

# Experiences with functional endoscopic sinus surgery (FESS) in patients with cystic fibrosis

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## ABSTRACT

*Introduction:* In a review of Parsons, the incidence of nasal polyps in CF patients has been reported to be 6% to 48%. There is a general agreement that FESS is a method of choice in the operative therapy even in children in this disease.

*Objectives:* Clinical evaluation and survey of CF patients underwent FESS in childhood.

*Methods and results:* 20 children (aged 3,5-19) with cystic fibrosis underwent functional endoscopic sinus surgery because of severe nasal and paranasal polyposis. There were no adverse event or side effect observed. The rate of recidive during the two years follow-up period was 65%. Detailed evaluation (including spiral CT scan) and unsuccessful medical treatment always preceded the operation. The parents filled out a questionnaire in general 2 months after the operation about several vital functions of their children before and after treatment. Even in recidive cases a significant improvement could be observed in nasal obstruction, nasal discharge, snoring, and physical activity were significant (unpaired *t*-test:  $p < 0.05$ ).

Bacteriological evaluation revealed Staphylococci colonisation in 50%, *H. infl.* in 25 % *Pseudomonas* in 18,7% of patients. Histology showed certain changes in patient to patient – this needs further investigation to explore the connection with clinical status.

*Conclusion:* FESS is an effective, good method of therapy of polyposis in patients with CF. Still remains the problem of high recurrence rate, and the unsolved method of postoperative care.

## Introduction

Significant advances in the management of sino-nasal disease for children with cystic fibrosis (CF) have been made in the last several years, because of better understanding of the physiology of both CF and pediatric sinusitis.

The prevalence of CF differ from races, in the white population 1:2000 live birth, 1:90 000 in Asians, and 1:30 000 in Afro-Americans. The carrier rate in whites is approximately 1 in 20-25. Chronic sinusitis with or without nasal polyposis has long been recognised as the classic otolaryngologic manifestation of CF. Although the etiology is unknown, the mucostasis plays a major role, and leads to mechanical obstruction of sinus ostia. The obstruction causes

hypoventilation and ciliary injury, mucosal edema, and chronic inflammation with bacterial colonisation.

## **Material and methods**

The aim of present study was to get data of surgical treatment (functional endoscopic sinus surgery –FESS) of children with CF, the influence to their quality of life. Bacteriological and histological evaluation were also performed to assess specialities of these patients.

Form August 1996 to March 1998 25 CF children were operated at the ENT Department of Heim Pál Hospital for Sick Children, Budapest. The patient's age was between 3,5 to 18.

All of them were patients of the CF Outpatient Clinic of the Hospital and were selected for surgery by an independent pediatrician after careful clinical check – up. All these children have various degree nasal symptoms, and medical treatment was unsuccessful. Before the decision of surgery, nasal endoscopy and axial and coronal CT scan were performed. If these evaluation (together with general ENT examination) revealed severe sinonasal pathology, only then was surgery proposed. After informed consent all parents agreed with this treatment. 3-4 months after surgery a questionnaire was sent to the parents for assess the changes of quality of life

## **Results**

8 nasal parameter were checked in the questionnaire – out of 25 16 patients answered. (Fig.1) Leading nasal symptoms were nasal obstruction, discharge from the nose, sleeping problems and snoring, less commonly occurred headache, facial pain, and acute sinusitis.

As summarising the results, all parameter improved after surgery, the changes in nasal obstruction, nasal discharge, snoring, and physical activity were significant (unpaired *t*-test:  $p < 0.05$ ).

No adverse or side effect occurred. The rate of recurrence was high – 65 %, in 4 cases 3 operations were done. Even a small polyp has been seen at the control endoscopy –causing no complaints to the child – has been considered as a recurrence. Interestingly, even in recidive cases parents observed marked improvement in special symptoms.

Bacteriological evaluation in nasal smear revealed Staphylococci in 50 %, Haemophilus influenzae 25%, Pseudomonas aeruginosa 18,7 % and Strept. Haem. In 8,3%. (Fig 2.) In fluid of sinus maxillaris the prevalence of Haemophilus influenzae was higher (41,7%) ,

Ps.aeruginosa and Strept.haem were the same as in the nose, Staph. aureus was a little less common (Fig 3).

Histology revealed large mucous ducts and glands in the submucosa with mild signs of inflammation, markedly differ from those of polyps seen in allergy.

Stay in the hospital was no longer than 3 days, form some of the children only 2 days. Careful postoperative care has been done with endoscopic removing of scabs, and prescribing nasal steroid for several months.

## **Discussion**

Although functional endoscopic sinus surgery turned out to be a useful treatment in CF children with nasal symptoms, one can not cure the illness by this manner. Therefore, the decision – making has largely based on CF data ( 3, 5). The real value of this method is to improve the quality of life of these patients – and this is true even in recidive cases. Our results, according to the answered questionnaires, are in accordance with those of the literature (2, 4). All of our patient’s quality of life improved after surgery – even in case of recurrence. Because the operation takes only 30-40 minutes, and the hospital stay is also quite short, children and parents accepted this therapy. Postoperative care is almost as important as surgery itself (1, 6). This is sometimes difficult to perform, because in young children even a short endoscopy necessitates general anaesthesia, which has to be avoided in patients with cystic fibrosis.

When performing endoscopic sinus surgery in children, we mustn’t forget the statement of Pransky and Low. “ Sinus surgery in children should be as conservative as possible”. The principle of minimally invasive technique is essential in pediatric patient suffering from sinus disease (1). On the other hand, to minimise the recurrence, a detailed and careful polyp-removal has to be carried out. FESS in children needs skilled and experienced surgeon, who is devoted to care of pediatric patients. There is no doubt that FESS is a valuable method in the care of CF patients with sinus disease.

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**Abbreviations:** CF – cystic fibrosis  
FESS – functional endoscopic sinus surgery

**Key – words:** Cystic fibrosis, Endoscopic surgery

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