

Original Research Article

Effectiveness of minimally invasive endoscopic sinus surgery in alleviating the symptom complex in chronic rhino-sinusitis

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ABSTRACT

Background: Early surgical intervention has been found to be better in terms of patient satisfaction compared even with the medical management. The objective of the study was to study effectiveness of minimally invasive endoscopic sinus surgery in alleviating the symptom complex in chronic rhino-sinusitis.

Methods: Retrospective review of the chronic rhino-sinusitis data of 164 patients done, who undergone functional endoscopic sinus surgery with or without septoplasty between 2005 and 2013. Any recurrence of symptoms and radiological evidence recorded in the patient notes. The number of patients who undergone revision surgery also recorded.

Results: The recurrence rate of symptoms and sinus disease was 20% (33 patients). There was no relation between the severity of the symptoms and the amount of disease seen in the CT scans. The two patients, who had purulent sinusitis, WERE completely relieved of their headaches and resumed their routine work soon after the operation. About 90% patients improved regarding nasal obstruction, 75% patients improved of nasal discharge, 60% patients showed improvement for sneezing. There were adhesions in about 6% patients and polyps recurred in 30% of patients. The recurrence of symptoms improved with medication in majority of patients.

Conclusions: The meticulously performed functional endoscopic surgery effectively improved symptom complex. If properly performed it is effective in alleviating all the symptoms and decrease recurrence rate and complications can be kept at negligible levels. Hence it offers a clear advantage in reducing complications and recurrence rates in sinus disease.

Keywords: Endoscopic sinus surgery, Septoplasty, Recurrence, Revision surgery

INTRODUCTION

The prevalence of rhino sinusitis in USA has been estimated to be 13%. It has been found to cost around \$8.6 billion yearly to the health care system.¹ Among all the patients initially conservative treatment is tried. It may include use of topical nasal steroid, use of antibiotics orally, nasal irrigation with saline, and in some cases use of steroids orally. But it has been found that very few patients respond to the medical management and symptoms get aggravated. Such patients are left with the choice of surgical management. Surgical approach is

adopted in only “chronic rhino sinusitis (CRS) and recurrent acute rhino sinusitis (RARS)”. “CRS is defined by the American Academy of Otolaryngology – Head and Neck Surgery”, “as 12 weeks, or longer, of two of a defined group of symptoms/signs: mucopurulent drainage, nasal congestion, facial pressure/pain, or decreased sense of smell AND inflammation documented by one of the following: purulent mucus on endoscopy, polyps in the nasal cavity, or radiographic imaging showing inflammation”.²

“Alternatively, RARS is diagnosed when four or more episodes of acute bacterial rhino sinusitis (<4 weeks in

duration) occur in a period of 12 months without signs of rhino sinusitis between episodes”.²

The outcome of surgical approach is generally measured by reduction in the symptoms of the patient, improvement in the quality of life of the patients and improvement assessed by endoscopy.³

“Chronic rhino sinusitis (CRS)” is very common condition affecting more than 100 million Indians. Its management is very costly. It also deprives the quality of life of the patients. Even with good medical management, symptoms may not be relieved in most of the patients. Ultimately these patients have to undergo the surgery. If surgery is performed in the early stages of CRS, the outcomes are likely to be better compared to surgery if performed in the late stages of CRS. Early surgical intervention may be associated with fewer visits post-operatively to the health care service centers. Early surgical intervention has been found to be better in terms of patient satisfaction compared even with the medical management. There is no clear guideline regarding the timing of surgical intervention.⁴

The advent of endoscopes has revolutionized the sinus operations. Prior to introduction of endoscopes there were very few sinus operations being done. There used to be antral washouts, polypectomies, and Caldwell –Luc operations in majority of hospitals. Endoscopes have transformed the sinus surgery procedures in ENT and it went to the extent of doing skull base surgeries by ENT surgeons.^{5,6} This happened because ENT surgeons became well versed with the handling of endoscopes.

“Messerklinger developed the endoscopic technique with the aim of relieving diseased sinuses, while preserving healthy mucosa and at the same time being minimally invasive”.⁷ To keep mucosal damage to minimum some centers are coming up with balloon sinuplasty.^{8,9}

The study was conducted with the objective to study effectiveness of minimally invasive endoscopic sinus surgery in alleviating the symptom complex in chronic rhino-sinusitis.

METHODS

Type of study

Hospital based prospective study

Place of study

Department of ENT, Malla Reddy Institute of Medical Sciences, Hyderabad

Study period

January 2012 to December 2016.

Study population and sample size

During the study period of five years, a total of 183 patients underwent bilateral functional endoscopic sinus surgery. Out of these 183 patients, 164 were found to be eligible to be included in the present study.

Ethical considerations

Institutional Ethics Committee Permission was sought before initiating the present study. Informed consent was taken from each and every patient.

Inclusion criteria

Inclusion criteria were patients undergoing bilateral functional endoscopic sinus surgery; patients willing to participate in the present study; only those cases were included where complete data was available including complete follow up.

Exclusion criteria

Exclusion criteria were patients not willing to participate in the present study; patients lost to follow up.

The baseline data was collected in the pre designed study questionnaire for the present study. The symptoms included: 1. Headache, 2. Nasal Obstruction, 3. Nasal Discharge, 4. Sneezing, 5. other symptoms like cough and ear symptoms.

Surgical profile was done for all patients posted for surgery. The patients underwent pre anesthetic check up before surgery. Once the anesthetic declared the patient as fit, he was posted for surgery. The operative approach in our hospital is along the lines of Messerklinger technique of minimally invasive with meticulous preservation of mucosa. For this purpose the instruments at our center include: 0, 45, 70 degree scopes and other routine endoscopic surgical instruments.

Proper post operative care was taken. The patients were followed for 3-6 months. Any recurrence of symptoms and disease has been collected. The information about revision surgeries has been collected, collated and analyzed in conjunction with pre-operative symptomatology.

Statistical analysis

The data was analyzed using proportions.

RESULTS

There were almost an equal number of male and female patients with an age range of 14 years to 60 years. The polyps present in 25 patients.

Table 1: Distribution of study subjects as per their sex and presence of polyp.

Parameter		Number	Percentage (%)
Sex	Male	80	48.8
	Female	84	51.2
Polyp	Present	20	12.2
	Absent	144	87.8

Table 2: Recurrence of symptomatology for chronic sinusitis.

Recurrence of symptoms	Number	Percentage (%)
Yes	33	20.1
No	131	79.9
Total	164	100

Table 2 shows the recurrence rate of symptoms for chronic sinusitis. Overall recurrence rate of symptomatology for chronic sinusitis is about 20% i.e. about 33 patients. About 80% of the patients had no recurrence.

Table 3: Requirement of revision surgery among the patients.

Revision surgery required	Number	Percentage (%)
Yes	59	36
No	105	64
Total	164	100

Table 3 shows the requirement of revision surgery among the patients studied. The revision surgery was required only in 36% of cases, and remaining 64% patients responded to medical management and did not require surgery.

Table 4: Recurrence rate for polyp among the patients after primary surgery who were having polyp (n=20).

Recurrence	Number	Percentage (%)
Yes	06	33.3
No	14	66.7
Total	20	100

Table 5: Requirement of surgery among patients who had recurrent polyp.

Requirement of surgery	Number	Percentage (%)
Yes	04	66.7
No	02	33.3
Total	06	100

As seen from Table 1, the polyp was present in 20 patients and all of them underwent the surgery. Among them, the recurrence rate of polyp was 33.3%.

The recurrence of polyps was seen in about six patients. In recurrence polyps about 66% required revision surgery for polyps. The remaining 33% patients responded to medication. The recurrence of polyps in revision surgery cases was 50% and both patients needed 3rd revision surgery.

DISCUSSION

The total number of patients who had undergone endoscopic sinus surgery at our hospital was 183. The data of 164 patients was collected as they were found to be eligible for the present study. All these patients were operated by single surgeon. The recurrence rate of symptoms and sinus disease was 20% (33 patients). There was no relation between the severity of the symptoms and the amount of disease seen in the CT scans. The two patients, who had purulent sinusitis, WERE completely relieved of their headaches and resumed their routine work soon after the operation. About 90% patients improved regarding nasal obstruction, 75% patients improved of nasal discharge, 60% patients showed improvement for sneezing. There were adhesions in about 6% patients and polyps recurred in 30% of patients. The recurrence of symptoms improved with medication in majority of patients.

The above study has been done in our hospital. Over a period of 5 years we have been able to decrease the recurrence rate of symptoms and were also able to decrease the number of revision surgeries with refinements of operative techniques and also due to better postoperative outpatient management of crusting, adhesions and washings, etc. We have been doing routine outpatient endoscopies in the postoperative patients and clearing the debris, crusts and also washing the nasal cavities. If there was any disease found on endoscopic examination patients were given a course of appropriate antibiotics, antihistamines and steroidal sprays if necessary. This meticulous postoperative follow up helped in reduction of formation of synechiae (10%) and decrease the recurrence of disease.

Veloso-Teles et al found in their study that post operatively the patients improved symptomatically. Patients with nasal obstruction had shown better recovery than patients with hyposmia.¹⁰ Only 1.2% of the patients had major complications while 15.3% reported minor complications. 31% of the patients had recurrence. Among these, surgical intervention was required in only 7% of the cases. The recurrence was affected by factors like exposure to dust at occupational and asthma which was mediated by IgE.

DeConde et al observed that recurrence rate for nasal polyps was 35% after six months of surgery.¹¹ The author concluded that after endoscopic sinus surgery, recurrence of polyp was common among the patients. The authors found that the risk factors for recurrence of the polyp

were previous history of surgery on polyps and worse preoperative polyposis severity.

Jagdish et al carried out an interview based study among ENT specialists.⁴ The author tried to find out the reasons for denial of surgery among patients who were advised to undergo surgery by these ENT specialists. The authors thus found that cost of operation, fear about surgery and anesthesia were the major factors which were responsible for delaying the surgery among the patients who need surgery.

Lind et al² in their evaluation study, found that quality of life improved post operatively among the patients who underwent the endoscopic sinus surgery.¹² The olfactory function also improved to the satisfactory level of the patients.

Cabrera-Ramirez et al in their study found that the asthma was present among 34.6% of the patients.¹³ They reported that 23.2% of the patients had complications. Only one patient had major complication. The authors concluded that endoscopic sinus surgery was the effective. For achieving the proper hemostasis, hemostatic agents which are absorbable should be used.

Kim et al carried out a study to find out the prevalence of "Samter's triad (nasal polyps, asthma, and aspirin sensitivity)".¹⁴ They found that the prevalence of "Samter's triad (nasal polyps, asthma, and aspirin sensitivity)" was 4.8%. The prevalence was found to be highest in patients having both asthma and polyps compared to patients having asthma or patients having nasal polyp. The recurrence rate was among patients with "Samter's triad (nasal polyps, asthma, and aspirin sensitivity)".

Guerrero et al found in their study that adhesion was the most common complication.¹⁵ Recurrence was more among patients with asthma or intolerance to aspirin or both. Revision surgery was not found to be associated with recurrence or complications.

CONCLUSION

There was 80% improvement in symptoms after primary surgery and 64% improvement in symptoms after revision surgery. Almost all of the cases after revision surgery in non-polyp cases improved with regular postoperative follow up. Hence it shows that the minimally invasive endoscopic surgery is effective in dealing with sinus diseases with regular postoperative follow up facilities in the center.

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Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

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