Long-term results of FESS – a random survey

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Abstract Very little work has been published in literature about the long-term results of endoscopic sinus surgery especially with substantial numbers. A cross-sectional study was performed of patient satisfaction following endoscopic sinus surgery over a mean period of 9.8 years, of 155 patients. A variety of nasal symptoms were assessed and interesting data was recorded in relation to abatement of symptoms related to nasal and systemic allergy. Overall 94% of patients were satisfied with functional endoscopic sinus surgery (FESS) in relieving various nasal symptoms and a statistically significant number showed improvement in allergic symptoms. Our series has the longest follow-up with the largest patient group recorded in literature.

*Presented at: The 44th Annual Meeting of the
Irish Otolaryngological Society, Irish Otolaryngological
Head and Neck Society, Kilkenny*

Keywords Functional endoscopic sinus surgery ·
Long-term results · Random survey

Introduction

Nasal conditions are difficult to quantify, as the symptoms correlate poorly with objective signs [1]. Various nasal conditions present with similar symptoms and often it is difficult to separate the different nasal pathologies. It is not uncommon to see patients having multiple nasal pathologies like chronic sinusitis and nasal polyposis. These factors make it difficult to assess the success of any surgical procedure objectively.

Functional endoscopic sinus surgery (FESS) is a relatively new concept but is increasingly becoming popular with the majority of ENT surgeons [2]. Like any other procedures it is coming under close scrutiny with relation to evidence-based efficacy. There is a great need to assess the efficacy of this procedure especially on a long-term basis.

Tyrone County Hospital was a pioneer in introducing endoscopic sinus surgery in Northern Ireland. This unit has a great patient turn over for endoscopic sinus surgery and has an excellent long-term follow-up of the cases in a well established exclusive “long-term follow-up clinic”.

To answer the question of long-term efficacy of endoscopic sinus surgery, a cross-sectional survey was performed to assess patient satisfaction following endoscopic sinus surgery. Many interesting facts were recorded and presented in this article.

Methods

In Tyrone County Hospital patients who failed to respond to medical treatment and underwent endoscopic sinus surgery for various indications (chronic sinusitis, nasal polyposis...) are followed up in the routine ENT clinic on a regular basis for the first 6–9 months. After this period they are followed up in dedicated long-term follow-up clinics for endoscopic sinus surgery.

Patients, waiting to be seen in the “long-term follow-up clinic, were randomly recruited to fill in a questionnaire. One hundred and fifty-five questionnaires were collected, from 74 males and 81 females. The patients were aged between

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Fig. 1 Preoperative symptom score for primary nasal symptoms

NO = Nasal obstruction, PND = Postnasal drip, HA/FP = Headache/facial pain, AR = Symptoms of allergic rhinitis. (0 = no symptoms, 10 = maximum symptoms).

NO: (139/155) 89.7% severe, (9) 5.8% moderate, (6) 3.9% mild symptoms and (1) case had no symptoms.

PND: (123) 79.3% severe, (20) 12.9% moderate, (8) 5.2% mild and (4) 2.6% no symptoms.

HA/FP: (105) 67.8% severe, (22) 14.2% moderate, (18) 11.6% mild and (10) 6.4% no symptoms.

AR: (52) 33.6% severe, (24) 15.5% moderate, (14) 9% mild and (65) 41.9% no symptoms.

Fig. 2 Postoperative symptom scores for primary nasal symptoms

NO: (4/155) 2.6% severe, (7) 4.5% moderate, (143) 92.3% mild and (1) 0.6% no symptoms.

PND: (5/155) 3.2% severe, (13) 8.4% moderate, (133) 85.8% mild and (4) 2.6% no symptoms.

HA/FP: (5/155) 3.2% severe, (4) 2.6% moderate, (136) 87.7% mild and (10) 6.5% no symptoms.

AR: (6/155) 3.9% severe, (20) 12.9% moderate, (64) 41.3% mild and (65) 41.9% no symptoms.

4 and 83 years (mean age = 41.7 years). Ninety-eight had undergone endoscopic sinus surgery and 57 had endoscopic sinus surgery plus septoplasty for various indications. Mean

duration of follow-up was 9.8 years (range 4–12 years) and the data was recorded over a period of 8 months.

Factors analyzed were classified as primary nasal symptoms (nasal obstruction, anterior nasal discharge, postnasal drip, headache/facial pain and allergic rhinitis–sneezing/itching) and associated conditions (of systemic allergy), i.e. house dust allergy, hay fever, asthma and chest infections, allergy to dairy products and hypersensitivity to aspirin. The patients were asked to mark on a visual analog score their symptom severity, for each named symptom, on a score of 0–10 (0 being no symptoms and 10 maximum). They were asked to compare their symptoms before surgery versus their current symptoms; after surgery.

They were also asked about their experience of the surgery, the discomfort/pain suffered during the procedure and recovery period and the time taken for their symptoms to abate.

The data of preoperative versus postoperative scores was analyzed statistically with Wilcoxon Signed Ranks Tests and presented graphically.

Results

As previously mentioned, patients marked their individual symptoms on a scale of 0–10, where 0 = no symptoms, 1 = mild, and 10 being the most severe of the suffering in the patients' perception. For ease of presentation, scores of 1–4 were considered as mild symptoms, 5–7 as moderate and 8–10 taken as severe symptoms.

Preoperative primary nasal symptom scores are represented graphically in Figure 1. Ninety percent complained of severe nasal obstruction, 79% severe postnasal discharge, 68% severe headaches/facial pain and 33.6% had symptoms of severe allergic rhinitis before surgery.

Postoperative symptoms scores are represented graphically in Figure 2. Less than 3% complained of residual severe obstruction, 3.2% severe postnasal discharge, 3.2% severe headaches/facial pain, 4% severe allergic rhinitis.

As is very obvious by the graphs there is a complete reversal of the trends in the symptom scores from severe symptoms in the preoperative state to the postoperative period. 94.6% of the patients were very satisfied with the results of FESS in relieving their primary nasal symptoms. Statistical analysis was done using SPSS Version 11, with the help of an experienced statistician from the Queens University of Belfast. Wilcoxon Signed Ranks Tests were used for individual symptoms which showed a high statistical significance of the findings ($p < 0.005$).

Similarly scores for associated symptoms, i.e. systemic allergies were recorded and are represented in Figure 3. Seventy percent had severe house dust mite allergy, 12% severe hay fever, 16% severe asthma, 2% severe

Fig. 3 Preoperative symptom scores for associated conditions (systemic allergies)

HD = House dust allergy, HF = Hay fever, Ast = Asthma/chest infections, Asp = Hypersensitivity to aspirin, DP = Allergies to dairy products.

HD: (27/155) 17.4% severe, (25) 16.1% moderate, (10) 6.5% mild and (93) 60% no symptoms.

HF: (19) 12.3% severe, (11) 7.1% moderate, (11) 7.1% mild and (114) 73.5% no symptoms.

Ast: (25) 16.1% severe, (13) 8.4% moderate, (17) 11% mild and (100) 64.5% no asthma.

Asp: (3) 1.9% severe, (7) 4.5% mild and (145) 93.6% no hypersensitivity to aspirin.

DP: (9) 5.8% severe, (6) 3.9% moderate, (7) 4.5% mild and (133) 85.8% no symptoms.

Fig. 4 Postoperative symptom scores for associated conditions

HD: (13/155) 8.4% severe, (13) 8.4% moderate, (36) 23.2% mild and (93) 60% no symptoms of allergy to house dust.

HF: (7/155) 4.5% severe, (4) 2.6% moderate, (30) 19.4% mild and (114) 73.5% no hay fever.

Ast: (5/155) 3% severe, (13) 8.4% moderate, (37) 23.9% mild and (100) 64.5% no asthma.

Asp: (2/155) 1.3% severe, (8) 5.2% mild and (145) 93.6% no hypersensitivity to aspirin.

DP: (3/155) 1.9% severe, (7) 4.5% moderate, (12) 7.7% mild and (133) 85.8% no allergy to dairy products.

Fig. 5 Patients' experience of the procedure 1 being minimal discomfort or pain and 10 being severe discomfort/pain.

hypersensitivity to aspirin and 6% severe allergy to dairy products.

Postoperative scores are represented in Figure 4. Eight percent still complained of severe house dust mite allergy, 4.5% severe hay fever, 3% severe asthma/recurrent chest infections, 1% severe hypersensitivity to aspirin, 1.9% severe allergy to dairy products.

As is visible from the graph there is a trend for improvement for certain of the conditions, i.e. house dust, hay fever and asthma/chest infections and negligible difference in the preoperative versus postoperative scores for dairy product allergy and no difference for hypersensitivity to aspirin. These results were statistically significant when tested by Wilcoxon Signed Rank Test ($p < 0.005$) for allergies to house dust, hay fever and asthma/chest infections, and not statistically significant ($p > 0.05$) for allergy to dairy products and hypersensitivity to aspirin.

Patients' experience of the procedure with relation to discomfort and pain is depicted in Figure 5. As is obvious majority of the patients experienced mild discomfort and minimal pain. Time taken for abatement of symptoms is again represented in Figure 6. Majority of patients felt their symptoms had improved within 2 months.

Discussion

Nasal pathology is difficult to assess both subjectively and objectively. Many nasal conditions present with common symptoms and signs, e.g. nasal polyposis, chronic sinusitis, allergic rhinitis, etc. may all present with nasal obstruction, nasal discharge, etc. [3]. Many patients also present with more than one pathology in the nose and is often difficult both for the patient and the surgeon to differentiate which started first (sinusitis and polyposis). Similarly the anatomical problems like deviated septums,

Fig. 6 Time taken for the symptoms to abate (n = 155)

etc. predispose to some of the pathology and make it difficult to correlate the symptoms of nasal obstruction, etc. to individual pathology [1]. It is not surprising therefore to appreciate the frustrations of medical researchers to objectively assess the treatment modalities of nasal pathologies. It is also common knowledge that symptoms also vary with time and success of treatments including surgeries over long-term has been difficult to establish.

We have therefore attempted to study the efficacy of a procedure (FESS) which addresses a broad range of nasal conditions, i.e. deviated septums, sinusitis, polyposis, etc. some of which may have contributed to the other. As the presentations of these conditions are similar it was logical to group these together in analysis. Literature has also proved that symptoms do not correlate with objective signs; therefore we looked at patient satisfaction scores [2]. Emphasis was given towards long-term results as symptoms following nasal surgery vary with time [1].

We added a new dimension to our study and looked at patients versions of their associated conditions as these often coexist with primary nasal conditions and have an impact to their general sense of well-being. We also attempted to look at their experience in terms of discomfort and time taken for their symptoms to improve.

Conclusion

Endoscopic sinus surgery has a good long-term success rate (94.6%) in relieving symptoms of nasal pathology and also

improves symptoms of systemic conditions like asthma and chest infections, hay fever and house dust allergy. Though the surgery does not cure the conditions of allergies the symptomatic improvement in their general well-being may be explained by improved ventilation of their sinonasal pathway, which enables them to cope better with their impairments.

Our results are comparable to reported series in literature with 94.6% success rate [4–6]. With meticulous postoperative care results can be maintained over long periods.

The surgical procedure and the recovery period involved are not associated with significant suffering and pain.

Scope for further studies

Endoscopic sinus surgery for patients with nasal conditions with associated chest problems shows a great promise in improving their associated conditions and this study has demonstrated a beginning towards further research to gain quantifiable data with regards to allergies and chest infections.

Acknowledgements: We wish to thank Dr Gordon W. Cran of the Department of Epidemiology and Public Health, Queens University of Belfast for his help in the statistical analysis of the data.

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