



ORIGINAL RESEARCH PAPER

OTORHINOLARYNGOLOGY

A COMPREHENSIVE STUDY OF CHRONIC RHINOSINUSITIS

KEY WORDS:

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ABSTRACT

Background: For decades co-existence of chronic allergic rhinosinusitis and asthma due to common inflammatory pathway has been illustrated in the literature. The Endoscopic sinus surgery (FESS) is regarded as the gold standard in the treatment of chronic rhinosinusitis refractory to medical treatment. The aim of the study was to assess symptoms of chronic allergic rhinosinusitis and pulmonary function pre and post surgically.

Method: This was a prospective study conducted between April 2003 and March 2004 at Mahatma Gandhi Medical College, Indore. The study was carried out on Fifty-five patients between 18 and 55 years, who underwent detailed clinical evaluation by nasal endoscopy and radiological assessment by CT scan PNS. Patients underwent FESS along with PFT pre & post surgically.

Results: Post surgery the lung function showed an average improvement of 14% in FEV1, 20% in PEFr and 18% in FVC. Also, there was 100% improvement in nasal obstruction, 92% in headache and 96% in nasal discharge post surgically.

INTRODUCTION

Chronic rhinitis is a very common disease with upwards of 25% of the population reporting persistent nasal symptoms at some time in their life. Chronic rhinitis, which may be allergic or non allergic is frequently associated with other upper or lower airway disorders like nasal polyposis, sinusitis, otitis media and bronchial asthma. In total these diseases have significant social, physical and socio-economic impact necessitating effective treatment for prolonged period of time.

Epidemiologically, there is association between allergic rhinitis and asthma due to a common inflammatory pathway. Asthma can affect 40% of the patients with rhinitis and 80% of asthmatics present with rhinitis. Stammberger et al (1989) concluded that about 73% of the patients suffering from bronchial asthma developed sinonasal pathology in the course of their disease. In all patients of chronic rhinosinusitis allergy is responsible in approximately 30% of cases for pathogenesis of the disease.

The disease is extremely common although prevalence depends a lot on the geographical conditions of the area of the population studied. Estimates vary 10% to 20% with a male predominance and a peak distribution in young adulthood. The relationship between the two diseases is explained by the term of "A United Airway". Allergic rhinitis patients have a unique physiologic characteristics that differ from the asthmatic and healthy subjects developing bronchoconstriction not related to clinical bronchospasm, therefore allergic rhinitis is considered a risk factor for asthma development.

Some patients with allergic rhinitis have unspecified bronchial hyper responsiveness especially during exacerbation stage. Since many of its features such as atopic etiology, cough as an associated feature, difficulty in breathing due to upper airway blockade, response to corticosteroid/immunotherapy etc are shared by bronchial asthma and allergic rhinitis. There is a clear link between allergic rhinitis and bronchial hyper reactivity.

The fact emphasizes importance of the unified approach towards such patients by the otorhinolaryngologist and chest physician as both can work in conjunction with each other towards a better evaluation of patients with such complaints.

The aim of the study was to assess symptoms of chronic

allergic rhinosinusitis and pulmonary function pre and post surgically.

MATERIALS & METHODS

The study was carried out in the Department of Otorhinolaryngology and head & neck Surgery, Mahatma Gandhi Medical College & MY Hospital, Indore between April 2003 and March 2004. It was a Prospective study which was conducted on 55 patients fulfilling the clinical criteria for CRS according to the CRS criteria. The patients belonged to the age group of 18-55 years of age group.

Inclusion Criteria:

The symptoms of the patients were subjected to CRS criteria which were further divided into major and minor criteria. The clinical diagnosis of CRS required presence of at least 2 major factors singly or one major factor with 2 or more minor factors for at least >12 weeks. *Major criteria* being Nasal blockage, Nasal discharge (anterior/posterior), purulence in the nasal cavity. While *minor criteria* were facial pain, olfactory dysfunction, ear pain/fullness.

Pregnant women, coexistent systemic diseases like diabetes, hypertension, neoplasia, patients with prior history of nose surgery were excluded.

CT Assessment:

A coronal section was done in practically all the cases and in selected few cases axial sections were taken in addition.

Pulmonary Function Tests:

The variables which were taken into consideration were FEV1 (flow rate in first second of expiration), FEF25-75 an effort independent variable, PEFr (indicates severity of obstructive nasobronchial pathologies, normally amounts to 200 ml/min, FVC (indicates inspiratory volume reserve).

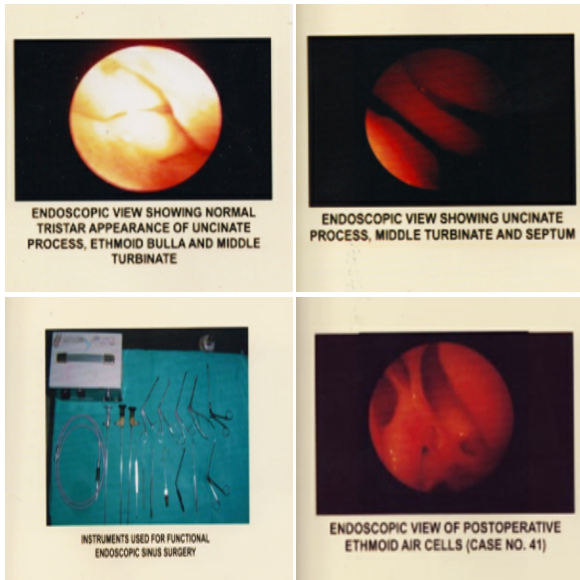
Nasal Endoscopy:

Patients were evaluated clinically by using 4 mm Hopkins rigid endoscope with 0 degree and 30 degree angulations after topical local anaesthetising with 4% xylocaine and decongestent solution. Endoscopes were introduced and three passes as described by Messerklinger were made.

Surgical Plan:

After obtaining informed and written consent the procedures were performed in local anaesthesia except for the few (highly uncooperative patients) which underwent in general

anaesthesia. For local anaesthesia nasal cavities were packed 2% xylocaine with adrenaline soaked roller gauge after spraying with 4% xylocaine nasal spray. Infiltration was done using 2% xylocaine with 1:100000 adrenaline submucosally, over the attachment of uncinete process to lateral nasal wall, middle turbinate, axilla, superior aspect of inferior turbinate and adjacent nasal septum. The procedure consisted of FESS along with septoplasty and partial turbinectomy, if necessary. The concepts of Messerklinger technique of FESS was followed in all the patients. At first, uncinectomy was performed followed by maxillary antrostomy. Next the ethmoid bulla was identified and opened. The remainder of the ethmoidal cells were cleared, with the surgeon exercising caution when approaching the ethmoid roof and maintaining constant reference both the endoscopic view and preoperative CT scan. Frontal sinus work was typically reserved for the end of the procedure. A 45 or 70 degree proves useful for frontal sinus surgery. At the end after thorough suctioning nasal cavities were packed with ribbon gauze impregnated with oxytetracycline and fluocinolone cream. Patients were kept over antibiotics, analgesics and antihistaminics. Anterior nasal pack was removed after 24 hours followed by regular suction cleaning. The patients were followed up at fortnightly intervals for first 3 months, followed by check ups upto 6 months and every half yearly thereafter. Spirometry was done beginning after 6 weeks.



Observations

The study consisted of 55 patients suffering from CRS who had undergone FESS. Preoperative and postoperative values were measured at the end of 1 month and the results were analysed. Age & Sex distribution: The age of patients involved in the study ranged in between 18 to 55 years. The mean age was 33.20 ± 20.38 years. The maximum number of patients were in the age of 21 to 30 yrs with 52% male & 48% female.

Clinical Symptoms

Table No. 1: Symptom Distribution

S.no.	Symptoms	No. of patients	Percentage (%)
1.	Nasal obstruction	47	84
2.	Nasal discharge	51	92
3.	Headache	40	82
4.	Sneezing	30	74
5.	Cough	16	30
6.	PND	28	51
7.	Ear (discharge/heaviness etc.)	17	31

8.	Disordered olfaction	27	49
9.	Proptosis	1	2
10.	Lacrimation/itching in eyes	16	30
11.	Pre diagnosed asthma	6	11
12.	Other signs of allergy (urticaria/itching in eyes,nose,etc.)	19	35

Clinical Findings:

Nasal mucosa was found normal in 7 patients, congested in 9 and pale in 39 unilaterally. On anterior rhinoscopy, 15 patients found to have watery discharge, 9 mucoid and 2 mucopurulent. 20 patients had DNS towards right & 29 towards left. Inferior turbinate hypertrophy was seen in 41 subjects while middle turbinate hypertrophy in 24. On posterior rhinoscopy 9 patients showed polyp at choana.

Table No. 2: Showing CT Finding

Sinus involved	No. of sinuses diseased	Percentage(%)
Anterior ethmoid	52	47
Posterior ethmoid	22	20
Maxillary	50	45
Frontal	17	15
Sphenoid	20	18
OMC	20	18
No. of patients	55	-

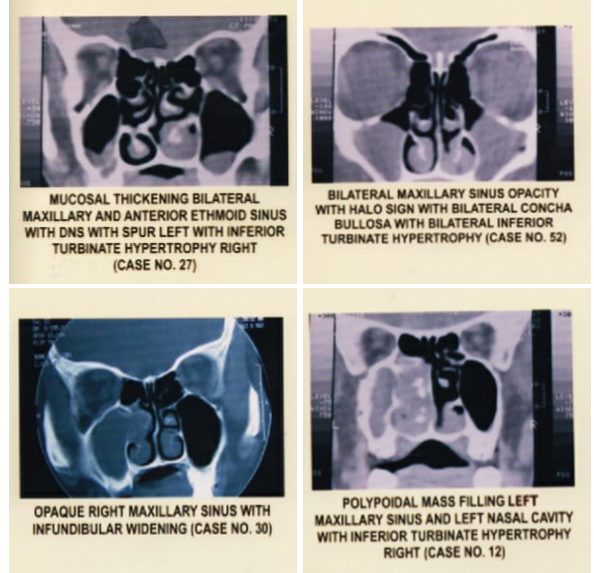


Table No. 3: Showing FESS And Concurrent Procedure

Procedure	No. of patients	Unilateral	Bilateral
Uncinectomy	43	11	32
Maxillary antrostomy	26	5	21
Ethmoidectomy	25	5	20
Polypectomy	14	4	10
Partial lateral excision of concha bullosa	14	6	8
Sphenoidectomy	3	3	-
Septoplasty	34	-	-

Table No. 4: Showing Pre & Post Operative Spirometry Findings:

Function	Normal (pre-Rx)	Normal (post-Rx)	Mild reduction (70-90%) Pre - Rx	Mild reduction (70-90%) Post - Rx	Mod erate (50-70%) Pre- Rx	Mod erate (50-70%) Post- Rx	Severe (<80%) Pre- Rx	Severe (<80%) Post- Rx
FVC	17	23	08	7	10	6	05	4
PEFR	11	21	13	8	9	3	7	6
FEV1	16	24	14	10	4	4	6	4

Table No.5: Showing Symptomatic Improvement In Postoperative Follow Up

Symptoms	Total no. with symptoms	First follow up improvement	Second follow up improvement	Subsequent improvement	%
Nasal obstruction	47	45	47	47	100
Headache	40	35	37	37	92
Nasal discharge	51	30	44	48	96
Post nasal discharge	28	20	26	27	97
Disordered olfaction	27	11	24	24	92
Allergic symptoms	55	32	40	42	82
Subjective sense of improvement	55	32	53	53	95

SUMMARY & CONCLUSION

Nasal discharge and nasal obstruction were the commonest presenting complain followed by headache closely. Coronal CT scan was found to be a useful preoperative evaluation tool and not only it provided a road map for endoscopic sinus surgery but also helped in identifying the site of obstruction or maximal narrowing due to any anatomical variations or mucosal abnormality. Ethmoid sinuses were found to be involved in majority of cases. Endoscopy is a very effective synergistic tool together with CT scan in patients of allergic rhinitis as it allows a direct view in the sites prone to blockage like middle turbinate and uncinate process were most commonly involved in such conditions.

Patients of Chronic allergic rhinitis have higher incidence of reduced pulmonary function parameters including PEFR, FER, FEV1, in comparison to normal population. We recommended a routine pulmonary function assessment in patients if chronic allergic rhinitis so that patients more prone to develop asthmatic changes could be identified at an early stage and could be managed in a better way.

Septoplasty and partial turbinectomy (partial lateral excision of concha bullosa) when performed concurrently help marked reduction of airway resistance of patients. Our study clearly shows that FESS causes a definite improvement in pulmonary function of the patients. The subjective improvement in nasal obstructive symptoms was objectively confirmed by lung function test and the results shows a betterment of about 15-20% in each parameters.

Performing endoscopic sinus surgery with concurrent procedures like septoplasty, spurectomy, partial turbinectomy etc not only decreases the airway resistance and decreases the rate of complications but also gives better and longer lasting results.

Allergic complaints such as sneezing, lacrimation and rhinorrhea cannot be cured by surgery but allergy can be controlled by following factors along with the surgery.

- 1.Allergen avoidance
- 2.Medication
- 3.Education

This study shows that patients if allergic rhinitis refractory to medical management along with increased nasal airway resistance/predisposition to asthma and complaining of repeated nasal obstruction can be benefited by functional endoscopic sinus surgery used in combination with medical therapy.

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