Quality of Life after Functional Endoscopic Sinus Surgery

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Objective:
The aim of the study was to evaluate how functional endoscopic sinus surgery (FESS) modifies patients' symptom profiles and quality of life.

Materials and methods:
The patients of chronic sinonasal disease (allergic /inflammatory/) attending the Rhinological clinic of Department of Otorhinolaryngology, Nepalgunj Medial College, Banke from 2004-2008 were selected for functional endoscopic sinus surgery (FESS) and were evaluated subjectively regarding the outcome of surgery. Z test of proportion was used to compute statistical significance.

Results:
One hundred and twenty patients were selected. Major complaints were nasal obstruction (80%), nasal discharge (75%) and headache (72.5%). Regarding nasal obstruction, 93.7 % (90/96) responded favorably to surgery while success in nasal discharge was 89.9%. In case of headache, 93.1% (81/87) of patient responded, while patients with post-nasal discharge responded least after surgery (82.8%). The overall results reveal that 87.7% patients were asymptomatic or improved following the surgery.

Conclusion:
Our center reports a subjective improvement of symptoms following FESS compatible with results attained internationally.

Keywords:
Chronic sinusitis, sinus surgery, outcome.

INTRODUCTION:

Chronic rhinosinusitis (CRS) is a significant health problem which seems to mirror the increasing frequency of allergic rhinitis and which results in a large financial burden on society. Chronic sinusitis is an inflammatory condition of the sinuses that is either self-promulgated or it may be due to very subtle infections. The traditional approach has been to treat them with an antibiotic once or twice, and then send them to a surgeon.[1, 2]

The surgery today is much better than any surgery that was done until functional endoscopic surgery was started about 25 years ago. So this is a dramatic step forward from the older days. Functional endoscopic sinus surgery (FESS) has revolutionized the way otolaryngologists manage sinus disease in particularly chronic rhinosinusitis (CRS). Chronic rhinosinusitis restricts the quality of life of millions of involved patients. Currently there exists a growing body of literature on the objective and symptom specific efficacy of both medical and surgical interventions for CRS patients. The technique of functional endoscopic sinus surgery (FESS) has been widely accepted and applied to inflammatory diseases and benign tumors of the paranasal sinuses with internationally reported results of this technique having been very good.

Otolaryngologist all over the world are still taking a critical look at what this procedure has to offer to preference over different medical treatment. Recent efforts in measuring outcomes have focused on evaluating not only the physical but also the social and emotional consequences of diseases and their treatments.

There is correlation between the assessment of subjective and objective findings in patients with chronic (CRS) rhinosinusitis before and after FESS. So subjective assessment of improvement is a good method for evaluation of outcome of FESS.[3] The aim of the study was to evaluate the outcome functional endoscopic sinus surgery in patients' symptom profiles and quality of life.

MATERIALS AND METHODS:

In this study we have selected patients of chronic sinonasal disease (allergic /inflammatory /allergic fungal sinusitis/nasal polyps/rhinitis caseousa) attending the Rhinological clinic of Department of Otorhinolaryngology, Nepalgunj Medial College, Banke from March 2004 to March 2008. All the patients were pre-operatively evaluated clinically, radiologically as well as endoscopically. A uniform history was documented for every patient and after routine necessary investigations they were subjected to endoscopic and radiological evaluation

After complete pre-operative evaluation patients were considered to have chronic rhinosinusitis when they had nasal obstruction, recurrent episodes of mucopurulent secretion, headache, facial pain and pressure. Initially patients were managed medically according to their symptoms and were observed for six weeks.The patients who were symptomatic even after medical management were operated upon using the Messerklinger's approach. All the patients were operated under local anesthesia except two who were uncooperative (12 years and 10 years of age).

Patients were given a course of broad spectrum antibiotics postoperatively for 1 week. Nasal secretions were cleared endoscopically daily for 3 days under direct vision and patient advised saline nasal douches to clean the nose for 3 weeks.

Patients were followed up regularly and after 2 years the complaints were asked and were graded as done by Teris and Davidson.[4] The quentionnaire were filled up by patients themselves.
Group A: No particular symptoms
Group B: Symptom present but less than previous
Group C: No improvement or worsening of symptoms

RESULTS:

In this study we have selected 120 patients of chronic sinonasal disease (allergic /inflammatory/). Out of 120 patients included, there were 60 patients (50%) of sinonasal polyps, 51 patients (42.5%) of chronic rhinosinusitis, and 9 patients of expanding cyst of maxilla.

Table: 1. Age and Gender incidence

Age Group	Total No.of cases	(%)Male (%)	Female (%)
10 – 20 yrs.	36(30.0)	21(17.5)	15(12.5)
20 – 30 yrs.	27(22.5)	15(12.5)	12(10.0)
31 – 40 yrs.	30(25.0)	21(17.5)	9(7.5)
41 – 50 yrs.	21(17.5)	12(10.0)	9(7.5)
51 – 60 yrs.	0	0	0
61 – 70 yrs.	6(5.0)	3(2.5)3	(2.5)
70 – more	0	0	0
Total :	120(100)	72(60)	48(40)

Predominantly male patient presented, which accounts to 60%. About one fourth of patients were from 31-40 years age group. (Table-1) Major complaints were nasal obstruction (80%), nasal discharge (75%) and headache (72.5%) (Fig-1). Regarding nasal obstruction, 71.8% had bilateral complaints; similarly it was 66.6% in case of nasal discharge. Headache was present in frontal region in 65.5% patients followed by facial region in 20.6% (Fig - 1).

Endoscopy in all 120 patients revealed various pathological abnormalities at the middle meatus and anterior ethmoid region. Major findings were mucopurulent discharge in middle meatus in 75 out of 120 cases which was bilateral in 72% cases. Enlarged aggar nasi was found in 42.5%. Nasal polyp was seen in 50% of cases in endoscopy which is more in comparison to 32.5% in anterior rhinoscopy (Table-2).

Table: 2. Nasal endoscopic findings

Findings	Total No. of Cases (%)	Unilateral Cases (%)	Bilateral Cases (%)
1.Mucopurulent discharge in middle meatus	75(62.5)	21(17.5)	54(45.0)
2. Polypoidal middle Or concha-bullosa turbinate	18(15.0)	18(15)	0
3. Polyp Nasal Cavity	60(50.0)	15(12.5)	45(37.5)
4. Infundibular mucosa oedematous	27(22.5)	3(2.5)	24(20.0)
5. Swollen and enlarged Agger Nasi	51(42.5)	15(12.5)	36(30.0)
6. Maxillary bent of U.P.	6(5.0)	6(5.0)	0
7.Destroyed U.P.	6(5.0)	6(5.0)	0
8. Cholesteatoma (Rhinitis caseosa)	2(1.6)	1(0.8)	1(0.8)

Radiological evaluation done by coronal section CT Scanning revealed the different patterns of diseases. Osteomeatal Unit (42%) pattern of disease was the most common. Thirty three cases (27%) were sporadic form of disease. In 17.5% diffuse polyp was seen. Sphenoethmoidal pattern was seen in only few cases (5%) (Fig-2).

Table: 3. Post-operative subjective improvement in present study

Symptoms	Total No.	Group			Total improvement [A+B] (%)
		A.(%)	B.(%)	C.(%)	
1.Nasal Obstruction	96	42(43.7)	48(50.0)	6(6.3)	93.70
2.Nasal Discharge	90	33(36.63)	48(53.2)	9(9.9)	89.91
3.Headache	87	36(41.38)	45(51.7)	6(6.8)	93.10
4.PND	69	27(39.04)	30(43.4)	12(17.3)	82.84
5.Sneezing	54	24(44.44)	24(44.4)	6(11.1)	88.88
6.Heaviness in ear	48	18(37.50)	18(47.5)	12(25)	75.00
7.Ear Discharge	21	6(28.56)	9(42.8)	6(28.5)	70.40
Total	465	186(40.00)	222(47.7)	57(12.2)	87.74

In this series, 120 patients were followed up regularly over a period of at least 24 months and up to 48 months (with an average of 36 months) and were also assessed during the follow up with reference to their dominating symptoms.

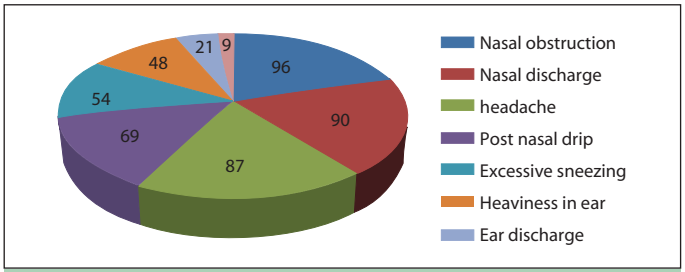

Fig: 1. Symptomatology

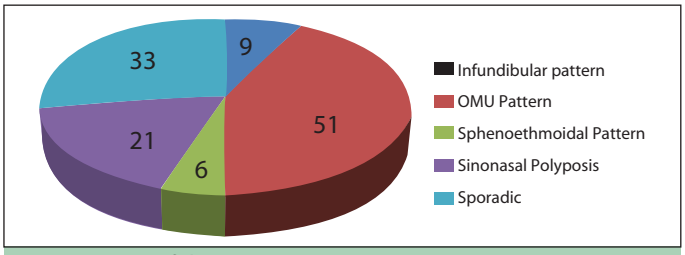

Fig : 2. Pattern of disease

Each patient was asked to assess the improvement in pre-operative symptoms. Regarding nasal obstruction out of 96 cases; 42 showed complete resolution of symptoms, 48 showed improvement while 6 did not benefitted at all (Table- 3). After surgery 93.7 % (90/96) responded favorably to nasal obstruction.

Out of 90 patients with nasal discharge, 33 (36.6%) patients got complete resolution of symptom; 48 (53.2%) cases showed marked improvement while 9 cases were not benefited at all. This suggests the overall success in this perspective was 89.91%. Headache was present in 87 (72.5%) cases in which 81/87 (93.1%) responded, while patients with post-nasal discharge responded least, well after surgery (82.84%). The overall results reveal that 87.7% patients considered them asymptomatic or improved following the surgery.

No major complication directly related to FESS occurred in this series. However, one patient presented with ecchymosis, one patient presented with sub-conjuctival haemorrhage and one patient presented with restriction of eye movement. Orbital sub-cutaneous emphysema was seen in one patient. In the less severe group of complications,[6] patients presented post operative adhesion.

DISCUSSION:

The present study focuses on post operative symptomatic evaluation. During the follow up averaging 3 years, author asked the patient to grade their different symptoms pre and post operatively on the basis of effect over the day to day life.

Patient was also asked to evaluate the quality of life improvement after the surgery and whether they are benefited or satisfied after surgery or not. Follow up period in our study (average 36 months) is better as compared to that of Li et al (24 months) [5], Mace et al (12+/- 2 months) [6], Smith et al (1.4 +/- 0.35 years)[7], Damm et al, (31.7 months).[8] Sample size was also better than other study like Mace et al study (102) 6 , Smith et al study (119).[7]

The leading symptom nasal obstruction was 80% in our study which is comparable to that of Damm et al (92%) [8] while post nasal drip was only 57.5% in our study which is less than that of Damm et al, (87%).[8] In our study 87.7% had improvement though complete relief was in only 40% as compared to Lai et al study, (82%).[9] But in our study, sample size was more and also symptoms evaluated was also different than that of Lai et al.[9] In our study, 12.3% had similar severity of symptoms or worsening which is comparable to that of Damm et al (15%).[8] Nasal obstruction 93.7% were improved which is more than in Bunzen et al study (83.3%).[10] Similarly, headache was relieved in 93.1% which is also more than that by Bunzen et al (62%).[10]

The overall success rate after surgery on patient own evaluation was found to be 94% which is significant ($p<0.05$). The restriction of quality of life in patient with chronic rhinosinusitis is intense and mainly caused by these main symptoms which can be improved by FESS. Majority of patient were satisfied by the surgery with good quality of life. Teris and Davidson study review 10 different series with total patient of 1730 for the outcome after FESS.[4]

The results of this study was evaluated in 3 categories:[4]
1) Very good result as either complete resolution of symptoms or rare episodes of sinusitis (<2episodes/year)
2) Good result when patient report improvement but no resolution of their symptoms and 2-5 episodes of sinusitis per year.
3) Bad result when post operatively there is no resolution or worsening of symptoms.

Although there were no fixed parameters to categorize the preoperative status extent of disease and surgery; the study showed success rate with good result 73-79% result after FESS. Interestingly category 2 was reported to achieve in 28% in comparison to very good result in 63% in the mean value. The later success rate seems to be high which may be attributable to the fact that some results were inadequately classified by Teris and Davidson[4] in 3 categories. For instance the result reported by Kennedy and Atol as marked improvement (>50%) classified these series of Teris and Davidson [4] in Category.[1] On other hand in present series percentage of good result is slightly higher than very good result and depends on repeated and long follow up that was more than 3 years.

One problem of present study was that the tool we use for outcome result is not validated before use. As there is no exact measure of subjective improvement, but the patient satisfaction in toto is objective of surgery. The study shows significant subjective percentage of improvement and can be indication of improvement of quality of life. Many study have tried to define and quality outcome with FESS. However, our understanding of the multiple facet of outcome of FESS remains incomplete.

CRS is a common health problem that leads to frequent visit to primary health care and Otorhinolaryngologists. It contribute significant amount of health care expenditure due to direct cost arising from physician visit as well as indirect cost related to missed days at work and a general loss of productivity due to a decrease quality of life .It is essential to evaluate the outcome verification and therapy effectiveness. Because the disease itself is defined by signs and symptoms, it is logical to use the presence and severity of sinonasal symptom as primary outcome measure for sinusitis and the measurement of symptom require that patient is assessed with a complete self-assessment measures.

Multiple reviews of the result of endoscopic sinus surgery worldwide reported excellent subjective results with overall improvement of 90%. Eighty-six percent of the patients said they would recommend the same kind of surgery on them.[11] Patient with chronic sinusitis have more bodily pain and worse social functioning then those with chronic osbtructive pulmonary disease, Angina, congestive heart failure and body pain. Therefore a successful endoscopic sinus surgery can positively influence the life of those individuals. Like in our study, Guerrero et al[12] study also showed no major complications and minor complications occurred in 21 patients (19 %) with the most frequent being adhesion.

There are many case series with large patient populations that have shown significant improvement in short- and long-term symptoms following surgery. These outcomes are expected to improve with even greater refinement of technology, experience, and instrumentation, and the quality of future studies may be improved by determining and using objective measures of success and, possibly, by the use of control groups.[13]

Hence, over the conventional method, FESS has a number of advantages, besides being more accurate in diagnosis namely access to inaccessible areas of nose and sinuses, restoring normal physiology and avoidance of radical surgery. However, the image of sinus is very much different from normal vision, the orientation of directions and depth and magnification have to be acquired by practice. The success depends upon a thorough pre-operative endoscopic and CT coronal screening, evaluation and of course upon the efficiency and skill of the surgeon. In spite of certain serious complications, of which no surgery is exempt, FESS is undoubtedly the beginning of a new era.

CONCLUSION:

In this study the leading complaints within the symptom profile of patients with chronic sinonasal diseases are nasal obstruction, nasal discharge and headache. The restriction of quality of life in patients with chronic sinonasal disease is mainly caused by these symptoms. Our center reports a subjective improvement of symptoms following FESS compatible with results attained internationally.

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