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Research Article

Role of Septoplasty with Endoscopic Sinus Surgery in Management of Patients of Chronic Rhino Sinusitis? A Prospective, Randomized Observational Study

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Abstract: Chronic rhino sinusitis is thought to be a disease secondary to obstruction caused by anatomic anomalies and reactive mucosal engorgement. The treatment of chronic rhino sinusitis aims at the re-establishment of proper aeration and drainage. In the present study patients who were observed to have sinusitis radiologically were treated either with septoplasty with functional endoscopic sinus surgery or functional endoscopic sinus surgery alone. Results were analyzed using CT scan of Para nasal sinuses and SNOT 20 test. Despite subjective improvement, many of the patients had evidence of residual sinus disease on radiological examinations in patients undergoing Functional Endoscopic Sinus Surgery alone. In conclusion where ever an anatomical abnormality was detected it is ideal to give a complete relief by performing Septoplasty along with Functional Endoscopic Sinus Surgery to give complete relief to the patients.
Keywords: Chronic Rhino sinusitis, Septoplasty, Functional Endoscopic Sinus Surgery, SNOT 20

INTRODUCTION

Chronic rhino sinusitis is thought to be a disease secondary to obstruction caused by anatomic anomalies and reactive mucosal engorgement [1]. Patients with Chronic rhino sinusitis may suffer from a number of conditions, including headache or facial pain, postnasal discharge and congestion, a hoarse voice, sore throat, ear disease, and visual changes [2]. All specialists treating nasal and sinus disease should be able to perform a complete endoscopic evaluation of the nose and sinuses, especially for evaluation of inflammatory disease [3].

Although much has been discussed about the surgical technique of functional endoscopic sinus surgery, little has appeared about its long-term results [4]. Subsequent to obstruction, inflammation occurs resulting in the changes of the morphology of the lining mucosa of nasal sinus [5]. Interest in the surgical treatment of chronic rhino sinusitis has increased, primarily because of rigid endoscopy and, more particularly, computed tomographic scanning has facilitated the visualization of disease [6].

Treatment of the chronic rhino sinusitis by opening and irrigating the sinus via a variety of routes has a long and varied history [7]. Not all sinus surgery is the same for everybody since it involves operating on any of the 4 paired sinuses in the face: frontal, maxillary, ethmoid and sphenoid. Both endoscopic and open techniques may be employed depending on each individual's needs. There are usually several steps in the procedure, which may involve one or more of the procedures of Septoplasty which is straightening the middle wall of the nose to provide better airflow and to relieve obstruction, Antrostomy, Ethmoidectomy, Sphenoidotomy, Frontal Sinusotomy and Turbinectomy [8].

The treatment of chronic rhino sinusitis aims at the re-establishment of proper aeration and drainage [9]. It is believed that Endoscopic sinus surgery affords benefit in the vast majority of cases selected for surgery [10]. Still, relapses after surgery are not infrequent provided that the initial sinus surgery was technically adequate and resulted in an acceptable outcome [9, 10]. it is possible to recognize anatomic abnormalities that may contribute to persistent disease after surgery. Post operatively many conditions require medical management which include allergic or nonallergic chronic inflammation, chronic infection, fungal colonization, hyperplasic mucosa, nasal or sinus polyposis, and aspirin hypersensitivity [11].

The present study was planned to compare the adequacy of Functional Endoscopic Sinus Surgery alone, Functional Endoscopic Sinus Surgery along with Septoplasty in patients of chronic sinusitis.

MATERIALS AND METHODS

In the present study patients coming to Department of ENT during September 2012 to August 2013 with complaints of nasal obstruction, postnasal drip, and nasal discharge were selected and investigated with Diagnostic nasal endoscopy and X ray Paranasal sinus. Those patients who were observed to have sinusitis radiologically with X ray Para nasal sinus were managed medically for 1 month with broad spectrum antibiotics, antihistamines and decongestants. The patients showing no improvement were investigated with CT scan of Para Nasal Sinuses coronal and axial view. The patients presenting with unresolved sinusitis evident from CT scan of PNS were taken up for study. Patients having previous nasal or sinus surgery, diabetes mellitus and hypertension were excluded from the study.

A total number of 40 patients of suffering from chronic rhino sinusitis were included in the study. All these patients were evaluated with a questionnaire of SNOT 20 and tested for 4 domains of rhinologic, ear and facial symptoms, sleep, and psychological domain and the scores were noted.

Initial workup was performed with a detailed clinical questionnaire which included history about the symptoms and their duration, pre operative medical management and a detailed clinical examination which included anterior rhinoscopy, posterior rhinoscopy and indirect laryngoscopy. Individual nasal symptoms of nasal obstruction, headache, nasal discharge, post nasal drip were analyzed and documented pre operatively. CT scan of Para Nasal Sinus coronal and axial views was performed for assessing the exact pathology and nature of the disease.

Patients were randomly divided into two groups of 20 each. Patients in Group A underwent Septoplasty with Functional Endoscopic Sinus Surgery whereas patients of group B underwent Functional Endoscopic Sinus Surgery alone. All the surgeries were performed by a single surgeon who has adequate experience in management of chronic sinusitis. The patient being treated was not aware of the surgical procedure being performed for relief.

Post operatively all the patients were treated with oral antibiotics, analgesics, antihistamines, decongestants, nasal douchings, and steroid nasal spray for 1 month. The follow-up of the patient was done at the end of 1st month, 2 months and 3 months.

During follow up at the end of 3 months Patients were reviewed for their symptoms relief subjectively and improvement of quality of life objectively using SNOT questionnaire and CT Scan of Para nasal sinus at the end of 3 months. Also improvement in the individual nasal symptoms in the no of patients was documented for nasal obstruction, headache, nasal discharge, post nasal drip. Postoperative results of SNOT 20 were analyzed by assessing domains of rhinologic, ear, facial symptoms, sleep, and psychological domain and the SNOT 20 scores were noted at the end of 3 months in both the groups. CT Scan of Para Nasal Sinuses was repeated at the end of 3 months to assess the improvement of clinical picture in patients of both the groups and the results were analyzed.

RESULTS

Age of the patients was in the range of 18 to 61 years. Mean age in group A was 28.1 years while mean age of group B was 26.9 years. Out of 40 patients, 22 were males and 18 were females.

CT scan of Para nasal Sinuses coronal and axial view was performed pre operatively in all the cases. It was observed that all the patients were having deviated nasal septum. Osteo Meatal Complex block was the most common finding in all 20(100.0%) patients of group A and 20 patients of group B. Mucosal hypertrophy and Involvement of more than one sinus was the next most common finding in 17(85.0%) patients of group A and 18(90.0%) patients of group B. These results were documented in Table 1.

Pre operative SNOT Scores for 4 domains were in the range of 41 to 69 in 17 patients, 3 patients had score range of 70 to 100 in group A with a mean value of 55.7. Among 20 patients of group B 19 patients were observed to have a SNOT 20 score range of 41 to 69 and one patient had a score range of 70 to 100 with a mean of 57.5 in group B were observed to have the above mentioned score range.

Pre operative assessment of Individual nasal symptoms showed that headache was most common complaint in both the groups with 17 patients in group A and 18 patients in group B. The next most common complaint in group A was nasal obstruction in 16 patients where as in group B post nasal drip was the second most common complaint in 17 patients. In group A nasal discharge was observed in 12 patients and post nasal drip was observed in 15 patients. In group B nasal obstruction was observed in 15 patients and nasal discharge was also observed in 15 patients. These results were documented in table 3.

Post operative CT scan of Para nasal Sinuses coronal and axial view at the end of 3 months revealed that in patients of group A who underwent Septoplasty with Functional Endoscopic sinus surgery Osteo meatal complex block was reduced by 95.0% over group B where the Osteo meatal complex block was reduced by 75.0%. A decrease in mucosal hypertrophy and Involvement of more than one sinus in group A was observed in 82.35% where as these symptoms were

reduced by 61.11% in group B. These results were documented in Table 1.

Post operative SNOT Scores for 4 domains in Group A were in the range of 0 to 10 in 15 patients and 5 patients in Group A had score range of 11 to 40 with a mean value of 7.8. It was observed that in group B Post operatively SNOT Scores for 4 domains revealed that 13 patients had scores between 0 to 10 and 7 patients were observed to have values of 11 to 40 with a mean value of 11.8. These results were documented in Table 2.

Post operatively an improvement in nasal symptoms was observed. In the patients of group A there was a relief in nasal obstruction in 93.75% of patients, headache in 88.23% of patients, Nasal discharge was relieved in 66.67% of patients, and post nasal drip was relieved in 73.33% of patients. Similarly in patients of Group B nasal obstruction was relieved in 86.67% of patients, headache was relieved in 72.22% of patients, nasal discharge decreased in 66.67% of patients and post nasal drip decreased in 58.88% of patients. These results were documented in Table 3.

When results of SNOT were assessed individually for each domain in Group A there was an improvement in rhinologic domain in 95.0% of patients and 85.0% of patients in Group B. Relief of ear symptoms was 100.0% in group A patients where as it was 83.33% in group B. Facial pain was relieved in 93..33% in Group A and 82.35% of patients in Group B. In both the groups the disturbances in sleep were reduced by 100.0%. When psychological domain of SNOT 20 was observed there was 100.0% improvement in Group A patients and 90.0% improvement in Group B patients. These results were depicted in Fig. 1.

Table 1: CT Findings Pre operatively and post operatively

CT Scan PNS	Group A			Group B		
	Pre operative	Post operative	Improvement in %	Pre operative	Post operative	Improvement in %
Osteo meatal complex block	20(100.0%)	1(5.0%)	95.0%	20(100.0%)	5(25.0%)	75.0%
Mucosal hypertrophy and Involvement of more than one sinus	17(100.0%)	3(17.65%)	82.35%	18(100.0%)	7(38.89%)	61.11%

Table 2: Pre and Post operative assessment of SNOT 20 test

	Group A			Group B		
	Pre operative	Post operative	Improvement in %	Pre operative	Post operative	Improvement in %
Rhinologic	20(100.0%)	1(5.00%)	95.0%	20(100.0%)	3(15.0%)	85.0%
Ear	7(100.0%)	0(0.0%)	100.0%	6(100.0%)	1(16.67%)	83.33%
Facial	15(100.0%)	1(6.67%)	93.33%	17(100.0%)	3(17.65%)	82.35%
Sleep	4(100.0%)	0(0.0%)	100.0%	5(100.0%)	0(0.0%)	100.0%
Psychological	9(100.0%)	0(0.0%)	100.0%	10(100.0%)	1(10.0%)	90.0%

Table 3: Pre op and Post op Nasal symptoms

Nasal Symptom	Group A			Group B		
	Pre Op	Post Op	Improvement in %	Pre Op	Post Op	Improvement in %
Nasal Obstruction	16	1	93.75	15	2	86.67
Headache	17	2	88.23	18	5	72.22
Nasal discharge	12	4	66.67	15	5	66.67
Post nasal drip	15	4	73.33	17	7	58.88

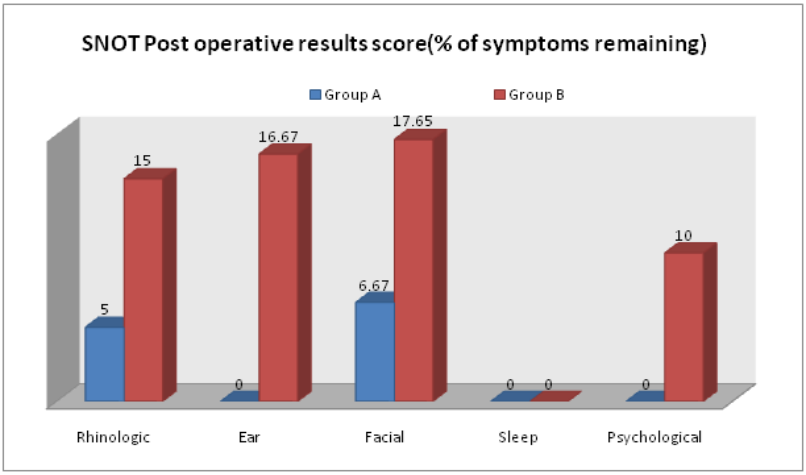

Fig. 1: SNOT 20 score post operative results (% of clinical symptoms observed post operatively)

DISCUSSION

Chronic rhino sinusitis is believed to be an annoying disease secondary to obstruction caused by anatomic anomalies which lead to reactive mucosal hypertrophy [12]. Anatomic abnormalities and pathologic processes in the region of the Osteo Meatal Complex predispose to the development of chronic sinus disease [13]. It is believed that once ventilation of sinus is restored and proper aeration is achieved the nasal and sinus mucosa may regain normal function. The primary aim of treating sinus disease is by performing surgery. The surgical technique of sinusitis has evolved from removing all diseased sinus mucosa to specific exenteration of the tissue causing obstruction.

In our study Age of the patients was in the range of 18 to 61 years. Mean age in group A was 28.1 years while mean age of group B was 26.9 years. In similar studies by Yeolekar, Aditya M [14] the mean age was 21 years. Age of patients in our study was slightly more than this study.

In our study Out of 40 patients, 22 were males and 18 were females. In a study by Goel AK [15], 17 were males and 23 were females. The findings in our study were differing from this study where we has more number of male patients.

CT scan of Para nasal sinuses allows us to have a view into the exact pathology of the Sino nasal disease. CT scan of Para nasal sinuses has capability for displaying bone and soft tissues and exact anatomical abnormalities of underlying Sino nasal disease. It is the current diagnostic modality of choice for evaluating the Osteo Meatal Complex and provides precise guidance for therapeutic powered instrumentation [16]. However imaging of nose and Para nasal sinuses is indicated only after adequate medical treatment of the disease where the treatment cannot effectively clear the disease and the symptoms of the disease. Radiologically CT scan of Para nasal sinuses should be interpreted with proper clinical history, examination and response to medical treatment.

Available literature regarding the Sino nasal disease and surgical outcome suggest that there were a number of clinical studies focusing on the disease outcome and management with variable follow-up. When subjective appraisal of results was analyzed studies show a clinical improvement estimated at between 80%–98% [17].

In the present study pre and post operative analysis of improvement of quality of life using SNOT test vide four domains of rhinologic, ear and facial symptoms, sleep, and psychological domains [18]. It was observed that there was a subjective improvement of nasal symptoms when a concurrent Septoplasty was performed along with Functional Endoscopic Sinus Surgery. There was an improvement in all the four domains in patients of group A over group B. These results were documented in Fig. 1. These findings were comparable to the study by Satish H S and Sreedhar KT [19] who analyzed the results of quality of life following Septoplasty using SNOT 22. In their study it was observed that the post operative scores of the test were reduced following surgery.

In the present study an objective assessment of the nasal symptoms with CT Scan of Para nasal sinuses was performed. It was observed that there were remnants of residual disease which were observed in the form of Osteo meatal complex block, hypertrophy of mucosa with involvement of more than one Para nasal sinus when underlying anatomical disease was not corrected. Although there was a clinical improvement of clinical symptoms and quality of life with Functional Endoscopic Sinus Surgery, it was observed that around 20.62% of underlying Sino nasal disease was persisting even after the exenteration of Sino nasal disease when concurrent anatomical abnormality was not corrected. This high percentage of residual Sino nasal disease can lead to the subsequent proliferation of Sino nasal disease in an exaggerated form. These results when analyzed with a student t test were statistically significant with a p value of 0.0019 asserting the fact

that there needs a proper anatomical correction of the underlying anatomical abnormality in patients of chronic rhino sinusitis.

In the present study when individual improvement of nasal symptoms was analyzed there was an improvement in nasal obstruction in both the groups of patients with 93.75% in group A and 86.67% in group B. However it was a little in higher percentage in patients of Group A. In similar studies by VJ Lund and Kennedy DW [6] it was reported that in 650 patients of chronic rhino sinusitis undergoing Functional Endoscopic sinus surgery nasal obstruction was improved in 92% of patients. Similarly improvement in nasal discharge was observed in 86% of their patients. In our study nasal discharge was improved in 66.67% of patients in both group A and group B. The improvement in symptoms of nasal obstruction was comparable to their study. However there is a difference in improvement of symptoms of nasal discharge from their study. This can be probably due to the difference in surgical outcome based on the extent of the disease and the presence of anatomical abnormalities which can probably alter the course of the relief of symptoms in the disease.

In many of these clinical studies objective tests have not been performed to assess the exact disease free clearance in Sino nasal disease. Besides "subjective" measurements, the most meaningful tools for treatment outcome control also include "objective" methods in the form of CT scan of Para nasal sinuses. Despite subjective improvement, many of the patients had evidence of residual sinus disease on radiological examinations. It was opined by many that though satisfactory results of Functional Endoscopic Sinus Surgery in chronic rhino sinusitis were reported Subjective improvement of symptoms expressed in percentage and complemented by nasal endoscopy and optional radiological assessment is the best way to assess these patients [20].

CONCLUSION

In conclusion where ever an anatomical abnormality was detected it is ideal to give a complete relief by performing Septoplasty along with Functional Endoscopic Sinus Surgery to give complete relief to the patients.

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