in two lakh adrenaline ready solution was infiltrated into septum for vasoconstriction to minimize the bleeding and for hydro dissection. Standard Freer's incision was placed on the concave side of the septum. Mucoperichondrial flap elevated to create anterior tunnel, septal cartilage was dislocated from the maxillary crest and the rest of the bony septum behind. Mucoperiosteal flaps are elevated on either side to create inferior and posterior tunnels. The deviated portion of the bony septum excised, maxillary crest if found deviated was gouged and removed. Minimal resection of the cartilage was done if required or scored on concave side and the major part of the cartilage was preserved to prevent any supratip depression in the post-operative period. Continuous trans-septal sutures are placed on the septum to hold the flaps together and to prevent bleeding and hematoma formation starting from the posterior end till anterior end. The needle is passed through the septum from one nasal cavity to other placing the sutures back and forth in a zig-zag manner, ensuring that all the areas of separated mucous membranes are closed together. No nasal packs of any kind or the septal splints were used in the surgery. Patients were discharged the next day or second post-op day after suction clearance of any crusts if present with an advice not to strain and blow the nose for five days. Oral antibiotics, anti-histamines and decongestant nasal drops were prescribed for one week post operatively. All patients were followed up at one week, two-week, one month and three months. The degree of post-operative pain was measured subjectively using visual analogue score (VAS) of 1-10 on first post-operative day. Nasal obstruction symptom evaluation (NOSE) scale as shown in the Table 1 and was used to assess quality of life for nasal obstruction before and after the surgery.⁹ Patients are asked to circle the responses and these were added up and then multiplied by five to get the score out of 100. Any complications of septoplasty were recorded during follow up examinations.

Table 1: NOSE (Nasal obstruction and symptom evaluation) scale.

NOSE	Not a problem	Very mild problem	Moderate problem	Problem fairly bad problem	Severe problem
Nasal congestion/stuffiness	0	1	2	3	4
Nasal blockage/obstruction	0	1	2	3	4
Trouble breathing through nose	0	1	2	3	4
Trouble sleeping	0	1	2	3	4
Unable to get enough air through during exertion	0	1	2	3	4

RESULTS

The 50 patients were included in the study. 34 patients were males and 16 were females and male to female ratio was 2.1:1.

Patients were in the age range of 15 to 55 years and the mean age was 29.9 years.

The 38 patients underwent septoplasty for nasal obstruction, 2 cases for access during endoscopic DCR, 6 cases in concurrent with FESS and 4 patients underwent septoplasty along with rhinoplasty (Table 2).

Table 2: Indications for septoplasty in present study.

Indication	Number of patients
Nasal obstruction	38
Endonasal DCR for access	2
FESS for access	6
Along with septorhinoplasty	4

The average time taken for endoscopic septoplasty was 50 minutes and the mean time for quilting sutures was 15 minutes.

There were no symptoms after 2 weeks. There was no incidence of septal hematoma in any of these patients. None of the patients had reduced oxygen saturation. None of them had significant post-operative hemorrhage, however 3 out of 50 patients had minimal bleeding in the post-operative period for 2 hours which was managed conservatively by intravenous Tranexamic acid injection and vasoconstrictor nasal drops. 5 patients had post-operative pain which subsided at 1 week follow up with analgesics, but one patient had pain up to two weeks. No patients had sinusitis in the post-operative period.

The 12 out of 50 patients had crusting post operatively on 2nd day which persisted for one week in 8 patients which improved after the suction clearance and none of the patients had crusting at 2 weeks. Only one patient had synechia between inferior turbinate and the septum at the end of 2 weeks and since the patient was asymptomatic it was left alone. There was no incidence

of septal perforation however 1 patient had residual septal deviation but the patient was asymptomatic (Table 3).

Post operatively, nasal obstruction symptom evaluation (NOSE) scores came down on the 2nd post-operative day itself and continued to improve when the score was calculated after one week and 2 weeks.

Table 3: Results of endoscopic nasal examination on 2nd day, at 1 week and 2 weeks after surgery.

Post-op complications	2 nd post-op day (no. of patients)	At 1 week (no. of patients)	At 2 weeks (no. of patients)
Hemorrhage	3	0	0
Crusting	12	8	0
Synechia	0	1	1
Sinusitis	0	0	0
Pain	5	1	0
Septal hematoma	0	0	0
Septal perforation	0	0	0
Residual septal deviation	1	1	1

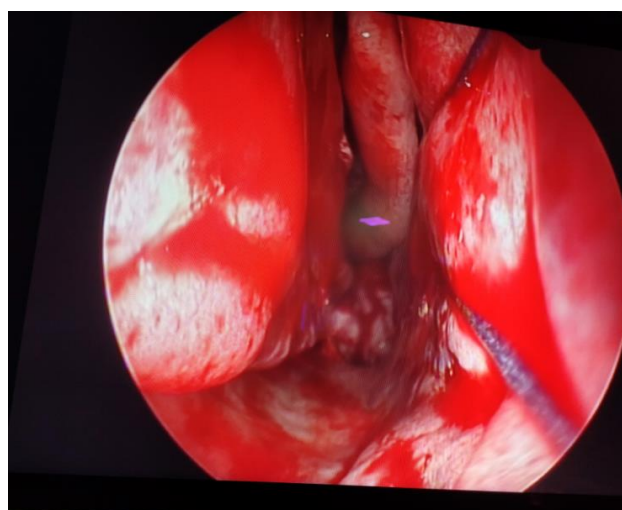


Figure 1: Right nasal cavity of trans-septal sutures in place.

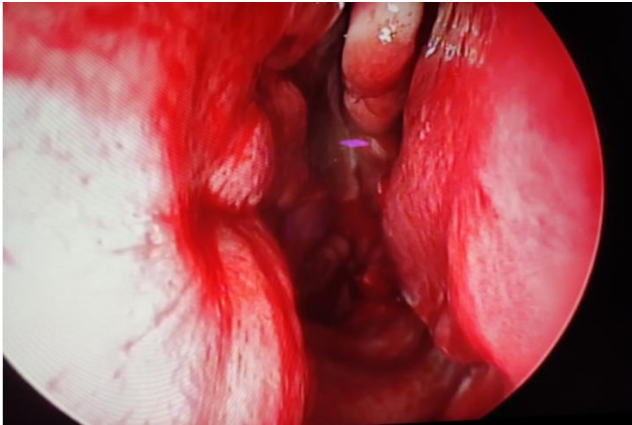


Figure 2: Left nasal cavity with trans-septal sutures in place.

DISCUSSION

Septoplasty is one of the common surgical procedures to correct a deviated nasal septum in symptomatic patients and the procedure is also performed in association with other surgeries like FESS, endoscopic dacryocystorhinostomy for the access. Traditionally septoplasty has been performed using head light and nasal specula, which had compromised illumination, visualization and hence associated with relatively higher complication rate. With the use of endoscopes in nasal surgeries in recent years all above nuances have been overcome. Use of endoscopes in septoplasty also gives better magnification and is an excellent teaching and training tool when used along with camera and recording system. Traditionally repositioning of mucoperichondrial flaps and there by hemostasis was achieved by using one or the other kind of nasal packing such as ribbon gauze soaked in liquid paraffin, merocele, balloon tamponade, clips and nasal splints.^{10,11} Nasal packs when placed on either side of the septum provide good splint to keep the septum in position and prevents accumulation of blood between the septal flaps and there by prevent hematoma formation. Though nasal packing has many advantages, the disadvantages are compromised nasal breathing, dryness of mouth, pain, nasal valve narrowing, vestibulitis, crusting, synechia, headache, watering from eyes, difficulty in swallowing hypoxia and also toxic shock syndrome as a rare complication. Septal perforation can also happen if the packing is tight enough to jeopardize the vascularity to the underlying cartilage and flaps.

In study conducted by Jonnalagadda et al the post-operative complications such as bleeding and pain can be decreased by avoiding the nasal packing post septoplasty.¹²

In meta-analysis by Banglawala et al it was concluded that there is no significant benefit by the use of nasal packing after septoplasty and most of the RCTs didn't favor routine use of nasal packing.¹³ Cayonu et al in their

study observed patients who underwent septoplasty with nasal packing experienced higher immediate respiratory distress related to anesthesia post operatively compared to those who underwent septoplasty with trans-septal suture with internal splint.¹⁴ Zayyan et al studied the effects of totally occluding nasal packs and nasal packs with airway on cardiac functions and blood arterial gases in 39 adults and concluded that the pressure exerted on the nasal mucosa increasing the vagal stimulus by the pack may lead to cardiac problems and warrants close observation.¹⁵ In our study, we have not used any kind of nasal packing which possibly avoided all the above said disadvantages of nasal packing.

In a study by Hafeez et al concluded that frequency of bleeding after septoplasty without nasal packing is very low and nasal packing should be reserved only for those who bleed more during surgery or land with reactionary bleeding or develop septal hematoma.¹⁶ Naik in his study said that suturing of the nasal septum with a splint after septoplasty should be a preferred alternative to nasal packing in view of elimination of pain and discomfort for the patients and absence of complications like synechia and also lesser hospital stay than with nasal packing. In study by Eşki et al nasal packing did not affect subjective surgical success; it reduces quality of life and hence its common use should be avoided. Pack-free septoplasty with transeptal sutures is a successful and effective method for treatment of septal deviation.¹⁷ In study conducted by Plasencia et al on 92 patients, they have come to conclusion that transeptal suture is an effective and safe alternative to classic nasal packing in septal surgery. Erkhan et al performed a first study on rabbits and found that the septal suture is an efficient and useful method for bringing the septal flap over the septal cartilage.¹⁹ In our study, we have done trans-septal suturing and all the patients had good quality of life post operatively which is in consistent with above studies.

CONCLUSION

Use of endoscopes in septoplasty gives better illumination, magnification and close up view of the entire septum and also provides opportunity to record and teach and hence endoscopic septoplasty is preferred over conventional septoplasty. Trans septal quilting sutures has less complication rate, good quality of life and can be learnt and practiced easily, hence a valid alternative to intranasal packing following septal surgery.

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