

Endoscopic detection of Fast mucociliary pathways in endoscopic sinus surgery: A marker for local mucociliary function

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Abstract The mucociliary transport velocity is heterogeneous showing areas of slow and fast pathways. Aim of this study was to assess fast mucociliary pathways (FMP) in maxillary sinus in chronic rhinosinusitis (CRS). **Methods:** Endoscopic recording of

mucociliary clearance (MCC) and FMP on posterior wall of maxillary sinus in 22 chronic rhinosinusitis patients subjected to endoscopic sinus surgery and 12 normal volunteers undergoing septal or turbinate surgery. MCC was assessed intraoperatively using methylene blue over 20 minutes. MCC was designated as complete, incomplete or absent. All patients and controls had pre and postoperative sinonasal outcome scores (SNOT 20), transnasal and transmaxillary saccharin test

and preoperative computed tomography radiological staging. **Results:** FMP were more frequent in controls (75 %) than patients (40%) with no statistical significance. Delay, direction, site and duration of FMP were not statistically different in both groups. Six patients with no FMP (absent MMC in 5 and partial in one) had extremely prolonged transmaxillary saccharin times with no postoperative improvement.

Otherwise SNOT 20, transnasal and transmaxillary saccharin times improved significantly in patients. Controls had significant improvement and transmaxillary saccharin time. FMP correlated $r=0.636$ significantly with MCC ($r < 0.01$), trans nasal ($r = -0.7, p < 0.05$)

and transmaxillary ($r = -0.553$; $p < 0.05$) saccharin times. In a discriminant model the only predictive variables of FMP detection were MCC (positive) and transnasal saccharin time (negative) with total correction classification (91.2%). This study describes different characteristics of FMP. Our results suggest that FMP can be used as a marker of local MCC.

Keywords: Mucociliary, fast pathways, chronic rhinosinusitis, endoscopic sinus surgery.