MAK HILL Publications Research Journal of Medical Sciences

Research Article
doi: 10.36478/makrjms.2020.275.280

A Comparative Study Between Endoscopic Septoplasty and Conventional Septoplasty

Dr. Haseena Mohammed

Department of ENT, Nimra Institute of Medical Sciences, Jupudi, Ibrahimpatnam (M), Vijayawada, Andhra Pradesh 521456 India

ABSTRACT

The objective of this study is to compare the outcomes of Conventional and Endoscopic Septoplasty. A total of 100 patients presenting with symptomatic deviated nasal septum were recruited and allocated into two groups of 50 individuals each. In the conventional group, 2 patients (4%) reported nasal discharge, while this symptom was noted in 8 patients (16%) within the endoscopic group. Hyposmia, often overlooked, was observed in 7 patients (14%) from the conventional group compared to 2 patients (4%) in the endoscopic group. Although epistaxis is commonly associated with deviated nasal septum, it was absent in all participants of this study. Among the 100 patients, 28 individuals (38.88%) exhibited a spur, with equal distribution of 14 patients (50%) in both the conventional and endoscopic groups. Hypertrophied turbinates were identified in 22 patients (44%) in the conventional group and 24 patients (48%) in the endoscopic group. The nasal valve area emerged as a critical factor for the success of septal surgery in alleviating nasal obstruction. Endoscopic septoplasty facilitated the release of adhesions and the correction of the nasal valve area, as well as addressing high and posterior deviations of the nasal septum. This technique also proved beneficial for isolated spurs, allowing for limited incisions and minimizing unnecessary mucosal trauma. The incision employed in conventional septoplasty was Freer's Hemitransfixation Incision, whereas the endoscopic approach utilized an incomplete transfixation or an incision along the floor of the nasal cavity. In the conventional group, inferior turbinate cautery was performed in 22 cases and bilateral polypectomy was conducted in 3 instances. Conversely, in the endoscopic group, functional endoscopic sinus surgery was performed in 5 patients, inferior turbinate cautery in 9 patients, endonasal dacryocystorhinostomy in 2 patients and polypectomy in 1 patient. Postoperatively, both groups utilized ribbon gauze with soframycin ointment to pack the nasal cavities for 2T hours, while packs for functional endoscopic sinus surgery were maintained for 48 hours. The improvement in nasal obstruction was reported at 95% for the conventional group and 98% for the endoscopic group. Both groups experienced a complete resolution of headache symptoms, with a 100% benefit rate. However, no significant differences were observed between the two groups regarding other symptoms such as nasal discharge, post-nasal discharge and hyposmia. Hemorrhage emerged as the most prevalent complication, occurring in three cases (6%) within the conventional group and one case (2%) in the endoscopic group. Mucosal tears were noted in three patients from the conventional group and two from the endoscopic group. Synechiae were identified in one case (2%) in the conventional group, while none were reported in the endoscopic group. No additional complications, such as external deformities or septal issues, were observed in either group. The synechiae were effectively managed through release under local anesthesia, followed by nasal packing with ribbon gauze for 24 hours.

OPEN ACCESS

Key Words

Septoplasty, dacryocystorhinostomy, septoplasty, hemitransfixation, hyposmia, nasal discharge

Corresponding Author

Dr. Haseena Mohammed, Department of ENT, Nimra Institute of Medical Sciences, Jupudi, Ibrahimpatnam (M), Vijayawada, Andhra Pradesh-521456, India

Author Designation

Assistant Professor

Received: 11 September 2020
Accepted: 23 October 2020
Published: 28 November 2020

Citation: Dr. Haseena Mohammed, 2020. A Comparative Study Between Endoscopic Septoplasty and Conventional Septoplasty. Res. J. Med. Sci., 14: 275-280, doi: 10.36478/makrjms.2020.275.280

INTRODUCTION

Breathing well is a condition directly related to quality of life. A good breathing Demands good permeability of the nasal airways, the physiological entry door of air Flow. Nasal obstruction is one of the most common complaint that a otorhinolaryngologist faces in the day to day practice. Deviated nasal septum is one of the most common causes for the nasal obstruction. It not only causes breathing difficulty but also results in improper aeration of Para nasal sinuses predisposing to sinusitis and also results in drying of mucosa leading to crusting and epistaxis. It was Killian (1904) who described the technique which is most commonly practiced today, with retention of both dorsal and caudal struts of cartilage to prevent any subsequent change in the external shape of the nose[1,2]. Metzenbaum[3] described the swinging door Technique for caudal dislocation and subluxuation. Galloway[4] removed the entire nasal cartilage and replaced it as a single auto graft. In 1947 cottle described first conventional septoplasty[5]. Various surgeries have been proposed for the correction of deviated nasal septum. It has undergone several modifications since its inception. Later septoplasty was developed as it had advantages of minimal resection of septum and less complication. With the introduction of endoscope into the field of otolaryngology, there were efforts to use it for the correction of deviated nasal septum targeting the surgical procedure in removing only the deviated portion, spur and maxillary crest. It is more effective with minimal manipulation and also had the advantage of diagnosing and treating the abnormalities of the lateral wall of the nose at the same sitting. The advent of the nasal endoscopes facilitates accurate identification of the pathology. Further limited elevation of the flap, minimal resection and realignment are possible[6]. Endoscopic septoplasty has several advantages over traditional headlight septoplasty which include superior visualization, accommodation of limited and minimally invasive septoplasty and usefulness as an effective teaching tool when combined with video imaging[7]. Hence the present study was taken up to compare the conventional and endoscopic septoplasty.

MATERIALS AND METHODS

The present study to compare the conventional and endoscopic septoplasty was carried out in the department of otorhinolaryngology. Data was collected by selecting the patients with deviated nasal septum willing for surgery. They were divided into two groups., one group undergoing conventional septoplasty and the other endoscopic septoplasty and following up the patients preoperatively and postoperatively.

Inclusion Criteria:

- Patients with symptomatic deviated nasal septum.
- Age >or equal to 14 years.
- Traumatic deviated nasal septum.
- Patients suffering with complications of deviated nasal septum.

Exclusion Criteria:

- Patients with asymptomatic deviated nasal septum.
- Patients with acute rhinitis or allergic rhinitis.
- Patients not willing for surgery and not willing to participate in study.

Methods of Collecting Data: Cases selected for the study were subjected to detailed history and clinical examination. Routine haemogram which includes hemoglobin %, total leukocyte count, differential count, absolute eosinophil count, bleeding time, clotting time and urine examination. X ray of paranasal sinuses-Water's view and Caldwell view to note the conditions of paranasal sinuses. CT scan of paranasal sinuses in selected cases.

Conventional Septoplasty: 2% xylocaine with adrenaline was infiltrated into cartilaginous septum on left side and into bony septum on both the sides. Hemitransfixation incision as advocated by Freer is taken at the caudal border of the septal cartilage on the left side using 15 No. blade. The cartilaginous and bony septum is exposed by elevating the mucoperichondrial and mucoperiosteal flaps respectively on left side by using Freer's elevator. The contact between the septum and mucoperichondrial flap on the other side is maintained. The difficulties of flap elevation occur mainly at the junction of the septal cartilage above, with the anterior nasal spine, premaxillary crest and Vomer below, as the perichondrium encloses the cartilages in a complete envelop which not fuse with the periostium, which forms the inferior envelops. These are called as anterior tunnel and inferior tunnels respectively. Finally these tunnels are united using sharp dissector or knife and is called has Cottles's maxillary-premaxillary approach. The septal cartilage is then freed from all it's attachments apart from the mucosal flap on the right side. An attempt is made to reposition it back into the midline where it should rest on its osseous groove. If this is impossible then 4-5mm wide lower strip of cartilage is excised. If anterior spine is deviated, it is fractured and repositioned in the midline. Bony deviations are treated either by fracturing and repositioning or by resection of the deviated parts using Luc's forceps. If necessary, multiple crosshatch incisions are made on concave side of the septal cartilage. If needed, to avoid the overriding of the segments of the cartilage, through and through mattress sutures are used where in one arm passes between the segments of the cartilage and the other through all the three layers of the septum. The incision is sutured with 3-0 chromic catgut. Finally the nasal cavities were packed with ribbon gauze impregnated with soframycin ointment.

Endoscopic Septoplasty: 2% xylocaine with adrenaline (1in 20,000) was infiltrated into septum of area of interest only in case of isolated spur or along the floor. An incomplete incision was made at the caudal end of the septum in its lower half in most of the cases except when there was a caudal dislocation or anterior buckling, then the incision included the entire caudal end of the septum (Hemitransfixation). The incision was made on the convex side in cases with anterior deviation and on the concave side for subluxation, spur or posterior deviation to expose the abnormality at the bony cartilaginous junction. In case of an isolated bony spur, incision was made parallel to the floor, on the spur itself. The initial mucoperichondrial flap was elevated using Freer's elevator and nasal Speculum. Further elevation was done using 0^{o} rigid nasal endoscope (4mm), held in the left hand, keeping the tip of the endoscope between the mucoperichondrial flap and the septal cartilage. The right hand was used for instrumentation. Flap elevation has to be carried out in the correct cleavage plane to minimize the bleeding. Exposure was limited to the target area. The traditional Cottles's maxillary-premaxillary approach was not followed in the Endoscopic method. A subluxated cartilage from the crest was shaved using no. 15 blade Bard Parker knife to resect the excess cartilage inferiorly, without dislocating the vomero-chondral junction. At the anterior nasal spine the subluxated cartilage was carefully trimmed and repositioned over the crest to prevent a supra-tip deformity. The laterally projecting part of the associated Vomer in spur or prominent crest or overlapping cartilage, if any, was resected. In case of a posterior deviation or a deviation at the ethmochondral junction, the bony septum was fractured to realign it in the midline, or a minimum resection of the caudal end of the ethmoidal plate was performed. A 'C' shaped cartilaginous deviation was dealt with, precise multiple wedge resections aided by the endoscope, placing them on strategic sites and planes. When the deviation involved the dorsal part of the cartilage, the endoscope helped in guiding release of the upper lateral cartilages from the septal cartilage. Patients were put on appropriate antibiotics at least for a week, along with analgesics and decongestants. Nasal packs were removed 24 hours after the surgery. Normal saline douching (5-6 times daily) and decongestant nasal drops (3 times daily) were advised for a week. At each follow up visit, subjective and objective assessment was done. Subjective assessment was done by asking about nasal obstruction, headache, Nasal discharge, hyposmia, postnasal discharge. Objective assessment was done by cold spatula test, persistent deformity, discharge in middle meatus. With above findings, the outcomes of surgery were measured.

RESULTS AND DISCUSSIONS

100 patients with symptomatic deviated nasal septum were selected and were divided into two groups of 50 each. One group underwent conventional and the other 50 underwent endoscopic septoplasty. In our study, all the 100 patients (100%) had presented with nasal obstruction. The next common symptom was headache which was present in 41 patients (41%) of which 19 cases (38%) were in conventional septoplasty group and 22(44%) cases in endoscopic septoplasty group. The next symptom was nasal discharge which was present in 10 patients (1^{o}%), of these 10 patients 2 (4%) were in the group of conventional septoplasty and 8 (16%) were in the endoscopic septoplasty group. Postnasal discharge was present in 8 patients (8%) divided into 1 case (2%) in conventional septoplasty group and 7 cases (14%) in endoscopic septoplasty group. Deviated nasal septum was the most common finding and was present in all the 100 patients. The right sided septal deviation was present in 25 cases in both conventional and endoscopic septoplasty group, where as the left sided deviation was present in 25 cases (50%) in conventional septoplasty group and 25 cases (50%) in endoscopic septoplasty group. Spur was the next common finding present in 14 cases (38.88%) in conventional septoplasty group and 14 cases (38.88%) in endoscopic septoplasty group. Nasal discharge in middle meatus was seen in 1 case (2.77%) in conventional septoplasty group and 8 cases (22.22%) in endoscopic septoplasty group. Hypertrophied middle turbinate was seen in 1 case (2.77%) in conventional septoplasty group and 4 cases (11.11%) in endoscopic septoplasty group with total 5 cases (6.94%), where as hypertrophied inferior turbinate was seen in 21 cases (58.33%) inconventional septoplasty group and 20 cases (55.55%) in endoscopic septoplasty group. Preoperative X-ray (water's view or Cald well view) or CT scan of paranasal sinuses was done in all the 100 patients. The radiological investigations showed septal deviation in 17 cases (17%) of which 5 (13.88%) were in conventional septoplasty group and 12 (33.3%) in endoscopic septoplasty group. The middle turbinate pathology was seen in total of 4 (4 %) cases of which 1 (2.77%) was in conventional septoplasty group and 3 (33%) in endoscopic septoplasty group. Hypertrophied inferior turbinate was seen in 41 cases (41%), of which 21 (58.33%) were in conventional septoplasty group and 20 (55.54%) in endoscopic septoplasty group. Maxillary sinus pathology was seen in total 4 cases (4 %), of which only 1 (2.77%) underwent conventional septoplasty and 3

Table 1: Duration of Stay (Hours)

Duration of stay (Hours)	No of cases		
	C .S (n=50) (%)	E .S (n=50) (%)	Total No of Cases (n=100) (%)
?48	41 (82.0%)	40 (80.0%)	81 (81.0%)
≥48	9 (18.0%)	10 (20.0%)	19 (19.0%)
Total	50 (50.0%)	50 (50.0%)	100 (100.0%)

Table 2: Duration of the Surgery (Hours)

Duration of the surgery (Hours)	No of cases		
	C .S (n=50) (%)	E .S (n=50) (%)	Total No of Cases (n=100) (%)
?1	40 (80.0%)	20 (40.0%)	60 (60.0%)
≥1	10 (20.0%)	30 (60.0%)	40 (40.0%)
Total	50 (50.0%)	50 (50.0%)	100 (100.0%)

Table 3: Post-Operative Symptomatology

Symptom	C .S (N=50) (%) Post op/Pre op	E .S (N=50) (%) Post op/Pre op	Total no. of cases (n=100)
Nasal block	2 (4.0%)	1 (2.0%)	3 (3.0%)
Nasal discharge	0 (0.0%)	0 (0.0%)	0 (0.0%)
Headache	0 (0.0%)	0 (0.0%)	0 (0.0%)
P N D	0 (0.0%)	0 (0.0%)	0 (0.0%)
Hyposmia	0 (0.0%)	0 (0.0%)	0 (0.0%)

Table 4: Post-Operative Findings

Findings	C .S (N=50) (%) Post op/pre op	E .S (N=50) (%) Post op/pre op	Total no. of cases (n=100)
C S T	1/50	0/50	99/100
Septal deformities (Deviation, spur)	0/50	0/50	100/100
Hypertrophy of turbinates	0/22	0/24	46/46
Discharge in middle meatus	0/1	0/8	9/9

Table 5: Post Operative Review

Symptom	C .S		E .S			
	Post op/ Pre op	Percentage of Benefit	Postop/ Pre op	Percentage of benefit	Total	% of Benefit
Nasal block	2/50	95%	1/50	98%	3/100	95.83%
Nasal discharge	0/2	100%	0/8	100%	0/10	100%
Headache	0/19	100%	0/18	100%	0/37	100%
P N D	0/1	100%	0/7	100%	0/8	100%
Hyposmia	0/7	100%	0/2	100%	0/9	100%

(8.33%) underwent endoscopic septoplasty. The frontal sinus haziness was seen in total 5 cases (5 %) of which 2 (5.55%) were in conventional septoplasty group and 3 (8.33%) in endoscopic septoplasty group. Ethmoidal sinus haziness was present in only 1 (1%) out of total 100 cases, which belong to endoscopic septoplasty group. Sphenoidal pathology was not seen in any of the cases. In our study we are comparing the duration of the surgery based on type of surgical approach. Out of 100 patients 50 are conventional and 50 are endoscopic septoplasty. Nasal discharge was complained by none of the patients (100%) in both Conventional and endoscopic septoplasty groups. Headache was relived in all the patients belonging to both the groups. Postnasal discharge was not seen in any of the patients who underwent either conventional or endoscopic septoplasty, so as the relieve from hyposmia symptom. All the patients were examined during their post operative visit by anterior rhinoscopy and endoscope. Cold spatula test (c.s.t) showed good and equal misting in 99/100patients (99%). The only patient who was having decreased misting on deviated side belonged to conventional septoplasty group. Persistent septal deformities like septal deviation and spur were not seen in any of the patients (benefit-100%) either in conventional Septoplasty group or endoscopic septoplasty group, so as the persistent hypertrophy of inferior and/or middle turbinates. None of the patients in conventional septoplasty group or endoscopic septoplasty group had post operative persistent discharge in the middle meatus.

The present study was conducted in 100 adults with symptomatic deviated nasal septum attending the otorhinolaryngology department were included in the study. The results of 50 cases of conventional septoplasty and 50 cases of endoscopic septoplasty were assessed. In the present study, all the 100 cases were adults with the age varying between 14 years and 59 years and in our study children were excluded. In the group who underwent conventional septoplasty, 9 patients were (18%) in the age group of 11-20 years, 27 patients (54%) were in the age group of 21-30 years, 8 patients (16%) were in the age group of 31-40 years and 5 patients (10%) each in the 41-50 years group. Amongst the endoscopic septoplasty group, 6 patients (12%) were in the age group of 11-20 years, 29 patients

(56%) were in the age group of 21-30 years, 11 patients (22%) were in the age group of 31-40 years, 3 patient (6%) in the age group of 41-50 years and 1 patient (2.%) in the age group of 51-60. Thus maximum numbers of patients were in the 3rd decade of life. The average age of the patients in conventional septoplasty group was 29.76 years and in endoscopic septoplasty group was 27.88 years with an overall mean age of 28.82 years. Thus the results of our study were not significantly different from existing literature. In the present study, all the 100 patients had nasal obstruction as a chief complaint. 10 patients (10%) complained of nasal discharge, headache was complained by 41 patients (41%) and hyposmia was the complaint in 2 patients (2%). Epistaxis was not complained by any of the patients. So in our study nasal obstruction was the commonest symptom in patients with deviated nasal septum and epistaxis was the least common symptom as. Suggested by previous studies. All the patients underwent anterior rhinoscopy and or nasal endoscopic examination in our study. In the current study, deviated nasal septum was seen in all the 100 patients, of which 25 patients each had septal deviation to right and left sides in conventional septoplasty group and in endoscopic septoplasty group, 25 patients had septal deviation to right side and 25 patients to left side. Spur was seen in 14 patients in conventional septoplasty group and in 14 patients in endoscopic septoplasty group. Discharge in middle meatus was seen in 1 patient in conventional septoplasty group and in 8 patients in endoscopic septoplasty group, hypertrophied middle turbinate was seen in 1 patient in conventional septoplasty group and 4 patients in endoscopic septoplasty group and hypertrophied inferior turbinate was present in 21 patients in conventional septoplasty group and in 20 patients in endoscopic septoplasty group. The advantages of endoscopic septoplasty are the ability to reduce the morbidity and postoperative swelling in isolated septal deviations by limiting the dissection to the area of deviation, improved visualization, improved surgical transition between septoplasty and sinus surgery. In the present study, septoplasty was done in all 100 cases. In conventional septoplasty group, along with septoplasty, inferior turbinate cautery was done in 9 cases and bilateral polypectomy was done in 1 case. In endoscopic septoplasty group, along with septoplasty, inferior turbinate cautery was done in 13 cases, functional endoscopic sinus surgery was done in 5 patients, endonasal dacryocystorhinostomy in 2 patients and polypectomy in 1 patient. In the present study the patients were examined on 3rd and 15th day and then monthly for 3-6 months. During each visit, the patients were assessed subjectively and objectively. The following were the results noted on their last visit. In the present study, hemorrhage was the most common complication seen in 3 cases (6%) of conventional septoplasty group compared to 1 cases (2%) in endoscopic septoplasty group. Mucosal tear occurred in 0 patients (0%) in conventional septoplasty group compared to no patient (0%) in endoscopic septoplasty group. Synechiae was seen in 1 patients of conventional group only. External deformities and other complications were not seen in both the groups.

CONCLUSION

- Evolution of endoscopic septoplasty is a major event in the history of septal surgery., It helps in dealing with posterior deviations, high deviations, isolated spurs, surgery in children and revision surgeries.
- The complications significantly occurred in the conventional septoplasty group. We found significant advantages with the endoscopic methods.
- Surgeons are comfortable while dealing with anterior deviation, caudal dislocation and anterior nasal spine require conventional septoplasty, but even then it requires large incision, poor illumination and often creation of tunnels on both the sides.
- At the same time the nasal endoscope aids in better identification and treatment of pathology of the lateral nasal wall either in relation to septal deviation or independent of it.
- Patients presented with other co morbid conditions may undergo endoscopic surgery along with septoplasty., It leads to increasing duration of the surgery.
- Clinically the endoscopic septoplasty has come up with better results in relation to postoperative symptoms relieved for example nasal obstruction, nasal discharge, headache, epistaxis and hyposmia. But there was no significant association found in respect to duration of patient stay.

REFERENCES

1. Killian G., 1904. Die submucose Fensterresektion der Nasenscheidewand. Archiv fur Laryngologie undreported only haemorrhage which occurred in one patient Rhinologie., Vol. 16.
2. Freer O., 1902. The correction of deflections of the nasal septum with a minimum of traumation. J. of the American Medical Association., Vol. 38.
3. Metzenbaum, M., 1929. Replacement of the lower end of the dislocated septal cartilage versus submucous resection of the dislocated end of the septal cartilage. Arch. Otolaryngology Head Neck Surg., Vol. 9 .10.1001/archotol.1929. 00620030300008.

4. Galloway T., 1946. Plastic repair of the deflected nasal septum. Archives of Laryngol., Vol. 44.
5. Cottle, M.H., R.M. Loring, G.G. Fischer and I.E. Gaynon, 1958. The "Maxilla-Premaxilla" Approach to Extensive Nasal Septum Surgery. Arch. Otolaryngology Head Neck Surg., Vol. 68 .10.1001/archotol. 1958.00730020311003.
6. Murakami, W.T., L.W. Wong and T.M. Davidson, 1982. Applications of the biomechanical behavior of cartilage to nasal septoplastic surgery. The Laryngoscope, 92: 300-309.
7. Rao, J.J., E.C.V. Kumar, K.R. Babu, V.S. Chowdary, J. Singh and S.V. Rangamani, 2005. Classification of nasal septal deviations-Relation to sinonasal pathology. Indian J. Otolaryngology Head Neck Surg., 57: 199-201.