

Nasal polyposis, sense of smell, and surgery

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Nasal polyposis (NP) is an inflammatory condition of unknown etiology which is present in 2-4% of the European adult population^(1,2). Smell loss is one of the most frequent complaints in patients with nasal polyps, often being the first symptom of the disease⁽³⁾, and having a negative impact on quality of life^(4,5). Olfactory deficits secondary to NP have traditionally been attributed to the inability of odorant molecules to access the olfactory mucosa, which is believed to remain histologically normal despite the aggressive inflammatory process in the respiratory regions of the nose⁽⁶⁾. However, the loss of smell associated with NP may be due to either mucosal obstruction or inflammation of the olfactory cleft⁽⁷⁾.

The management of NP has been the topic of frequent controversial debates for many decades. Most authors agree on the fact that management of NP should be primarily based on a medical approach to be completed by endoscopic sinus surgery (ESS) only in the case of drug failure^(8,9).

The objectives of the management of NP are: to reduce or eliminate polyps, open the nasal airway, improve or restore the sense of smell, prevent polyp recurrence, and improve patients quality of life⁽¹⁰⁾.

Although many patients receive ESS to improve the sense of smell, relatively little research has been performed to investigate determinants of postoperative outcome. Until recently, the evaluation of smell loss was mainly based on patient's self-reported symptoms and rarely quantitative smell tests were performed and used as criterion for improvement, leading thus to criticism of the outcomes claimed⁽¹¹⁾.

Pade and Hummel⁽¹²⁾ only could identify supra threshold olfaction as they were using the odour identification tool in "Sniffin Sticks". After sinus surgery, improvement was found in 23%, no change was seen in 68%, and decreased function was seen in 9% of the patients. In terms of the sense of smell, surgery produced the highest success rates in patients with eosinophilia and a high degree of NP. Pade and Hummel⁽¹²⁾ explained this change of olfactory function that surgery removes/damages olfactory receptor neurons in the olfactory epithelium. However, Say et al.⁽¹³⁾ suggest that, for example, resection of the superior turbinate during the endoscopic transethmoidal sphenoidotomy procedure does not affect olfactory function. Similar results have been reported by Lanza

et al.⁽¹⁴⁾ stating that biopsies directly from the olfactory neuroepithelium had no measurable effect on the ability to identify odours. Damm et al.⁽¹⁵⁾ demonstrated that even the volume in the nasal valve area correlates with odour thresholds, meaning that even when surgery is performed in areas remote from the olfactory cleft, change of these nasal volumes might affect olfactory function, at least in some patients.



Furthermore, Litvack et al.⁽¹⁶⁾ have reported significant improvement in olfactory scores after ESS in anosmics with NP at 6 months, which sustained at 12 months. However, they used a smell identification test, not a threshold test. Minovi et al.⁽¹⁷⁾ showed that in terms of the sense of smell nasal, surgery produced the highest success rates in women, high degree of NP, and aspirin-intolerance. Olsson and Stjerne⁽¹⁸⁾ demonstrated that ESS alone improved both sense of smell and olfactory thresholds in patients with NP with or without asthma.

Danielides et al.⁽¹¹⁾ studied ESS in patients with concomitant medical treatment and found an odour threshold increase already at 1 month. Duration of olfactory deficit and previous sinus surgery presented highly significant predictive value for the short-term outcome of the olfactory function after ESS. All patients suffering from NP will probably improve olfaction significantly in a period up to six months after surgery. However, studies with a long-term follow-up (> 5 years) are needed to evaluate the efficacy of surgery on sense of smell in patients with NP.

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