

ORIGINAL ARTICLE

Analogical Evaluation of Endoscopic Septoplasty in Posterior Septal Deviation

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ABSTRACT

Background: Deviated Nasal Septum is one of the pronounced causes of Nasal Obstruction. A number of surgeries are being done since decades to alleviate symptoms. Recent advancement with endoscopes has revolutionized the surgical approach towards minimal invasive procedures.

Aim: To analyze the post-op hospital stay and complications in headlight vs. endoscopic septoplasty

Study design: The study is Cross sectional Randomized Control Trial.

Place and duration of study: We conducted this study in ENT Unit I of Jinnah Hospital Lahore from June 2021 to January 2022. The follow up time was 2 months.

Methodology: We performed this study on 30 patients who were diagnosed with Posterior Septal deviation. We randomly divided the patients into two groups. Group A was to undergo trans-nasal trans-speculum (TNTS) septoplasty while group B, endoscopic septoplasty. We analyzed the outcomes in the form of incidence of anterior nasal packing, post-op hospital stays and rate of adhesion formation.

Results: We concluded that in Group A, nasal packing was required in 14(93.3%) patients, adhesion formation in 2(13.3%) patients and the mean post-operative hospital stay was 2.13±0.352 days while in Group B, only 3(20%) patients needed anterior nasal packing, none developed post-surgical adhesion formation and the mean postop hospital stay was 1.00±0.000 days.

Practical implication: This study delineated that endoscopic septoplasty once mastered is far superior to Endonasal Conventional septoplasty and must be adopted in all public and private sectors to improve cost-effectiveness.

Conclusion: We concluded that endoscopic septoplasty is far superior to trans-nasal trans-speculum (TNTS) septoplasty when post-op hospital stays and incidence of nasal packing was concerned in posterior septoplasty. However, there was no statistical difference in terms of post-surgical adhesion formation among the two studied groups.

Keywords: Endoscopic Septoplasty, Trans-nasal trans-speculum (TNTS) septoplasty, Deviated Nasal Septum

INTRODUCTION

Nasal Obstruction is one of the most common presenting complaints to ENT OPD¹. Amongst the causes Deviated Nasal Septum is the pronounced one⁷. Septoplasty is definitive treatment for deviated nasal septum reserved for nasal obstruction not responding to medical treatments. Septoplasty not only ensures nasal patency but also provide better surgical approach to maxillary, ethmoidal, frontal and sphenoid sinuses in Functional Endoscopic sinus surgery¹⁵.

Septum is divided into two parts on the basis of an imaginary line drawn between anterior nasal spine of the frontal bone and anterior nasal spine of the maxillary bone, "the cottle's line". Areas anterior and posterior to cottle's line are termed as anterior and posterior parts of nasal septum respectively. Both parts of the septum, if deformed, can cause significant nasal obstruction, headache, chronic sinusitis, epistaxis, Obstructive Sleep Apnea or chronic nonspecific facial pain depending upon degree and site of deviation. Anterior Nasal Septum is associated with both structural deformity and functional abnormalities in the form of Nasal Obstruction, Chronic Rhino sinusitis, chronic headaches, facial pain, Eustachian tube disorder and cosmetically unacceptable nasal contour. In contrast, the deviated posterior part of septum only has functional problems. Posterior deviation is not associated with cosmetic concerns. Anterior nasal septum deviation manipulation, if overdone, can result in significant nasal deformity in the form of depressed nasal bridge and supra tip depression. However, no cosmetic deformity is associated with over manipulation or removal of posterior part of nasal septum. Deviated Nasal Septum usually results from birth or acquired trauma^{2, 8} or from abnormal regeneration of nasal septum or cartilage and presents with unilateral or bilateral nasal obstruction, posing great effect on overall quality of life.

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From centuries nasal deformity has been corrected to alleviate the symptoms and improve quality of life³. Conventionally, sub mucosal Resection was the treatment of choice¹¹ in which almost whole of the nasal septum is removed placing only 1 to 1.5cm thick strip of quadrangular cartilage at the nasal dorsum securing the integrity of nasal contour. This method though efficient in maintaining patent nasal airway is associated with greater risk of nasal deformity in the form of saddle nose and permanent septal perforation. With recent advancements and gaining expertise, more conservative approach resulted in evolution of technique to Septoplasty^{6,9}. In Trans-nasal trans-speculum (TNTS) a curved incision Killian's or Freer's incision is given at the caudal end of nasal septum after injecting 2% xylocain solution with adrenaline diluted in normal saline for hydro-dissection of Mucoperichondrial flap. Flap is raised in the next step with Surgical Blade no 15 exposing whole of the quadrangular cartilage over the deviated side, Vomer bone, Perpendicular plate of ethmoid bone and Maxillary crest. Deviated part of nasal septum or cartilage or spur is then removed under vision and nasal patency is secured. Raised mucoperichonreal flap is stitched in position after ensuring its integrity. Splints are placed unilaterally or bilaterally depending upon degree of manipulation. Anterior nasal packing is done as required.

Now in the past few years, after the invention of endoscopes, endoscopic procedures have become the standard of care. Endoscopic Septoplasty has particular importance and better outcomes in isolated septal either bony or cartilaginous spur and/or posterior nasal septum while anterior deflections can better be corrected with Conventional headlight or Trans-nasal trans-speculum (TNTS) septoplasty¹³. In this technique a 0 degree Hopkins rod endoscope is used. Local Anesthesia is injected at the area with deviation or spur, incision is given just anterior to the spur and a hemitransfixation incision is avoided thus avoiding the

need for exposing whole of the septum. Septal or cartilaginous spur is removed under vision and flap is placed unstitched. Unilateral splints are placed and anterior nasal packing is done if required. These endoscopic techniques, though difficult to master¹⁴, have better functional outcome in the form of lesser chances of hemorrhage, manipulation, adhesion formation, rate of anterior nasal packing and decreasing post op admission days to hospital⁵.

Trans-nasal trans-speculum (TNTS) septoplasty approach in posterior nasal deflections renders the tissue on verge of maximum handling resulting in increased rate of post-operative complications. While newer techniques in septoplasty offer maximum relief in symptoms with minimum tissue handling^{4, 10} hence least chances of complications and better functional outcomes¹².

Since the surgical outcomes vary in different setups, therefore, the purpose of this study was to compare the post op results in trans-nasal trans-speculum (TNTS) septoplasty and endoscopic septoplasty in posterior Septal Deviation only in our setup.

METHODS

We conducted a prospective comparative study after taking informed consent and permission from ethical board of Jinnah Hospital Lahore. Detailed procedure, risks, benefits and possible outcomes were explained to the patients taking part in study in their mother tongue. 30 patients, who were diagnosed as having Posterior nasal Deflection in the form of isolated bony or cartilaginous spur on the basis of CT Nose and Para nasal Sinus with FESS Protocol and 0° Hopkins endoscopic telescopic (4mm) findings causing significant breathing difficulty, Chronic Headache, chronic rhino sinusitis, epistaxis, Obstructive Sleep Apnea and non-specific facial pain were included in this study. All the patients were greater than 18 years of age. Patients who had any sort of anterior nasal deviation, previous nasal surgery, bilateral nasal blockage, concurrent Allergic Rhinitis, infectious, autoimmune or neoplastic disease of nose and any of the patients who were not willing to participate in this study were excluded from the research.

Jinnah hospital Lahore is a tertiary care hospital with ENT staff trained in performing routine ENT and head and neck Surgeries. Endoscopic Sinus Surgery is a routine procedure at our setup. We have staff trained in doing conventional and endoscopic septal and sinus surgeries. We took the patients presenting in ENT OPD with the above listed complaints at our hospital. We randomly divided the patients into two groups. Group A was to undergo trans-nasal trans-speculum (TNTS) septoplasty also known as conventional or headlight septoplasty while group B was aimed to undergo endoscopic septoplasty, both in experienced hands. Need for nasal packing was dependent upon the degree of hemorrhage control after applying temporary pressure with ribbon gauze drenched in diluted adrenaline solution. We intend to compare and contrast the effectiveness of two different techniques highlighting the better surgical procedure amongst the two groups in the form of. 1. Rate of per-operative anterior nasal packing. 2. Duration of hospital stay after surgical procedure. 3. Follow-up in eight consecutive weeks to diagnose and manage post-operative adhesion formation.

Detailed informed Consent was taken prior to procedure from each and every patient as per standard hospital protocols. Data was recorded in Standard Research Protocols and data entry and analysis was done by using SSP 20. P value ≤0.05 was considered significant.

RESULTS

In this study, the results of gender showed that in Trans-nasal trans-speculum (TNTS) septoplasty method, 9(60%) were males and 6(40%) were females, while in Endoscopic septoplasty, 10 (66.7%) were males and 5 (33.3%) were females (Table-1).

In Trans-nasal trans-speculum (TNTS) septoplasty method, the mean age was 23.27±3.973 years, while in Endoscopic septoplasty, the mean age was 22.53±3.623 years. In Trans-nasal trans-speculum (TNTS) septoplasty method, 11(73.3%) patients had ages ≤25 years and 4(26.7%) patients had >25 years. In Endoscopic septoplasty, 10(66.7%) patients had ages ≤25 years and 5(33.3%) patients had >25 years (Table-2).

In Trans-nasal trans-speculum (TNTS) septoplasty method group, nasal packing was required in 14(93.3%) patients, while in Endoscopic septoplasty group, nasal packing was required in 3(20%) patients. The p-value showed significant difference (p=0.001) (Table-3).

In Trans-nasal trans-speculum (TNTS) septoplasty method group, adhesion was formed in 2 (13.3%) patients, while in Endoscopic septoplasty group; adhesion was formed in no patients. The p-value showed insignificant difference (p=0.143) (Table-4).

In Trans-nasal trans-speculum (TNTS) septoplasty method group, the mean post-operative hospital stay was 2.13±0.352 days, while in Endoscopic septoplasty group; the mean post-operative hospital stay was 1.00±0.000 days. The p-value showed significant difference (p=0.001) (Table-5).

Table-1: Comparison of gender distribution between groups

| Gender | Groups | | Total |
|--------|---|--|-----------|
| | Trans-nasal speculum septoplasty method | trans-speculum (TNTS) septoplasty method | |
| Male | 9(60%) | | 10(66.7%) |
| Female | 6(40%) | | 5(33.3%) |
| Total | 15(100%) | | 15(100%) |

Table-2: Comparison of age distribution between groups

| Age groups | Groups | | Total |
|------------|---|--|--------|
| | Trans-nasal speculum septoplasty method | trans-speculum (TNTS) septoplasty method | |
| ≤25 years | 11 | | 10 |
| | 73.3% | | 66.7% |
| >25 years | 4 | | 5 |
| | 26.7% | | 33.3% |
| Total | 15 | | 15 |
| | 100.0% | | 100.0% |

Table-3: Comparison of nasal packing distribution between groups

| Nasal packing | Groups | | Total |
|---------------|---|--|--------|
| | Trans-nasal speculum septoplasty method | trans-speculum (TNTS) septoplasty method | |
| Yes | 14 | | 3 |
| | 93.3% | | 20.0% |
| No | 1 | | 12 |
| | 6.7% | | 80.0% |
| Total | 15 | | 15 |
| | 100.0% | | 100.0% |

P value 0.001

Table-4: Comparison of adhesion formation distribution between groups

| Adhesion formation | Groups | | Total |
|--------------------|---|--|--------|
| | Trans-nasal speculum septoplasty method | trans-speculum (TNTS) septoplasty method | |
| Yes | 2 | | 0 |
| | 13.3% | | 0.0% |
| No | 13 | | 15 |
| | 86.7% | | 100.0% |
| Total | 15 | | 15 |
| | 100.0% | | 100.0% |

P value 0.143

Table-5: Comparison of post-operative hospital stays between groups

| Groups | N | Mean | SD |
|--|----|------|-------|
| Trans-nasal trans-speculum (TNTS) septoplasty method | 15 | 2.13 | 0.352 |

| | | | |
|------------------------|----|------|-------|
| Endoscopic septoplasty | 15 | 1.00 | 0.000 |
|------------------------|----|------|-------|

P value 0.001

DISCUSSION

Nasal septum not only divides the nasal cavity into two halves but also provide structural support to the nasal dorsum, the columella, and the nasal tip. Anterior and posterior nasal deviation is dependent on an imaginary line called the "cottle's line". Correction of deviated nasal septum is particularly important in order to relieve symptoms as well as reducing financial burden both over the patient and the hospital. In this particular study we found out that among 19 males and 11 females, there was statistically significant difference in rate of nasal packing p value 0.001. 93.3% of patients among trans-nasal trans-speculum (TNTS) septoplasty group had to undergo anterior nasal packing as part of procedure based on the degree of hemorrhage while only 20% of those who underwent endoscopic septoplasty needed anterior nasal packing as there is minimal tissue manipulation and minimal chances of bleed.

P value was also significant for post-operative hospital stay. Mean duration of hospital stay following trans-nasal trans-speculum (TNTS) septoplasty was 2.13 ± 0.352 days while mean duration in endoscopic approach was 1.00 ± 0.000 , p value 0.001. The rationale of this is that among the group undergoing trans-nasal trans-speculum (TNTS) septoplasty had an increased rate of anterior nasal packing. Usually patients who present in tertiary care hospitals are from far flung area that cannot be sent back with nasal packing. Nasal Packing is placed at least for 24 hours and then removed under vision necessitating the need for one day admission among the aforementioned group. While there was significant decrease rate of anterior nasal packing in endoscopic approach and hence the needs of hospital stay.

Nasal splints were placed in both the groups unilaterally or bilaterally depending upon the degree of manipulation and were placed for 2 weeks duration among all the subjects. This resulted in statistically insignificant difference among the two groups as far as rate of adhesion formation was concerned. p value was 0.143. Only 13.3% patients developed post-surgical synechiae in patients undergoing trans-nasal trans-speculum (TNTS) septoplasty while none of the patient in other group experienced such problem post-operative.

CONCLUSION

This study concluded that endoscopic approach in posterior nasal septal deviation is superior to trans-nasal trans-speculum (TNTS) septoplasty in terms of reducing the no of days in hospital and incidence of anterior nasal packing. However there was no statistically significant difference in terms of adhesion formation. On the basis of study following key points were noted. 1. In experienced hands endoscopic septoplasty should be preferred over trans-nasal trans-speculum (TNTS) septoplasty. 2. Endoscopic Septoplasty decreases no of days admitted in hospital decreasing patient expenses and can be used as a daycare procedure.

Conflict of interest: Nil

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