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Normalization of maxillary sinus mucosa after functional endoscopic sinus surgery in pediatric chronic sinusitis

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KEYWORDS
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Summary

Objectives: To observe the recovery of maxillary sinus mucosa after endoscopic sinus surgery in children with chronic maxillary sinusitis. Functional endoscopic sinus surgery (FESS) was used to perform a middle meatal antrostomy, leaving the antral mucosa intact for later observation.
Methods: Between January 1998 and December 2003, 43 children with chronic sinusitis were enrolled in the study. Pre-operative patient profiles, including a history of symptoms, signs and allergies, were collected. Phidiatap test was used to check allergy. Saccharine transit time tests were performed for each side of the nasal cavity. Under endoscopic observation, the antral mucosa was macroscopically divided into edematous and polypoid types.
Results: Sixty-four (76.2%) of the 84 antrums had edematous type mucosa in which 73.4% (48/64) of cases were found to have returned to normal within 8 weeks. The polypoid antral mucosa exhibited a slower recovery with 80% (16/20) returning to normal within 4 months. The preoperative saccharine transit time significantly correlated with recovery of the antral mucosa ($p < 0.05$), but allergy did not ($p > 0.05$).
Conclusion: The antral mucosa in children with chronic maxillary sinusitis was predominantly of the edematous type. Most recovered within 2 months of having FESS. The prolonged saccharine transit time and polypoid type antral mucosa were associated with delayed mucosal recovery, warranting follow-up of more than 4 months.

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1. Introduction

Chronic paranasal sinusitis is a relatively common disorder in children [1]. When treating chronic sinusitis, surgical procedures are generally considered only after optimal medical management fails. Functional endoscopic sinus surgery (FESS) has been widely used for chronic sinusitis in adults [2—4], and has since been used in children [5—7]. Clinically, improvements in nasal discharge and nasal obstruction have been more easily achieved than improvements in post-nasal drip [8]. Under endoscopic observation, the persisting pathological changes to the maxillary mucosa were found to be the usual cause of post-nasal drip [9]. Accordingly, normalization of the maxillary sinus mucosa critically affects the success of FESS.

Although several reports have discussed the results of FESS [5—7], none have described in detail the natural course of maxillary sinus mucosa recovery following FESS in children with chronic paranasal sinusitis. In this article, the natural recovery of maxillary mucosa with two main types of pre-operative pathological change is described.

2. Materials and methods

Between January 1998 and December 2003, 43 children with chronic paranasal sinusitis were enrolled in the study. Ages ranged from 7 to 15 years (mean, 10.3 years). Of the 43 children, 24 were boys. Two children had unilateral sinusitis only, giving a total of 84 maxillary sinus units (SU) in the study. Subjects had no history of previous adenoid, nasal or sinus surgery. Histories of sinus discomfort ranged from 7 to 48 months (mean, 15.3 months). Whether allergy or not in each patient was determined by histories of allergy and Phidiatap [10] tests as present. The saccharine transit time test was used in all patients to evaluate mucociliary transport for each nasal cavity [11].

All the procedures were performed under general anesthesia. After uncinectomy, a middle meatal antrostomy was performed, followed by an anterior ethmoidectomy. The antral mucosa was left intact. The pre-operative sinus CT scan and the pathological changes in the individual sinus observed at surgery determined whether or not a posterior ethmoidectomy, frontal recess clearance, or sphenoidotomy was also performed. The antral mucosa in each patient was categorized as either edematous (Fig. 1) or polypoid (Fig. 2) based on nasoendoscopic observation. All patients were discharged within 1 week of surgery and continued to receive weekly endoscopic treatment. Nasoendoscopic clearance of the antrum was performed to remove crusts and exudates thoroughly once every 2 weeks under topical anesthesia, or ketamine anesthesia if needed. If the antral mucosa did not return to normal within 16 weeks, it was defined as a persisting state. The Chi-square test with Yate's correction was employed for data analysis.

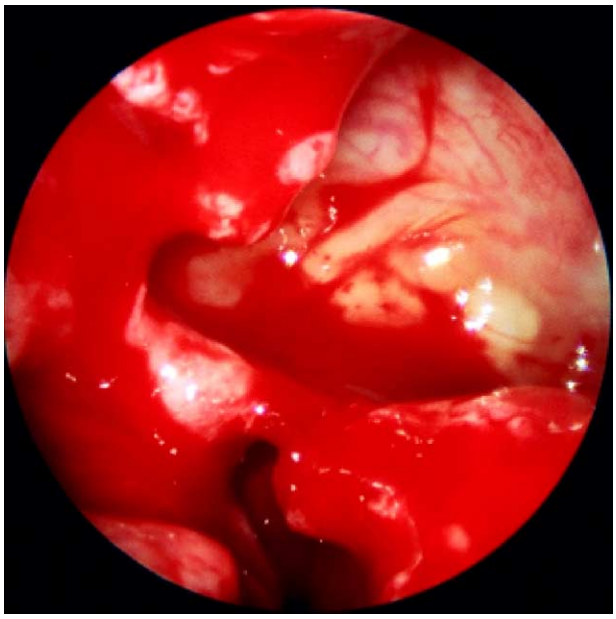

Fig. 1 Edematous type mucosa noted during FESS in a 9-year-old boy with chronic maxillary sinusitis.

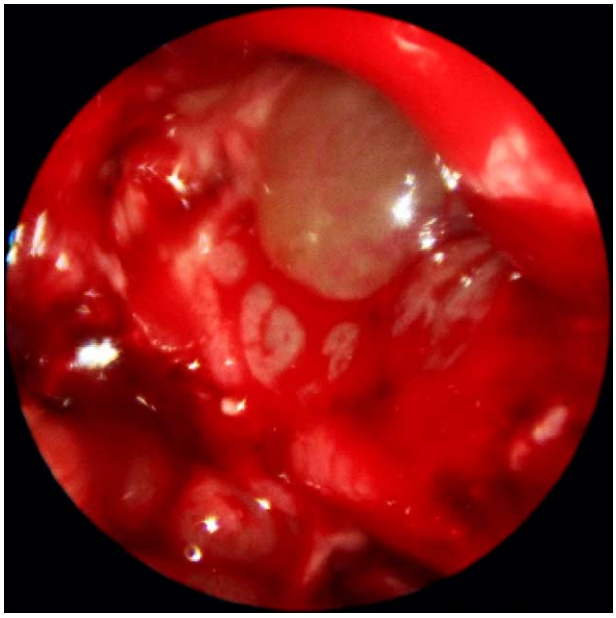

Fig. 2 Polypoid type mucosa found during FESS in an 11-year-old girl with chronic maxillary sinusitis.