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Original Research Article

Quality of life assessment in patients with chronic rhinosinusitis by using rhinosinusitis disability index

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ABSTRACT

Background: Chronic rhinosinusitis is a common disease affecting the nose and paranasal sinuses. One of the commonly used indices to assess the impact of chronic rhinosinusitis on quality of life is the rhinosinusitis disability index (RSDI). Objective was to study the surgical techniques and surgical findings of all patients with chronic rhinosinusitis undergoing endoscopic sinus surgery and to compare pre-surgical with post-surgical RSDI score.
Methods: The patients were given RSDI questionnaire forms which contain questions regarding physical, functional and emotional factors which will be answered before and 3 months after endoscopic sinus surgery. The surgical technique and surgical findings of all patients undergoing the surgery are studied. The pre-surgical and post-surgical RSDI scores are compared and analysed by the Wilcoxon sign rank test.
Results: Uncinectomy and middle meatal antrostomy were performed in all the patients undergoing functional endoscopic sinus surgery. Wilcoxon sign rank test is done to assess the difference in the pre and post-operative RSDI score and found to be statistically significant with p value <0.001 which indicates improvement in the RSDI score following functional endoscopic sinus surgery.
Conclusions: RSDI is a valuable tool in assessing the health-related quality of life in patients with chronic rhinosinusitis.

Keywords: Rhinosinusitis, Functional endoscopic sinus surgery, Rhinosinusitis disability index

INTRODUCTION

Chronic rhinosinusitis is a common disease of the nose and sinuses seen globally and in India. The incidence of rhinosinusitis is increasing due to increasing air pollution, industrial fumes and allergic factors, especially in urban areas. In rural areas, rhinosinusitis is also quite prevalent due to a lack of proper hygiene, malnutrition and low immunity.

Chronic rhinosinusitis is a multifactorial disease.[1] Factors contributing to rhinosinusitis can include mucociliary impairment, bacterial infection, allergy, swelling of the mucosa and physical obstruction caused by anatomical variations in the nose and paranasal sinuses. Because of the complex interplay of factors affecting the nose and paranasal sinuses, there has been significant debate and confusion in the classification and terminology used to describe rhinosinusitis. Benninger et al have proposed a system of classification for potential causes of rhinosinusitis.[2]

Chronic rhinosinusitis generally develops as a complication of viral or allergic inflammation of the upper respiratory tract.[3] Although bacteria can be found in the sinuses of most patients who have chronic rhinosinusitis, the exact aetiology of the inflammation associated with this condition is uncertain.[4,5]

The phases of sinusitis depicted here were studied by performing serial cultures in patients with maxillary sinusitis.[6]

Early phase

This is often a viral infection that lasts up to 10 days, with complete recovery occurring in most individuals.

Secondary acute bacterial infections

This usually supervenes, if the previous phase does not resolve in time.[7]

In chronic rhinosinusitis cases where signs and symptoms persist or recur after medical management, endoscopic sinus surgery should be considered.

It has been found to be quite effective in treating chronic rhinosinusitis. Various new techniques of endoscopic sinus surgery have emerged, such as balloon sinuplasty, for treating chronic sinusitis.

Chronic rhinosinusitis is a significant source of impairment in health-related quality of life. Recent efforts to evaluate the impact of disease on quality of life by Gliklich et al showed that chronic rhinosinusitis has shown the same.[8] One of the commonly used indices to assess the impact of chronic rhinosinusitis on quality of life is the rhinosinusitis disability index (RSDI). It is a valid instrument to measure the physical, functional and emotional impact of chronic rhinosinusitis on a person's quality of life. Though personally designed for rhinosinusitis, it has been used for several rhinological conditions. Benninger et al demonstrated that chronic rhinosinusitis has a more dramatic impact on patient quality of life than local nasal complaints.[9]

Aims and objectives

Aim and objectives were to study the surgical technique and surgical findings of all patients with chronic rhinosinusitis undergoing endoscopic sinus surgery; and also to compare the presurgical quality of life of patients suffering from chronic rhinosinusitis with the quality of life of patients after undergoing endoscopic sinus surgery by using the RSDI.

METHODS

This study is a prospective comparative study conducted in the Department of Otorhinolaryngology at Apollo Institute of Medical Sciences and Research over a period of six months from August 2023 to January 2024. A total of 52 consecutive cases of chronic rhinosinusitis of both genders, between ages thirteen and sixty-five were recruited from patients attending our ENT department. All patients with acute sinusitis and cases of chronic sinusitis who are medically managed, patients below twelve years and above sixty-five years of age, patients with previous nasal surgery and psychiatric patients are excluded from the study.

The data was recorded as per proforma after receiving written and informed consent and prior permission from the institutional ethical committee. The patients were given rhinosinusitis disability index forms, which contain questions regarding physical, functional and emotional factors that will be answered before and three months after endoscopic sinus surgery in their vernacular language. The surgical technique and surgical findings of all patients undergoing endoscopic sinus surgery are noted. The pre-surgical and post-surgical rhinosinusitis disability index scores are compared and analyzed.

RESULTS

Table 1 shows the age and sex distribution of the patients. Among the 52 patients, 31 (59.6%) patients were in the 13-45 years age group and 21 (40.3%) patients were in the 46-65 years age group. Maximum patients were male (76.9%) and the remaining female (23%).

After filling the rhinosinusitis disability index questionnaire, all 52 patients with chronic rhinosinusitis underwent endoscopic surgery. Uncinectomy and middle meatal antrostomy were performed in all patients and other techniques like inferior turbinectomy, ethmoidectomy, sphenoidotomy and polypectomy were performed according to the specific pathology and are mentioned in percentages as observed in Table 2.

Table 1: Demographic distribution of the study patients.

Variables	Number	Percentage
Age (years)		
13-45	31	59.6
46-65	21	40.3
Gender		
Male	40	76.9
Female	12	23

Table 2: Frequency distribution of the technique used during surgery.

Technique	Number of cases	Percentage
Septoplasty	35	67.3
Uncinectomy	52	100
Middle meatal antrostomy	52	100
Anterior ethmoidectomy	45	86.5
Posterior ethmoidectomy	35	67.3
Sphenoidotomy	18	34.6
Frontal recess surgery	22	43.3
Reduction of middle turbinate	18	34.6
Partial inferior turbinectomy	14	26.9
Polypectomy	22	42.3

Surgical findings are listed in Table 3. Common intraoperative findings include sinonasal polyps (42.3%), followed by nasal discharge (34.6%) and mucosal edema (21.1%). Only a few patients had fungal debris (13.4%).

Table 3: Frequency distribution of surgical findings.

Surgical findings	Number of cases	Percentage
Mucosal oedema	11	21.1
Polyps	22	42.3
Discharge	18	34.6
Fungal debris	7	13.4

A rhinosinusitis questionnaire was given to the patients three months following endoscopic sinus surgery and the data was analysed.

A Wilcoxon sign rank test is done to test the differences in the pre and post-operative RSDI scores. The median pre-operative RSDI score is 8 (IQR: 6-13.75) and the median post-operative RSDI score is 0.

This difference is found to be statistically significant with a p value <0.001, which indicates improvement in RSDI following surgery in rhinosinusitis patients, as represented in Table 4.

Table 4: Pre and postoperative RSDI scoring in rhinosinusitis patients (n=52).

RSDI scoring	Median	Inter-quartile range	P value
Pre-operative	8	6-13.75	<0.001
Postoperative	0	0	

A statistically significant difference is observed in the RSDI scoring before and after surgery in patients with and without polyps with p value <0.001 as seen in Tables 5 and 6.

Table 5: Pre and postoperative RSDI scoring in rhinosinusitis patients with polyps (n=22).

RSDI scoring	Median	Inter-quartile range	P value
Pre-operative	10	7-16	<0.001
Postoperative	0	0	

Table 6: Pre and postoperative RSDI scoring in rhinosinusitis patients without polyps (n=30).

RSDI scoring	Median	Inter-quartile range	P value
Pre-operative	6.5	5-9.75	<0.001
Postoperative	0	0	

DISCUSSION

In our study endoscopic sinus surgery was done to remove the pathology from osteomeatal complex area to facilitate ventilation of the sinuses there by decreasing nasal secretions, reducing diseased sinus mucosa by removing polypoid tissue, improving olfaction and providing relief from nasal obstruction. Keeping with the objectives of endoscopic sinus surgery, all 52 patients underwent appropriate exenteration of ethmoidal cells, thereby obtaining wider access to major sinuses.

Senior et al used the RSDI, to investigate the disability in 292 patients with various rhinologic diagnoses, including chronic rhinosinusitis and found that individuals with rhinologic disease in general have lower physical scores, followed by functional scores and emotional scores.[10]

Tahamiler et al in their study on the validity of the RSDI found that the RSDI is a reliable method in evaluating quality of life, however, it is affected by the socioeconomic and education levels of the participants.[11]

In the study conducted by Deal et al regarding significance of nasal polyps in chronic rhinosinusitis symptoms and surgical outcome in 201 patients having chronic rhinosinusitis with and without nasal polyps, they found that symptoms score was high in patients with polyps and surgical outcome was equally good when compared to patients suffering from chronic rhinosinusitis without polyps.[12] In our study symptoms score was high in patients having polyps and surgical outcome was equally good in patients with and without polyps. No intraoperative or per operative complications were encountered in any of the patients in our study though minor and major complications have been described in literature.

RSDI is a validated measure that has not been used much in clinical study. In a study conducted by Birch et al in 53 patients with chronic rhinosinusitis there was no correlation between endoscopic score and RSDI score.[13] The correlation between the self-rated symptom score and total quality of life score was significant. In our study we divided patients having chronic rhinosinusitis into patients with and without polyps. Patients with chronic rhinosinusitis with polyps had significant difference in outcome when compared to pre and post-operative RSDI score (p value=0.001). In patients with chronic rhinosinusitis without polyps the rhinosinusitis disability index score for pre and post-operative index also showed significant difference (p value=0.001).

In a recent study by Nair et al it was observed that statistically significant (p<0.001) association was found between baseline Lund-Kennedy endoscopic scores and Mackay-Lund computed tomography (CT) scores post medical treatment and no significant association was found between RSDI scores and Mackay-Lund CT scores, indicating that Lund- Kennedy endoscopic score is a more

accurate tool than RSDI score to predict a Mackay-Lund CT scores after medical treatment.[14]

Limitations

Presence of comorbid conditions like asthma and allergic rhinitis may affect RSDI scores.

As RSDI is only an objective tool, it cannot be solely used for predicting the treatment outcomes and needs to be supported by endoscopic or CT scores.

CONCLUSION

The quality of life was affected more in patients with chronic rhinosinusitis in the physical, functional and emotional domains of their life. Functional endoscopic sinus surgery is a good surgical method for decreasing morbidity associated with chronic rhinosinusitis. Patients having chronic rhinosinusitis with and without polyps have equally good results following endoscopic sinus surgery. RSDI is a valuable tool in assessing the health-related quality of life in patients with chronic rhinosinusitis.

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