

LINKING CHRONIC OTITIS MEDIA AND NASAL OBSTRUCTION: A CFD APPROACH

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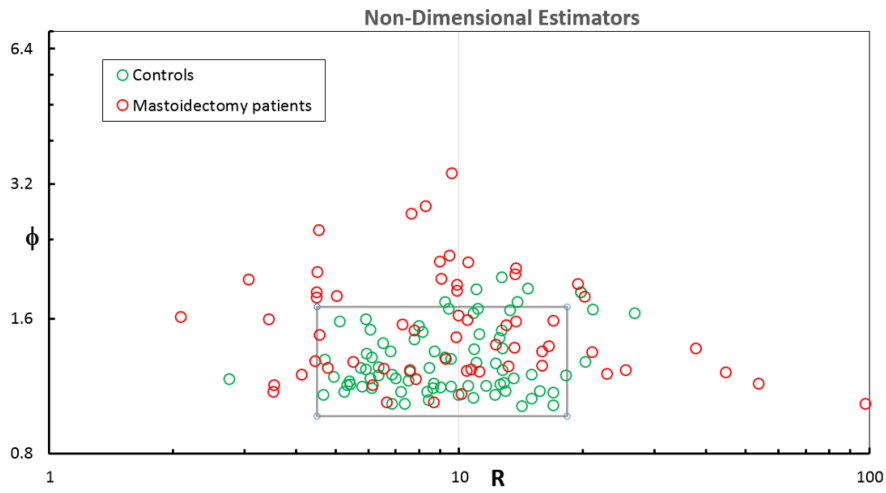
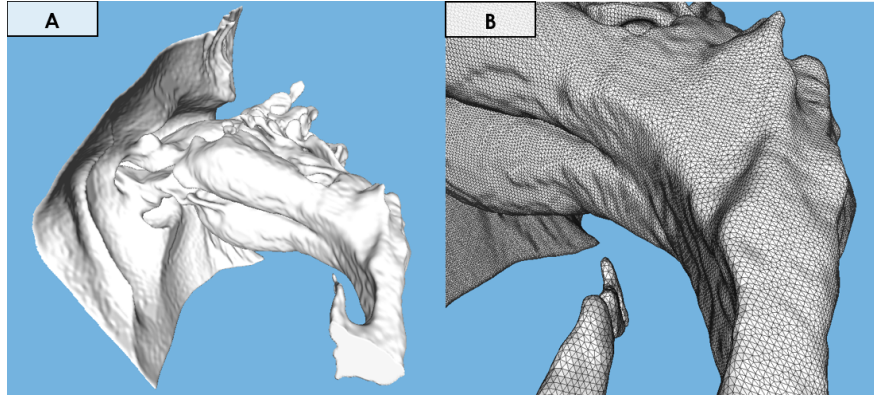
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Abstract

ABSTRACT OBJECTIVES: To investigate a possible relationship between altered nasal flow and chronic otitis media (COM) using computational fluid dynamics (CFD). **DESIGN:** Retrospective cohort sample of CT scans from patients with COM and controls without COM to compare the results of various nasal airflow parameters determined by CFD between a group of patients with COM (N=60) and a control group of subjects without any evidence of ear disease (N=81). **MAIN OUTCOME MEASURES:** The CT were subjected to various procedures to carry out CFD studies, determining the resistance to nasal flow, the proportion of flow through the right and left nasal cavity, and two nondimensional estimators. The results of CFD studies between patients with COM and controls were compared. **RESULTS AND CONCLUSIONS:** Whereas only 12.3% of the controls had CFD alteration (10 out of 81), 43.3% of the patients suffering COM displayed alterations of our nondimensional parameters (26 out of 60). According to our results, the incidence of alterations in nasal airflow by studying with CFD is significantly higher in patients with COM than in controls **IMPLICATIONS:** To our knowledge, this is the first paper linking nasal cavity and COM using a CFD approach. Our results support the hypothesis that nasal flow alterations could be implicated in the etiopathogenesis of the COM.

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