

Comparative Study of Septoplasty VS SMR

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ABSTRACT

Introduction: 'Nasal obstruction' - the most common problem faced by people having deviated nasal septum. So study was done to compare the relief of nasal symptoms between Submucosal resection and Septoplasty surgical techniques by relying on SNOT-22 score and to compare the complications of Septal surgery between Submucosal resection and Septoplasty.

Material and methods: 50 patients with nasal obstruction were included in the study. Depending on the history and clinical features, anterior rhinoscopy was done to identify nasal septal deviation. Type of surgery used depended upon the type of deviation.

Results: In Septoplasty most of the cases had C shaped deviations, where SMR had spurs. The average Pre-operative score for all the nasal symptoms was 10.56 (SD 1.53) compared with a Post-operative average score of 1.20 (SD 1.04). The average Pre-operative score for all the non nasal symptoms was 2.64(SD 1.49) compared with a Post-operative average score of 0.36 (SD 0.49).

Conclusion: There was no significant difference between Submucosal resection and Septoplasty with respect to symptomatic relief and complications following the surgery.

Keywords: Septoplasty, SMR

INTRODUCTION

Nasal obstruction is one of the most common problems bringing a patient to the Ent Opd and septal deviation is a frequent structural etiology.¹ As a result surgical correction of the septal deviation is a must and it is generally performed to improve the quality of life. Submucosal Resection² and Septoplasty are two surgeries performed to correct the nasal deviation. 'Septoplasty' and 'Submucosal resection of the septum' aims to remove or straighten part(s) of the deviated cartilage and bone of the nasal septum.

The type of surgery used depends on the type of deviation. If the deviation lies anterior to the Cottle's line (vertical line between the nasal processes of frontal and maxillary bones) then Septoplasty is preferred. If the deviation lies posterior to the Cottle's line then sub mucosal resection of septum is preferred.³ If the septal deviation is associated with external deviation of the nose, then septorhinoplasty is the treatment of choice. There have been only a few studies that have been performed to assess patients quality of life (QOL) and subjective relief of symptoms.⁴⁻⁶ Patients subjective pre-operative and post-operative evaluation should be considered to assess and compare the impact of Submucosal resection and Septoplasty on nasal symptoms and general health.

The use of the Sino Nasal Outcome Test (SNOT-22) score as a measure of outcome after septal surgery is novel as previous studies have tend to use separate tools to evaluate change in nasal and non-nasal symptoms. The SNOT-22 score was originally developed rhino sinusitis specific, 22-items health related questionnaire and combines both symptoms related to the nose and general health.⁷ Complications like hematoma,

adhesions, septal perforation, infections⁸ are compared in Sub mucosal resection and Septoplasty.

Study aimed to compare the relief of nasal symptoms between Submucosal resection and Septoplasty surgical techniques by relying on SNOT-22 score and to compare the complications of Septal surgery between Submucosal resection and Septoplasty.

MATERIAL AND METHODS

Study included includes 50 patients with nasal obstruction, who presented in the department of ENT, Kamineni Institute of Medical Sciences, Narketpally, over a period of 2yrs.

Inclusion criteria

1. Age 17 years and above.
2. Symptomatic deflected nasal septum.
3. Symptoms lasting at least for 3 months even after medical management like topical or oral decongestants, or an oral antihistamine with or without decongestant combination.

Exclusion criteria

1. Septal surgery performed for other reasons such as an access to nasal and sinus tumours, pituitary surgery and as part of treatment for sleep apnoea.
2. Septoplasty performed with concurrent sinus surgery.
3. Rhinoplasty, prior septoplasty/rhinoplasty or turbinoplasty.
4. Acute nasal trauma.
5. Adenoid hypertrophy.
6. Uncontrolled asthma/nasal allergy.

Interpretation of Data

Depending on the history and clinical features, anterior rhinoscopy was done to identify nasal septal deviation. Nasal endoscopic examination is carried in all patients to confirm the septal deviation. Based on Cottles³ classification deviations are divided into cartilaginous and bony types. Type of surgery used depends upon the type of deviation.

If the deviation lies anterior to the Cottle's line (vertical line between the nasal processes of frontal and maxillary bones) then Septoplasty is preferred. If the deviation lies posterior to the Cottle's line then Submucosal resection of septum is preferred. Complications like hematoma, adhesions, septal perforation are compared in SMR and Septoplasty. Prior to the surgery, the patient was asked to fill in the SNOT-22 questionnaire.

In this questionnaire, patients rated 22 different symptoms related to both nasal and general health on a score of 0 to 5 as

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below:

- 0 - No problem
- 1 - Very mild problem
- 2- Mild or slight problem
- 3 - Moderate
- 4 - Severe
- 5 - Very severe

The various nasal symptoms included nasal obstruction, sneezing, runny nose, need to blow nose, cough, post nasal discharge etc. whereas (QOL) related symptoms included lack of good night's sleep, waking tired, fatigue, reduced productivity and concentration, frustration etc. The patients were also asked to tick the most important item or symptom affecting his or her health. Prior informed consent was taken from every patient.

Follow up

A postoperative assessment for the same parameters was made at three months from the day of the surgery. The data from the above study was systematically collected, compiled and statistically analyzed. An improvement is defined as a reduction of > 2 points on the Sino nasal outcome test (SNOT-22) score.

Method of collection of data

Through detailed clinical history based on questionnaire to the patient, proforma is enclosed in the annexure.

Investigations

1. Haematological investigations like Hb%, Total leukocyte count, Differential count, Absolute eosinophil count, Bleeding time, Clotting time, Blood grouping and Typing.
2. Urine examination
3. Radiological investigations like X- ray PNS, Computerized tomographic scan of nose and paranasal sinuses coronal and axial views.

STATISTICAL ANALYSIS

SPSS version 21 was used for the statistical analysis. Inferential statistics was calculated with the help of paired t test. For descriptive data mean, SD and percentages were used.

RESULTS

A total of 50 cases of septal surgeries, 25 in each group performed at Kamineni Institute of Medical Sciences, Narketpally, over a period were included in the study. Majority of the patients were in the second decade of life which accounted for 80%

in Septoplasty, 56% in SMR. The next highest being 12% in Septoplasty, 32% in SMR were seen in the third decades. The least number of patients were seen in the fifth decade.

Type of deviation

In Septoplasty most of the cases had C shaped deviations, where SMR had spurs.

Nasal Symptoms

The average Pre-operative score for all the nasal symptoms was 10.56 (SD 1.53) compared with a Post-operative average score of 1.20 (SD 1.04). Statistical analysis shows the t = 26 and p < 0.0001 which is significant (table-1).

Non Nasal Symptoms

The average Pre-operative score for all the nons nasal symptoms was 2.64(SD 1.49) compared with a Post-operative average score of 0.36 (SD 0.49).Statistical analysis shows the t = 8.72 and p <0.0001 which is significant.

General Health Symptoms

The average Pre-operative score for all the nasal symptoms was 7.08 (SD 2.85) compared with a Post-operative average score of 1.04 (SD 0.93). Statistical analysis shows the t = 10.50 and p <0.0001 which is significant.

Nasal Obstruction

The average Pre-operative score for all the nasal symptoms was 3.84 (SD 0.62) compared with a Post-operative average score of 0.60 (SD 0.70). Statistical analysis shows the t = 20.10 and p <0.0001 which is significant.

Nasal Symptoms

The average Pre-operative score for all the nasal symptoms was 10.24(SD 2.79) compared with a Post-operative average score of 2.40 (SD 1.35). Statistical analysis shows the t = 13.20 and p <0.0001 which was significant (table-2, figure-2).

Non Nasal Symptoms

The average Pre-operative score for all the non-nasal symptoms was 3.20 (SD 1.35) compared with a Post-operative average score of 0.64 (SD 0.63). Statistical analysis shows the t =8.82 and p <0.0001 which was significant.

General Health Symptoms

The average Pre-operative score for all the nasal symptoms was 6.44(SD 3.19) compared with a Post-operative average score of 2.00(SD 1.19). Statistical analysis shows the t = 6.54 and p < 0.0001 which was significant

Symptoms	Average Pre op Mean ± SD	Average Post op Mean ±SD	t value	P value	Statistical significance
NS	10.56 ± 1.53	1.20 ± 1.04	26.00	<0.0001	Significant
NON NS	2.64 ±1.49	0.36 ± 0.49	8.72	<0.0001	Significant
GHS	7.08 ± 2.85	1.04 ± 0.93	10.50	<0.0001	Significant
NO	3.84 ±0.62	0.600 ±0.70	20.10	<0.0001	Significant

Table-1: Average means of snot 22 score in septoplasty (N=25)

Symptoms	Average Pre op Mean ± SD	Average Post op Mean ±SD	t value	P value	Statistical significance
NS	10.24 ± 2.79	2.40 ± 1.35	13.20	<0.0001	Significant
NON NS	3.20 ± 1.35	0.64 ± 0.63	8.22	<0.0001	Significant
GHS	6.44 ± 3.19	2.00 ± 1.19	6.54	<0.0001	Significant
NO	3.80 ± 0.64	0.72 ± 0.49	18.40	<0.0001	Significant

Table-2: Average means of snot 22 score in SMR N=25

Nasal Obstruction

The average Pre-operative score for all the nasal symptoms was 3.84(SD 0.64) compared with a Post-operative average score of 0.92 (SD 0.49). Statistical analysis shows the t = 18.40 and p <0.0001 which was significant.

Improvement of symptoms after septoplasty

Majority of the patients who underwent Septoplasty had relief of symptoms for all the categories. Relief of symptoms were maximum for nasal obstruction which accounted for 22 (88%) patients. Patients who did not have any improvement following surgery were only 3 (12%) with nasal obstruction, 5 (20%) with nasal symptoms, 9 (36%) with non-nasal symptoms, 7 (33%) with general health symptoms (figure-2).

Improvement of symptoms after SMR

Majority of the patients who underwent Sub mucosal resection had relief of symptoms for all the categories. Relief of symptoms were maximum for nasal obstruction which accounted for 21(84%) patients. Patients who did not have any improvement following surgery were only 5(16%) with nasal obstruction, 6(24%) with nasal symptoms, 10(40%) with non-nasal symptoms, 8(32%) with general health symptoms.

Comparison of improvement in symptoms following SMR and septoplasty

There was no much difference in improvement in symptoms following SMR and Septoplasty.

In the present study when evaluating with SNOT 22 the percentage of reduction of symptoms following Septoplasty and SMR were comparable (table-3).

In the present study following Septoplasty and SMR, complications like adhesions were noted to be 8%, where as columellar retraction was 4% in SMR (table-4).

DISCUSSION

In present study Males were more commonly affected than females. This was compared to studies done by J.R.Buckland et al.⁷ In present study the mean age was 28 yrs which was compared favourably with other studies like J.R.Buckland et al.⁷ The present study showed side of deviation was more towards Right side which was 60%, when compared with other study K

Pannu et al which also showed 52% Right sided deviation. According to Scott brown Orhinolaryngology the side of deviation was more commonly seen on towards right side.³

Post operative means for nasal obstruction in present study was 0.6, which was comparable to other studies as shown in table-5. Post operative means for nasal obstruction in present study was 0.72, which was comparable to other studies as shown in table-6.

In the present study 80% of patients had improved following surgery when compared to 74%, 30% in the study done by K.K Pannu et al, and J.R. Buckland.^{4,7} In the present study 88% obtained relief of symptoms following surgery when compared to 87% in the study done by J.R. Buckland.⁷ In our study 64% of patients were improved of non nasal symptoms compared to J.R. Buckland who had 55% improvement.⁷

In our study 77% of patients were improved of general health symptoms compared to 49% in the study done by K.K. Pannu et al and 30% in J.R. Buckland (table-7).^{4,7}

In the present study 76% of patients had improved following surgery when compared to 74% in the study done by K.K. Pannu et al⁴ and 84% obtained relief of symptoms following surgery when compared to 80% in the study done by K.K Pannu et al.⁴ In our study 60% of patients were improved of non nasal symptoms compared to K.K pannu et al.³ who had 49% improvement.

In our study 68% of patients were improved of general health symptoms compared to 49% in the study done by K.K. Pannu et al (table-8).

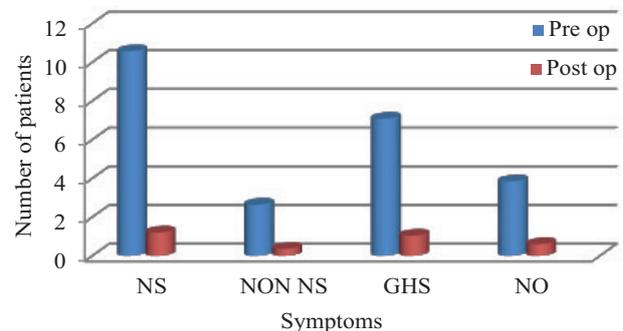


Figure-1: Comparison of average means of pre and post-operative SNOT 22 score in Septoplasty N=25

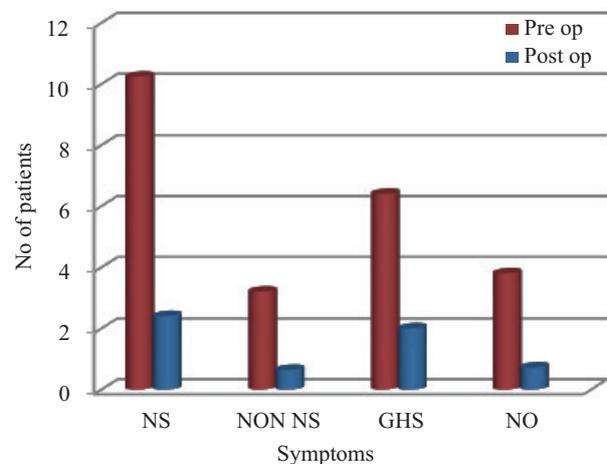


Figure-2: Comparison of Average means of pre and post-operative SNOT 22 score in SMR

Symptoms	Septoplasty n =25 (%)	SMR n = 25 (%)
NS	88.63	76.56
NON NS	85.07	80.00
GHS	85.79	68.94
NO	84.37	81.05

Table-3: Comparison of reduction of symptoms in percentage with SNOT 22 N=50

Complications	SMR n = 25 (%)	Septoplasty n = 25 (%)
1. Septal perforation	0	0
2. Adhesions	2(8.00)	2(8.00)
3. Recurrence of deformity	0	0
4. Saddle nose deformity	0	0
5. Columellar retraction	1(4.00)	0

Table-4: Comparison of complications between SMR and septoplasty N=50

Symptoms	K.K. Pannu. et. al ⁴		J.R. Buckland.et al ⁷		Present study-Septoplasty	
	Pre op	Post op	Pre op	Post op	Pre op	Post op
NS	10.43	4.73	1.4	0.9	10.56	1.20
Non NS	2.47	1.47	2.00	1.00	2.64	0.36
GHS	7.75	4.42	4.00	2.00	7.08	1.04
NO	3.42	1.3	3.9	1.2	3.84	0.60

Table-5: Comparison of means of SNOT 22 in septoplasty with other studies

symptoms	K.K.Pannu et al ⁴ n=100		J.R.Buckland.et al ⁷ n=40		Present Study –SMR n =25	
	Pre op	Post op	Pre op	Post op	Pre op	Post op
NS	10.43	4.73	1.4	0.9	10.24	2.40
Non NS	2.47	1.47	2.00	1.00	3.20	0.64
GHS	7.75	4.42	4.00	2.00	6.44	2.00
NO	3.42	1.3	3.9	1.2	3.80	0.72

Table-6: Comparison of means of SNOT 22 in SMR with other studies

	K.K. Pannu et. al ⁴ N=100			J.R. Bukland. et. al ⁷ N=40			Present Study -Septoplasty N=25		
	a	b	c	a	b	c	a	b	C
NS	59 (98.00)	44 (74.00)	15 (26.00)	40 (100.00)	12 (30.00)	1 (3.00)	25 (100.00)	20 (80.00)	5 (20.00)
Non NS	45 (75.00)	22 (49.00)	23 (51.00)	40 (100.00)	22 (55.00)	4 (10.00)	25 (10.00)	16 (64.00)	9 (36.00)
GHS	59 (98.00)	28 (49.00)	31 (51.00)	40 (100.00)	12 (30.00)	1 (3.00)	25 (10.00)	18 (77.00)	7 (33.00)
NO	48 (80.00)	39 (81.00)	09 (19.00)	40 (100.00)	35 (87.50)	0	25 (10.00)	22 (88.00)	3 (12.00)

a - No of patients having symptoms, b - No of patients improved after surgery, c - No of patients not improved

Table-7: Comparison of improvement of symptoms in septoplasty with other studies

	Kulwant Kaur Pannu et. al ⁴ N=100			Present Study -SMR N=25		
	a	b	c	a	b	C
NS	59 (98.00)	44 (74.00)	15 (26.00)	25 (100.00)	19 (76.00)	5 (24.00)
Non NS	45 (75.00)	22 (49.00)	23 (51.00)	25 (100.00)	15 (60.00)	9 (40.00)
GHS	59 (98.00)	28 (49.00)	31 (51.00)	25 (100.00)	17 (68.00)	7 (32.00)
NO	48 (80.00)	39 (81.00)	09 (19.00)	25 (100.00)	21 (84.00)	4 (16.00)

a - No of patients having symptoms; b - No of patients improved after surgery; c - No of patients not improved

Table-8: Comparison of improvement in symptoms after SMR with other studies

Complications	W.K Low, D. J. Willat ¹⁰ N=75(%)	Iqbal. A ⁹ Study N = 200 (%)	Present Study N=25(%)
Septal perforation	2 (3.00)	10 (5.00)	0
Adhesions	0	14 (7.00)	2 (8.00)
Recurrence of deformity	0	12 (6.00)	0
Saddle nose deformity	4 (5.30)	2 (1.00)	0
Columellar retraction	3 (4.00)	2 (1.00)	1 (4.00)

Table-9: Comparison of complications in smr with other studies

Complications	J.R. Buckland et. al. ⁷ N=40 (%)	P.S. Arunachalam et al ⁵ N=121(%)	Present Study N=25(%)
Septal perforation	1(2.00)	2(2.00)	0
Adhesions	1(2.00)	4(3.30)	1(4.00)
Recurrence of deformity	0	0	0
Saddle nose deformity	0	0	0
Columellar retraction	0	0	0

Table-10: Comparison of complications in septoplasty with other study

In our study complications following SMR was seen in 3 patients, 2 (8%) of them developed adhesions and 1(4%) developed

columellar retraction. This is similar to other study by Iqbal. A. which showed most common complication to be adhesion

7% followed by recurrence of deformity(6%) which requires a long term follow up. The study by W.K.Low, D.J.Willat showed increased incidence of septal perforation (3%), saddle nose deformity (5%).this might be because of number of cases taken in our study 25 patients as compared to 75 patients studied by them (table-9).^{9,10}

Only one patient (4%) developed adhesion following Septoplasty which compares favorably with studies done by J. R. Bukland (2%) and P. S. Arunachalam (3.3%). Both these studies had (2%) incidence of septal perforation which we did not see in our patients, because in all these cases we were very conservative in that only the most deflected parts were removed (table-10).^{7,5}

CONCLUSION

In our study, 84% of patients had relief of nasal obstruction in Septoplasty compared to 81% in SMR. Three patients in Submucosal resection, two in Septoplasty had complications. There was no significant difference between Submucosal resection and Septoplasty with respect to symptomatic relief and complications following the surgery.

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