ISSN : 2949 - 9100

International Journal of Health and Dentistry Care (IJHDC)

IJHDC : Health and Dental Publication
Available Online at: www.ijhdc.com
Volume – 2, Issue – 4, July - August - 2023, Page No. : 27 - 31

Comparative Analysis of Conventional Septoplasty and Endoscopic Septoplasty: A Cross sectional Study

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Citation This Article: Lattice K, Adduct E D, "Comparative Analysis of Conventional Septoplasty and Endoscopic Septoplasty: A Cross sectional Study", IJHDC – July – August - 2023, Volume. – 2, Issue - 4, P. No. 27 – 31.

Type of Publication: Original Research Article

Conflicts of Interest: Nil

Abstract

Objective: To compare the outcome of endoscopic and conventional Septoplasty and to evaluate the advantages, disadvantages and complications of conventional and endoscopic Septoplasty.

Methods: A study on 122 patients with symptomatic Deviated nasal septum. They were equally randomized into 2 groups 61 each- CS (Conventional Septoplasty group) and ES (Endoscopic Septoplasty group). Pre and post-operative evaluations were done by NOSE score, clinical examination, nasal endoscopy, CT scan.

Results: Endoscopic Septoplasty showed significant improvement of symptoms and less complications when compared with conventional Septoplasty.

Conclusion: The endoscopy assisted Septoplasty is precise, limited excision of deviated part of septum with fewer traumas to nearby mucosa making the duration of surgery shorter with minimal postoperative complications.

Keywords: Deviated nasal septum, Conventional Septoplasty, Endoscopic Septoplasty, NOSE score.

Introduction

Nasal obstruction is one of the common presenting complaints in rhinology practice and deviated nasal septum is the most common cause of nasal obstruction. A significantly deviated nasal septum not only causes nasal obstruction but also causes headache, sinusitis, obstructive sleep apnea, epistaxis**Error! Reference source not found.** etc. DNS is commonly associated with rhino sinusitis, nasal polyps, external deformities like saddle nose, hump nose etc. Surgery is the only option for the relief of obstructive and symptomatic DNS. Over the years, the deviated nasal septum correction surgery progressed further. The increased incidence of complications with SMR leads to adoption of more conservative septoplasty[1]. Now Septoplasty is one of the commonly performed procedures in ENT practice. It can be done alone or in combination with tuboplasty, FESS, rhinoplasty[3]. In the turn of 21st century, endoscope was

introduced in to the otorhinolaryngology field for septal correction[4]. The endoscopic Septoplasty has more advantages over conventional Septoplasty. It offers better visualization, more focused flap dissection with isolated resection. The technique of endoscopic Septoplasty is a fast-developing concept and is gaining popularity with an increasing trend towards endoscopic surgerie**Error! Reference source not found.**.

Methods

All patients, above 10years of age, presenting to ENT OPD with features of symptomatic DNS were included in the study. Those Patients with acute rhino-sinusitis, those who are diagnosed with nasal mass, and those patients with previous nasal surgery were excluded from this study. After getting informed consent, Patients were equally randomized into two groups. Group 1- those who have undergone conventional Septoplasty, Group 2- those who have undergone endoscopic Septoplasty. Total of 122 patients were studied with 61 in each group. Detailed clinical history was taken from each patient and patients were asked to fill the NOSE score table to assess the severity of nasal obstruction preoperatively. The table consist of 5 symptoms and the patient is asked to rate the symptoms within a score of 0 to 4, where 0- not a problem, 1-very mild problem, 2- moderate problem, 3-fairly bad problem, 4-severe problem. Complete nasal examination including diagnostic nasal endoscopy was done in all cases to assess the site of deviation, associated spur, polyp, inferior turbinate hypertrophy, and middle turbinate status. A preoperative CT nose and paranasal sinus (axial, coronal, sagittal) were performed in all cases to assess the type of deviation, status of paranasal sinus and turbinates. Preoperative evaluation-complete blood count, bleeding and clotting time, PT, INR, random blood sugar, renal function tests, urine routine, serology, ECG, and chest X-ray were done for all the patients. Pre anaesthetic check-up was done and anaesthetists' fitness for surgery was obtained.

All cases were operated under general anaesthesia. Topical anaesthesia of nasal cavity is achieved by packing the nasal cavity with 4% lignocaine with 1:1000 adrenalines in the ratio of 10:1 for 10 to15 minutes before surgery. The patient was laid supine in a reverse Trendelenburg position. The nose and adjacent areas were painted and then draped with sterile towels. Local infiltration with 1% lignocaine with 1:100,000 adrenaline was given into the nasal septum.

Technique of Conventional Septoplasty

Conventional Septoplasty was performed using a headlight and nasal speculum. A vertical hemi transfixion incision was made 2mm from the caudal end of septum on concave side along the entire height. Mucoperichondrial flap and mucoperiosteal flap raised. Bony cartilaginous septum dislocated; periosteal flap raised on opposite side. Remove the deviated cartilaginous and bony septum. Inferior flap raised over the maxillary crest and removed the crest. Incision was sutured with catgut and soframycin soaked nasal packing was done.

Technique of Endoscopic Septoplasty

Endoscopic Septoplasty was done using 0degree 4mm Hopkins rod endoscope attached to Karl Storz CCD camera and light source. Endoscope was passed into nasal cavity to assess the septum. The endoscope held in left hand and instruments in the right hand. Here the incision was not extended as in conventional Septoplasty. Limited mucoperichondrial–periosteal flap elevation was done over the most deviated part of septum. After resection, flap repositioned and incision was sutured with catgut. Nasal packing was done.

Intra operative Blood loss was recorded from the readings on the suction bottle. Fixed amount of saline

was taken before surgery and at the end of surgery; amount of saline used for irrigation was deducted from the total collection in the suction bottle. Duration of surgery was estimated from local infiltration to suturing of incision.

Post-operative care

The patient was started on intravenous antibiotic such as amoxicillin-clavulanate 1.2 gm or ceftriaxone 1gm twice a day during the hospital stay and was continued orally for 1week after discharge. The anterior nasal pack is removed after 24 hours and patients were discharged after 3-5 days with decongestants and analgesics. The patients were instructed to review in OPD after a week. During this visit, nasal cavities were examined endoscopically.

Follow up: The patients were re-examined twice monthly for 1 month, then monthly for 3months. At each follow up diagnostic nasal endoscopy was done and looked for any persistence of DNS, perforation, synechiae, crusting, bleeding. The patients were again evaluated for nasal obstruction symptom improvement after surgery by NOSE Score when they came for review at 2nd week, 1st month and 3rd month postop.

Results

The mean age of study population was 35.86 years. In this study 56 were male (45.9%) and 66 were females (54.1%). In this study following nasal obstruction, nasal discharge (77%) and headache (76.2%) were the main issues. Post Nasal drip was 29.5%, epistaxis was 23%. The least was hyposmia (18%). DNS to left was the main pre- operative diagnostic nasal endoscopic finding (72 patients) followed by DNS to right (50 patients). Preoperative CT imaging showed 43 patients having pansinusitis (35.2%) along with DNS. 37 patients had concha bullosa (30.3%) and 28 patients had S shaped DNS. The mean intraoperative blood loss in conventional group was 56.28ml, while that of endoscopic group was 53.44ml. Blood loss was slightly less in endoscopic group which was not statistically significant. In this study the mean duration of surgery in conventional group was 57.98 min and 51.36 min in endoscopic group. The duration of surgery was less in endoscopic group compared to conventional septoplasty group and the p value <0.001 which was statistically significant (Table 1).

Table 1: Comparison of Duration of Surgery in conventional and endoscopic group

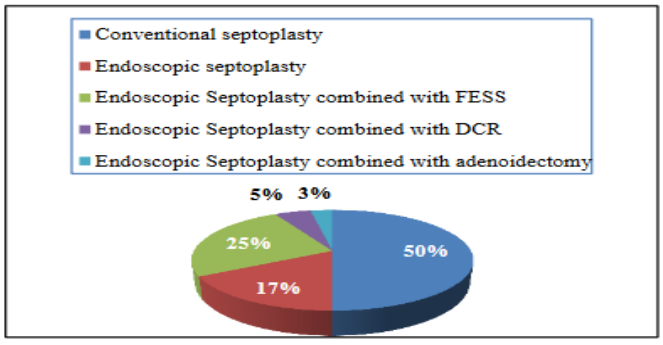
Findings	Conventional septoplasty	Endoscopic septoplasty	Total	Percentage (%)
Rt. DNS	10	9	19	38
Lt. DNS	8	8	16	32
Spur	7	8	15	30
Hypertrophied I.T	11	12	23	46
Polypoid M.T	0	1	1	2
Concha bullosa	0	1	1	2
Discharge	3	1	4	8

In this study the mean preop NOSE Score was 16.31 in conventional group and 16.52 in endoscopic group (Table 2) (Fig 1).

Table 2: Comparison of Drop in mean NOSE Score in conventional and endoscopic group

Group	Nasal airflow (cm)	Conventional septoplasty	Endoscopic septoplasty	Total
1	0–1	3	4	7
2	2–3	15	17	32
3	4–5	4	2	6
4	6–9	3	2	5
Total		25	25	50

Fig 1: Comparison of fall in NOSE Score in conventional and endoscopic group



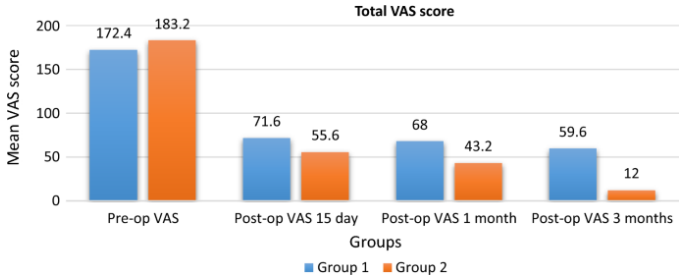
The 2nd week, 1st month and 3rd month postop NOSE Score in conventional group were 11.41, 7.79, and 4.15 respectively. In endoscopic group 2nd week, 1st month and 3rd month postop NOSE Score were 11.08, 7.18 and 1.13 respectively (Table 3).

Table 3: Associated lateral wall pathology prevalence.

Associated pathology	Conventional septoplasty Group A (N=50)		Endoscopic septoplasty Group B (N=50)		Total (N=100)	
	Number of cases	Percentage (%)	Number of cases	Percentage (%)	Number of cases	Percentage (%)
Concha bullosa	10	20	11	22	21	21
Inferior turbinate hypertrophy	35	70	43	86	78	78
Variation of uncinate process	7	14	10	20	17	17
Paradoxical middle turbinate	5	10	8	16	13	13
Polyps	4	8	5	10	9	9
Enlarged bulla	1	2	3	6	4	4

In conventional group total of 14 among 61 had complications- 4 had crusting, 3 had bleeding, 3 had persistence of deviation, and 1 had perforation and 3 had synechiae. In endoscopic group total of 6 among 61 had complications- 2 had crusting, 3 had bleeding, 1 had synechiae, and none had perforation and persistence of deviation. (Fig 2)

Fig 2: Post-operative complications in conventional and endoscopic Septoplasty



Conclusions: The endoscopic septoplasty offers an alternative to conventional technique with superior visualization, excellent illumination and excellent tool for teaching. It preferred for posterior deviation, whereas conventional septoplasty is still preferred for anterior deviation.

Discussion

In our study although the objective assessment showed insignificant difference in the functional outcome of both, the complications significantly occurred in the conventional septoplasty group. The subjective assessment of symptoms was insignificant.

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