Original Research Article

International Journal of Medical and Health Research
ISSN: 2454-9142
Received: 28-02-2020; Accepted: 18-03-2020; Published: 28-03-2020
www.medicalsciencejournal.com
Volume 6; Issue 3; 2020; Page No. 169-173

Comparative assessment of conventional and endoscopy assisted nasal septal correction surgery performed in NMCH, Patna

Dr. Indrajeet Kumar
Assistant Professor, Department of ENT, Nalanda Medical College and Hospital, Patna, Bihar, India

Abstract
The nasal septum is the bone and cartilage in the nose that separates the nasal cavity into the two nostrils. Normally, the septum lies centrally, and thus the nasal passages are symmetrical. A deviated septum is an abnormal condition in which the top of the cartilaginous ridge leans to the left or the right, causing obstruction of the affected nasal passage. A deviated septum can go undetected for years and thus be without any need for correction. The condition can result in poor drainage of the sinuses and subsequent sinusitis, difficulty in breathing, headache, epistaxis, sleeping disorders such as snoring or sleep apnea. [14] Symptomatic deviated nasal symptom demands surgical correction. Hence based on above findings the present study was planned for Comparative Assessment of Conventional and Endoscopy Assisted Nasal Septal Correction Surgery Performed in NMCH, Patna.

The present study was planned in Department of ENT, Nalanda Medical College and Hospital, Patna, Bihar, India. In the present study total 50 patients were enrolled undergoing the conventional or Endoscope assisted septal correction procedure. Patients were divided based on the undergoing procedures in two different groups. The 25 cases in Group I underwent the septal correction using nasal endoscope and remaining 25 cases of Group II underwent conventional septal correction. Patients with symptomatic nasal obstruction due to septal deviation in the age group of 18 to 60 years were selected after obtaining consent for conventional or Endoscope assisted septal correction procedure.

The data generated from the present study concludes that Endoscopy assisted nasal septal correction surgery is overweighed on conventional surgery as this technique is capable of approaching the targeted site more preciously and corrective surgery would be performed in less time with more accuracy even though the establishment expenditure is costlier than conventional nasal septal corrective surgery. Earlier relief from postoperative symptoms is significantly more in endoscopy assisted nasal septal correction surgery.

Keywords: conventional, endoscopy assisted nasal septal correction surgery, etc

Introduction

Nasal obstruction is one of the most common problems that brings a patient into a physician's office, and septal deviation is a frequent structural etiology. As a result, surgical correction of septal deviation (septoplasty) is the third most common head and neck procedure in the United States, and it generally is performed to improve quality of life.

Nasal obstruction is a common complaint. In 1974, Vainio-Mattila found a 33% incidence of nasal airway obstruction among randomly chosen adults [1]. Septal deviation was found to be the most frequently encountered structural malformation causing nasal obstruction. Clinically significant septal deviation was found in 26% of patients with nasal obstruction in this study.

Developmental septal deviation may occur. Patients in whom the septal cartilage has been damaged in the neonatal period and during birth can present with severe septal deviation in the absence of a history of nasal trauma. Microfractures sustained during late intrauterine life and during birth may cause weakness in the damaged side of the cartilage. The result is asymmetric bending of the cartilage toward the side of the injury, while the contralateral side achieves dominance over time. These conclusions are supported by evidence matching the direction of septal deviation with the presentation of the fetal head in the pelvis during delivery.

Septal deviation from traumatic impact can occur in childhood or adult life. Childhood trauma can cause severe nasal obstructive problems in adult life because any degree of septal deviation usually becomes more pronounced with time.

Depending on the direction and force of the nasal injury, septal cartilage can fracture horizontally or vertically, with single or multiple fracture lines, and can be accompanied by damage to the nasal bones or to the perpendicular plate of the ethmoid. In addition, the cartilaginous septum can subluxate from the vomeral sulcus. Usually, the junction of the bony and cartilaginous septum is the area of greatest deviation due to trauma. Septal cartilage provides structural support for the nasal dorsum while maintaining a remarkable degree of elasticity. It can absorb large amounts of force without permanent deformity. When the amount of force applied to the cartilage exceeds its biomechanical stress point, the cartilage fractures.

In the absence of trauma, septal cartilage is usually straight. Each side of the cartilage has an internal tension that is evenly balanced. Traumatic injury usually causes asymmetric damage to the cartilage, resulting in the dominance of one side over the other. Over time, the dominant side of the septal cartilage exhibits marked overgrowth relative to the contralateral side. A deviation

results, with the convex side exhibiting the dominant growth pattern. This is often the side ipsilateral to the injury.

The magnitude of injury required to generate a significant septal deviation is inversely proportional to the patient's age. In childhood, particularly during the adolescent growth years, even insignificant trauma to the nose can produce unilateral microfractures that have severe impact upon the growth pattern of the patient's septal cartilage [2].

Patients may present with a history of sinusitis, allergic rhinitis, obstructive sleep apnea, previous nasal surgery, or recent nasal trauma. They often relay symptoms of unilateral or bilateral nasal airway obstruction that is unrelieved with decongestants or nasal steroid sprays. On initial examination, external dorsal deviation may be evident, or the columella and caudal septum may be deflected off the midline.

Nasal airway breathing can be improved in the setting of allergic rhinitis and congested nasal mucosa by using intranasal phenylephrine (Neo-Synephrine) for several days, followed by a longer-term use of a steroid nose spray. Patients who have epistaxis initially should be treated with nasal packing or conservative cautery of an identifiable bleeding focus.

With a history of recent nasal trauma (< 7-10 d), the nasal bones and deviated septum may be reduced by lifting and realigning the structures with the patient under local and topical anesthesia. If the deviated septum cannot be corrected in this manner or if the septal deformity is long-standing, a formal septoplasty is recommended. Septoplasty can be performed with the patient under local or general anesthesia. If an adjunctive sinonasal procedure (such as endoscopic sinus surgery or rhinoplasty) is to be performed, it takes place after the septoplasty is completed.

Inform patients undergoing septoplasty of the risks and benefits of the procedure and of medical therapy alternatives. Risks entail postoperative epistaxis, septal hematoma, sinus infection, unimproved or worsened nasal airway breathing, nasal crusting, septal perforation, saddle-nose deformity, toxic shock syndrome (TSS), cerebrospinal fluid (CSF) leak, and a need for a revision procedure.

Many medications, herbal extracts, and vitamins can prolong a patient's bleeding time, prevent platelet adhesion, and delay coagulation. Patients need to be informed which medications have these effects and refrain from taking them the appropriate number of days before surgery. Intraoperative details include preoperative injections, technique via endonasal and external nasal approaches, elevation of the mucoperichondrial and contralateral mucoperichondrial flaps, correction of deviation, and closure.

Inform patients that they need to resort to mouth breathing while nasal packing is in place. They may expect a minimal amount of bloody mucous nasal discharge, but if they develop new-onset epistaxis, they must contact their physician immediately. When resting, patients should have their head elevated during the first 24-48 hours. Antibiotics are usually not necessary unless nasal packing is left in place more than 24 hours [3].

Significant discomfort is not experienced by most patients after septoplasty; however, if pain relief is necessary, narcotic pain medication can be used for those patients in the first several days. A prospective study by Sclafani *et al* of patients who underwent septoplasty with/without turbinate reduction or rhinoplasty with/without septoplasty supported the contention that pain following either of these procedures is primarily mild, with patients having low postoperative opioid requirements. In the septoplasty patients, pain reached moderate levels only on postoperative day 0. The investigators reported that over the course of 15 days, starting on the day of surgery, as few as 11 opioid tablets would have provided adequate analgesia for 90% of all patients in the study [4].

If patients are experiencing severe pain, they must contact their physician immediately. A randomized study by Klinger *et al* indicated that hyaluronic acid speeds the recovery of nasal mucosa following septoplasty. This was evidenced by a significant decrease in saccharin transit time in both nasal sides as early as 15 days after surgery in patients who received not only mupirocin ointment, as administered to controls, but also sodium hyaluronate solution. [5].

Literature documenting the outcomes of septal surgery is not abundant. Siegal *et al* and Samad *et al* have reported patient satisfaction and clinical improvement rates after septoplasty, and both agree that success rates for septoplasty are approximately 70% [6, 7].

A study by Sundh and Sunnergren, however, suggested that septoplasty produces unsatisfactory long-term results. Although 53% of the 111 patients in the study reported an absence of symptoms at 6-month follow-up, this rate had declined to 18% by 34- to 70-month follow-up, with more than 80% of patients at the longer-term follow-up reporting nasal obstruction and some stating that their symptoms had worsened [8].

Some debate has occurred over the role of acoustic rhinometry in preoperative assessment and postoperative determination of objective outcomes. Unfortunately, according to Reber *et al* and Hardcastle *et al*, efforts to link rhinometry measures with subjective perception of nasal patency have met with mixed results [9, 10]. At present, traditional measures of outcomes must be relied upon, including subjective patient questionnaires and clinical judgment.

The enhanced visualization provided by the zero or 30° endoscope, as compared with the headlight, allows for a magnified view and increased accuracy in the evaluation of septal deviations, especially those located more posteriorly. The ability to perform limited resections and achieve better accuracy in technically challenging revisions is an advantage of the endoscopic approach. Additionally, teaching and documentation are facilitated. Several publications describing promising results have emerged, including one 1999 review of 111 patients by Hwang *et al*. [11]

A prospective, observational study by Garzaro *et al* reported that both endoscopic and open septoplasty can effectively address nasal obstruction and associated symptoms, although the complication rate at 3-month follow-up, including with regard to pain, synechiae, early postoperative bleeding, septal tears, and incomplete correction, was lower in the endoscopic patients [12].

In 1997, an article by Kamami reviewed his experience with 120 septoplasties performed using the carbon dioxide laser [13]. The author claimed good results on patients with small-to-moderate anterior septal spurs. The technique involved shaving the spur along with the overlying mucoperichondrium in a caudal-to-cephalic horizontal direction, taking care to burn no more than a 2- to 3-mm

vertical strip of mucoperichondrium. The procedure was performed in 5 minutes with the patient under local anesthesia and resulted in quick healing. A 96% good-to-remarkable subjective improvement in nasal obstruction was reported, and adverse effects were negligible. Controlled studies and long-term follow-up observation are needed before this technique has widespread use.

The nasal septum is the bone and cartilage in the nose that separates the nasal cavity into the two nostrils. Normally, the septum lies centrally, and thus the nasal passages are symmetrical. A deviated septum is an abnormal condition in which the top of the cartilaginous ridge leans to the left or the right, causing obstruction of the affected nasal passage. A deviated septum can go undetected for years and thus be without any need for correction. The condition can result in poor drainage of the sinuses and subsequent sinusitis, difficulty in breathing, headache, epistaxis, sleeping disorders such as snoring or sleep apnea [14]. Symptomatic deviated nasal symptom demands surgical correction. Hence based on above findings the present study was planned for Comparative Assessment of Conventional and Endoscopy Assisted Nasal Septal Correction Surgery Performed in NMCH, Patna.

Methodology

The present study was planned in Department of ENT, Nalanda Medical College and Hospital, Patna, Bihar, India. In the present study total 50 patients were enrolled undergoing the conventional or Endoscope assisted septal correction procedure. Patients were divided based on the undergoing procedures in two different groups. The 25 cases in Group I underwent the septal correction using nasal endoscope and remaining 25 cases of Group II underwent conventional septal correction. Patients with symptomatic nasal obstruction due to septal deviation in the age group of 18 to 60 years were selected after obtaining consent for conventional or Endoscope assisted septal correction procedure.

All the patients were informed consents. The aim and the objective of the present study were conveyed to them. Approval of the institutional ethical committee was taken prior to conduct of this study.

Following was the inclusion and exclusion criteria for the present study.

Inclusion criteria: Subjects with symptomatic deviated nasal septum refractory to conservative medical treatment. Nasal obstruction, postnasal discharge, headache, epistaxis and hyposmia these five symptoms were taken into consideration.

Exclusion criteria: Subjects with allergic/vasomotor rhinitis, nasal mass and nasal polyps, revision cases.

Results & Discussion

Deviated nasal septum (DNS) is an important and commonest cause for nasal obstruction. The commonest causes of DNS are developmental factors like intrauterine compressions due to cephalo-pelvic disproportion, birth trauma during parturition, later unnoticed trauma during childhood and other injuries of the nose. Deviated nasal septum with nasal obstruction to the airway and with complicating rhinosinusitis and nasal polyposis is a common entity seen in ENT Out Patient Department.

Rarely, deviated nasal septum is seen in mass, benign and malignant lesions of the nose like rhinosporidiosis, adenocarcinoma and aesthesioblastoma. DNS with external deformities like deviation of nose, saddle nose, crooked nose and hump of the nose are also added to the list as the cosmetic importance is heightened now a days. Septoplasty is one of the oldest and commonest operation which is performed for DNS in the nose. As the septum goes, so the nose, hence in Septorhinoplasty septum has to be addressed according to the defect [15].

Initially sub mucosal resection of septum was proposed which was a radical surgery and was associated with several complications [16]. Later septoplasty was proposed as it was thought to be a better surgery compared to sub mucosal resection of septum since it had advantages of less resection of septum and less complications. With the introduction of endoscope into the field of otolaryngology, there were many efforts to use it for the correction of deviated nasal septum. It is more effective with minimal manipulation and other pathologies like nasal polyps and lateral wall abnormalities can be diagnosed and can be corrected.

Over the decades, various surgical procedures were described by various eminent scientists to correct the deviated nasal septum, starting from radical septal resection to mucosal preservation and subsequent preservation of septal framework. Cottle in 1947 introduced the practice of conservative septal resections. In conventional nasal septal surgery, there is often over exposure, unnecessary manipulation of the septal anatomy and more resection. Relatively poor illumination, accessibility and magnification call for more exposure by a large incision and by elevation of flaps on both sides of the septum. Endoscopic septoplasty is an attractive alternative to traditional septoplasty.

Endoscopic septoplasty is a fast-developing concept and gaining popularity as it provides a direct – targeted approach to the septal anatomic deformity, allowing a minimally invasive procedure with limited septal mucosal flap dissection and removal of a small cartilaginous and/or bony deformity. Better light visualization and magnification, provided by the endoscope, help to increase the precision of the surgical procedure. Endoscope aids limited but sufficient exposure of septal pathology and there is no need for disarticulation of ethmoidochondral and vomer chondral junctions. Endoscope guided surgery minimizes the dissection area only to the area of deviation and results in less morbidity to the patients.

Table 1: Demographic Details

Group	Group I	Group II
Procedure	**Septal correction using nasal endoscope**	**Conventional septal correction**
Age		
11 – 20 years	3	2
21 – 30 years	11	13
31 – 40 years	6	6
41 – 50 years	3	2
51 – 60 years	2	2
Sex		
Males	13	15
Females	12	10
Total	25	25

Table 2: Symptoms 48 hrs Post Operatively

Group	Group I (Observed in No. of Cases)	Group II (Observed in No. of Cases)
Procedure	septal correction using nasal endoscope	conventional septal correction
Headache	5	12
Watering of eyes	4	8
Nasal pain	2	4

Table 3: Relief in Symptoms after 8 weeks

Group	Group I (Observed in No. of Cases)	Group II (Observed in No. of Cases)
Procedure	septal correction using nasal endoscope	conventional septal correction
Nasal obstruction	23	21
Headache	24	22

Brennan H G *et al*. [17] noted that to obtain good results in septal surgery, there should be good exposure; safe elevation of flaps; and resection of the deviated part of the septum only. These could be obtained only by endoscopic septoplasty which has the advantage of a targeted approach to the specific septal problem, without the need for exposing excessive bone and cartilage, thereby improving healing time and decreasing tissue trauma.

The most common age group who were operated belongs to 2nd & 3rd decades. This was in concordance with the study of Jain L *et al*. Jain L *et al*. [18] stated that traditional technique of septoplasty had difficulty to evaluate the exact pathology, especially in the posterior part of septum, and poor visualization. On the other hand, the nasal endoscopic technique allows precise preoperative identification of the septal pathology and associated lateral nasal wall abnormalities.

Jain L *et al*. 6 stated that early reports of endoscopic septoplasty described several advantages associated with the technique, e.g., it makes easier for surgeons to see the tissue planes and it offers a better way to treat isolated septal spurs. Additionally, the endoscopic approach makes it possible for others to simultaneously observe the procedure on a monitor, making the approach useful in a teaching hospital. In Jain L *et al*6 study one patient (5%) had a mucosal tear in the flap in Endoscopic Septoplasty.

Lanza *et al* & Stammberger initially described the application of endoscopic techniques to the correction of septal deformity in 1991 [19, 20]. Lanza *et al* described a detailed endoscopic approach to the treatment of isolated septal spurs also [19]. Giles *et al*. evaluated the role of endoscopic septoplasty as an adjunct to functional endoscopic sinus surgery [21]. Park *et al*. concluded that it is an excellent teaching tool when used in conjunction with video monitors over traditional approaches [22]. Hwang *et al*. stated that endoscopic septoplasty is helpful in correction of posterior septal deformities, revision cases and as an effective teaching tool [23].

Use of an endoscope during the performance of the conventional septoplasty to assess the result of the procedure and correction of the defect not visualized by the naked eye is advantageous especially in relief of symptoms of nasal obstruction and headache [20]. Sometimes the hidden disease overlapped by an over grown nasal septum can be corrected by the use of an endoscope during intra operative period. This procedure differs from endoscopic septoplasty where in the entire surgical procedure is performed in terms of conventional septoplasty except an endoscope is used in last phase of surgery once the accessible septal deformity is corrected.

Though many recent techniques of surgical correction of nasal septum are being followed there is a very prime place for the conventional septoplasty in management of patients of deviated nasal septum. In 1963 Cottle described the concept of conventional septoplasty [24]. He mentioned that the technique of conventional septoplasty involves a proper access to the nasal septum with removal of the pathology and remodeling after proper stabilization [25]. Available literature suggests that Endoscopic septoplasty is primarily performed as an access to the disease of the lateral wall of the nose. It is not always performed for relieving nasal obstruction. Endoscopic septoplasty by itself is advantageous in pediatric patients, in revision surgeries and cases with previous septal perforation and also in cases with isolated septal spurs where minimally invasive surgical procedure has to be performed [26].

Endoscopic septoplasty is a major event and good evolutionary step in the history of septal surgery. Its role is special in dealing with posterior deviations, high deviated nasal septum, isolated spur, septal surgery in children and in revision surgery. 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. The best functional and anatomical results are obtained when the entire deformity of the nasal septum is corrected without compromising the resilience and stability of the cartilaginous septum, which cannot be obtained by conventional septoplasty. In addition to the above, the endoscopic septoplasty helps in documentation and is a efficient teaching tool.

Over the last two decades, the applications for endoscopy in the field of Rhinology have evolved beyond functional endoscopic sinus surgery. However, the use of an endoscope or the procedure of performing an endoscopic septoplasty for the relief of nasal obstruction has its own limitations particularly in gross deviations and also posterior deviations of nasal septum and the use of an endoscope in relief of nasal symptoms is always debatable.

Conclusion

The data generated from the present study concludes that Endoscopy assisted nasal septal correction surgery is overweighed on conventional surgery as this technique is capable of approaching the targeted site more preciously and corrective surgery would be performed in less time with more accuracy even though the establishment expenditure is costlier than conventional nasal septal corrective surgery. Earlier relief from postoperative symptoms is significantly more in endoscopy assisted nasal septal correction surgery.

References

1. Vainio-Mattila J. Correlations of nasal symptoms and signs in random sampling study. Acta Otolaryngol Suppl. 1974; 318:1-48.
2. Sedaghat AR, Kieff DA, Bergmark RW, *et al*. Radiographic evaluation of nasal septal deviation from computed tomography correlates poorly with physical exam findings. Int Forum Allergy Rhinol, 2014.
3. Georgiou I, Farber N, Mendes D, Winkler E. The role of antibiotics in rhinoplasty and septoplasty: a literature

review. Rhinology. 2008; 46(4):267-70.
4. Sclafani AP, Kim M, Kjaer K, Kacker A, Tabaee A. Postoperative pain and analgesic requirements after septoplasty and rhinoplasty. Laryngoscope. 2019 Mar 7.
5. Klinger F, Caviggioli F, Lisa AV, *et al*. Therapeutic effect of hyaluronic acid in reducing nasal mucosa recovery time after septoplasty. Ear Nose Throat J. 2017; 96(4-5):E16-E20.
6. Siegel NS, Gliklich RE, Taghizadeh F, Chang Y. Outcomes of septoplasty. Otolaryngol Head Neck Surg. 2000; 122(2):228-32.
7. Samad I, Stevens HE, Maloney A. The efficacy of nasal septal surgery. J Otolaryngol. 1992 Apr. 21(2):88-91.
8. Sundh C, Sunnergren O. Long-term symptom relief after septoplasty. Eur Arch Otorhinolaryngol, 2014.
9. Reber M, Rahm F, Monnier P. The role of acoustic rhinometry in the pre- and postoperative evaluation of surgery for nasal obstruction. Rhinology. 1998; 36(4):184-7.
10. Hardcastle PF, White A, Prescott RJ. Clinical and rhinometric assessment of the nasal airway--do they measure the same entity?. Clin Otolaryngol Allied Sci. 1988; 13(3):185-91.
11. Hwang PH, McLaughlin RB, Lanza DC, Kennedy DW. Endoscopic septoplasty: indications, technique, and results. Otolaryngol Head Neck Surg. 1999; 120(5):678-82.
12. Garzaro M, Dell'Era V, Riva G, Raimondo L, Pecorari G, Aluffi Valletti P. Endoscopic versus conventional septoplasty: objective/subjective data on 276 patients. Eur Arch Otorhinolaryngol, 2019.
13. Kamami YV. Laser-assisted outpatient septoplasty results on 120 patients. J Clin Laser Med Surg. 1997; 15(3):123-9.
14. Pannu KK, Chadda S, Kaur IP: Evaluation of benefits of nasal septal surgery on nasal symptoms and general health. Indian J Otolaryngol Head Neck Surg. 2009; 61(1):59-65. doi: https://doi.org/10.1007/s12070-009-0036-2.
15. Septal Hematoma in endoscopic is 0% and in conventional 2%. In Kaushik *et al*9 it is 13.33% in conventional and 0% in endoscopic.
16. Freer O: The correction of deflection of the nasal septum with a minimum of traumatation. Journal of American Medical Association 1902; 38:638.
17. Brennan HG, Parkes ML. Septal surgery: the high septal transfixion. Int Surg. 1973; 58:732-734.
18. Jain L, Jain M, Chouhan AN & Harshwardhan R. Conventional Septoplasty Versus Endoscopic Septoplasty. People's Journal of Scientific Research 28, 2011; 4(2).
19. Lanza DC. Kennedy DW, Zinreich SJ. Nasal endoscopy and its surgical application. Essential otolaryngology: head and neck surgery. 5th ed. New York: Mc Graw-Hill Education Europe, 1991, 373-387.
20. Stammberger H. Functional endoscopic sinus surgery. The Messerklinger Technique, Decker BC. Philadelphia: Mosby Inc, 1991, 430-434.
21. Giles WC, Gross CW, Abram AC, Greene WM, Avner TG. Endoscopic septoplasty. The Laryngosco. 1994; 104 (12):1507-1509. doi: https://doi.org/10.1288/00005537-199412000-00015.
22. Park DH, Kim TM, Han DG, Ahn KY. Endoscopic assisted correction of the deviated nose. Aesthetic Plast Surg. 1998; 22(8):190-195. doi: https://doi.org/10.1007/s002669900190.
23. 6. Hwang PH, McLaughlin RB, Lanza DC, Kennedy DW. Endoscopic septoplasty: indication, technique, and results. Otolaryngol Head Neck Surg. 1999; 120(5):678-682. doi: https://doi.org/10.1053%2Fhn.1999.v120.a93047.
24. Cot le MH, Loring RM, Fischer GG, Gaynon IE; The maxilla premaxilla approach to extensive nasal septum surgery. Aechives of Otolaryngology. 1958; 68(3):301-313.
25. Jain L, Jain M, Chouhan AN, Harshwardhan R; Conventional septoplasty verses endoscopic septoplasty. People's Journal of Scientific Research. 2011; 4(2):24-28.
26. Chung BJ, Batra PS, Citardi MJ, Lanza DC; Endoscopic septoplasty: revisitation of the technique, indications, and outcomes. Am J Rhinol. 2007; 21(3):307-311.