

Sinus Surgery Causing Beneficial Ostitis

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INTRODUCTION

A 52-year-old male with Cystic Fibrosis (CF) presented to the otorhinolaryngologist with a history of nasal obstruction, rhinorrhea and long-lasting severe headache localized to the frontal sinuses. Nasal endoscopy showed no signs of polyps or mucopurulent discharge. Computed Tomography (CT) of the sinuses revealed sinus opacification (Figure 1A). Endoscopic sinus surgery was performed including bilateral uncinectomy, ethmoidectomi and creation of large maxillary-, frontal- and sphenoid sinus anastomoses. Drilling of bone was performed to gain access to the right frontal sinus. Sinus cultures grew mucoid and non-mucoid *Pseudomonas aeruginosa*. Three years later, Symptoms of Chronic Rhinosinusitis (CRS) recurred, predominantly with left frontal headache. A new CT of the sinuses revealed new bone formation in the right frontal sinus (Panel B, arrow) (Figure 1B).

Figure 1A + 1B: Coronal CT scan of the sinuses in a CF patient before and three years after endoscopic sinus surgery

The sinuses are mucosa-lined aerated cavities in the cranial bone that are ventilated via the nasal cavity. They drain mucous to the nose through natural ostia. Most adults have four pairs of sinuses: the maxillary-, ethmoid-, sphenoid and frontal sinuses. The latter are located in the forehead above the eyes and drain to the middle meatus [1]. Blockage of the frontal sinus drainage pathway can lead to headache.

Abnormal sinus anatomy including decreased pneumatization of the sinuses is almost universal in patients with CF [2]. It remains unanswered how genetic and environmental factors may influence the pneumatization process [3]; however, many scientists agree, that early onset of CRS result in decreased sinus aeration [4]. Chronic rhinosinusitis is common from childhood in CF, which may explain the frequent finding of small paranasal sinuses CF [2]. However, sinus hypoplasia may also be a direct consequence of the CF mutation [4].

This case highlights that ossification of the sinuses can occur in adulthood. Bacterial sinusitis and sinus surgery is common in CF, and persistent mucosal disease and surgical trauma may lead to osteitis, new bone formation and recalcitrant CRS causing severe headaches. Nevertheless, in this report the new bone formation seemed beneficial as the patient only complained of recurrence of symptoms from the left side. Frontal sinus surgery can be challenging and abnormal sinus anatomy may also predispose to surgical complications. Therefore we advocate for image guided sinus surgery in CF as this has proven a safe procedure and have the capability of reducing the frequency of pulmonary samples positive for *P. aeruginosa*, improving sinus symptoms and health related quality of life in CF [5].



Figure (1A+1B): Arrow points at the new bone formation in the right frontal sinus.

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