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Pediatric endoscopic sinus surgery—does it have a future?

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In September 1996, an international consensus meeting [2,3], with a panel consisting of pediatric ENT specialists, a pediatrician and a microbiologist, provided definitions for different forms of pediatric sinusitis, with a numeration of the main symptoms and signs, indications for microbiological, allergic and immunological assessment, as well as for imaging studies, suggested standard medical management and finally, discussed the indications for surgery.

The following indications for endoscopic sinus surgery were maintained:

A—Absolute indications

1. Complete nasal obstruction in cystic fibrosis due to massive polyposis or closure of the nose by medialisation of the lateral nasal wall,
2. Antrochoanal polyp,
3. Intracranial complications except orbital cellulitis, because this disease can be treated adequately with parenteral antibiotics,
4. Mucocoeles and mucopyocoeles,
5. Orbital abscess,
6. Traumatic injury in the optic canal (endoscopic decompression),
7. Dacryocystorhinitis due to sinusitis, and resistant to appropriate medical treatment,
8. Fungal sinusitis,
9. Some meningoencephalocoeles,
10. Some neoplasms, including juvenile angiofibroma, etc.

B—A possible indication, and the most debated indication, is of course chronic rhinosinusitis. From the literature one knows that chronic sinusitis is a common disease

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in children. The overall prevalence of sinusitis signs on magnetic resonance images in a pediatric non-ENT population is 45%. This prevalence exceeds the adult prevalence of 39% [5–7], while the nature of the lesion is more severe in children. Furthermore, among children younger than 7 years of age the overall prevalence of pathological signals is higher (58% compared to 40% above the age of 7 years). This higher prevalence in the younger child is probably due to an immaturity of the immune defence system, and not to anatomical variations that increase with age in adults. Anatomical variations in children are less frequent than in adults [11,12].

Therefore, the consensus committee decided that only chronic rhinosinusitis, especially with frequent exacerbations and non-responsive to optimal medical treatment (2 to 6 weeks of oral antibiotic treatment or even parental antibiotic treatment) and after exclusion of a non-infectious condition, should be considered for surgery.

The most extensive surgery (complete sphenoidectomy) is advocated in cases of complete nasal obstruction due to nasal polyposis in cystic fibrosis, while for chronic sinusitis a limited ethmoidectomy is indicated (opening of the bulla ethmoidalis and making of a middle meatal antrostomy).

The results after surgery depend on the cause of the chronic sinusitis. In cystic fibrosis [2,4], a complete and permanent cure cannot be obtained. The quality of life of these children, however, 6 months after surgery improves dramatically (Table 1).

The long-term follow-up (average 7 years) of these 21 children operated because of chronic sinusitis due to cystic fibrosis, showed a recurrence rate of 42%. The number of operations for each child averaged 1.6 (1 to 4 operations). Twelve patients were completely free of recurrences and needed no further surgery. Six children (33%), all younger than 10 years at the time of the first surgery, showed recurrent massive polyposis. Three of these had more than one recurrence. The duration between the first and the second surgery (average 1.5 years) was always shorter than between the second and the third surgery (average of 4 years in three cases only) or between the third and fourth surgery (4 years in one case only).

A choanal polyp is not easy to diagnose in younger children [9]. The experience of the author is limited to four cases of endoscopic removal of choanal polyp in young children (3 to 10 years of age). In these four cases, one recurrence (25%) was seen after 13 months.

The results of endoscopic sinus surgery, if performed in time, are very good in cases of intracranial complications, orbital abscess, and dacryocystorhinitis due to sinusitis, fungal sinusitis and mucocoeles.

Table 1
Complaints before and after surgery in 21 children with cystic fibrosis, and nasal obstruction due to nasal polyposis or medialisation of the lateral nasal wall (in %)

	Before surgery	Six months after surgery
Nasal obstruction	94	0
Recurrent spells of acute rhinosinusitis	85	65
Rhinorrhoea	75	40
Headache	69	20
Poor quality of sleep	62	40

The results of endoscopic sinus surgery, in cases of chronic rhinosinusitis with frequent exacerbations in children and after optimal medical therapy, seem to be good [10].

Recently, more is known about the influence of sinus surgery in children and the outcome of facial growth. In 46 children [1], we were not able to see any influence of previous endoscopic sinus surgery on the anthropomorphic data of the face. In our department [13], we were not able to see any statistical difference between the encephalometric data of a group of children with cystic fibrosis that had undergone an extensive sphenoidectomy before the second growth spurt, a second group that had no surgery whatsoever but chronic sinusitis without massive polyposis, and a third group that had surgery after the second growth spurt. There also existed no statistical difference between the encephalometric measurements of these three groups with cystic fibrosis children and normal individuals.

Finally, the use of an endoscope in the treatment of bilateral choanal atresia is advocated. This technique was first described by the author in 1985 [8]. It is important in the neonate with breathing and feeding difficulties to perform, as soon as possible, a drill-out procedure of the bony choanal plate and this preferably under optic control of the nasopharynx. A 70° endoscope in the oropharynx will allow a good visualisation of the nasopharyngeal part of the bony choanal plate. With the use of bright light, transillumination of the choanal plate in the nasal cavity occurs, and the surgeon can precisely localize the place where the drill-out needs to be performed. The disadvantage of an early endonasal drill-out is that only a small opening can be obtained (3 mm) and a second procedure is often necessary at a later age [8].

In conclusion, one can state that endoscopic sinus surgery in children is an efficacious and safe way of treatment, as long as the indications are correct.

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