

# The association between the periodontal status and the thickness of maxillary sinus membrane using cone-beam CT

ABSTRACT n° 15547

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Type of presentation : : Poster Display

Clinical Research - surgery : Clinical research - peri-implant biology

I want to apply for a travel grant as : -

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If your research is accredited, please enter your accreditation number :

Keywords : CT Imaging, Diagnosis, Clinical assessment, Sinus floor elevation

Date of submission : 2019-04-25

Résumé [ 2539 Characters ]

## Background (500 characters maximum)

Maxillary posterior implant therapy is usually influenced by the anatomic structure of maxillary sinus and the conditions of mucosal membrane. In maxillary sinus lift surgery, the sinus membrane should be intact without causing inflammation. Common causes of odontogenic sinusitis are dental abscesses and periodontal disease.

## Aim/Hypothesis (300 characters maximum)

This study was conducted to determine the relationship between the periodontal condition of upper posteriors and the thickness of maxillary sinus membrane using cone-beam CT(CBCT).

## Materials and Methods (1000 characters maximum)

This study included 194 CBCT scans of dental patients. The thickness of the Schneiderian sinus membrane was evaluated at five points of reference(at the floor, at 3 mm and 10 mm, buccal and palatal) and the characteristics of the maxillary sinus membrane such as thickening and cyst were recorded by the criteria according to Patel et al.(1996) and Kanagalingam et al.(2009). Periodontal status of 378 posterior teeth was assessed by bone loss on available panoramic radiograph and available periodontal probing depth recording according to Arbes et al.(1999) and the periapical status was determined according to Lofthag-Hansen et al(2007). The thickness of the Schneiderian membrane was compared to the periodontal conditions by ANOVA and correlation analysis. Factors such as age, gender, or periapical status of the remaining adjacent posteriors that may affect the sinus membrane thickness were also evaluated using multivariate linear regression models.

## Results (1000 characters maximum)

The thickness of the Schneiderian membrane exhibited a wide range (0.3 mm - 31.0 mm) and was significantly associated with the radiologic periodontal status ( $r=0.29-0.36$ ,  $p<0.001$ ). The linear regression model showed an association between both radiologic periodontal state and palatal probing depth, and the thickness of the Schneiderian membrane. Age, sex, or other dental status were not associated with the sinus mucosal thickening. Mucosal thickening was common in moderate to severe periodontitis (57.1 and 48.3%, compared to 16.7 in healthy to mild periodontitis ) and mucosal cyst was significantly more frequent in severe periodontitis (21.7%, compared to 0-1.4% in healthy to moderate periodontitis,  $p<0.001$ ).

## Conclusions and Clinical Implications (500 characters maximum)

Severe periodontal bone loss was significantly associated with mucosal thickening of the maxillary sinus and mucosal cysts. Periodontally compromised patients need to be properly diagnosed and managed prior to implant therapy. Future studies are needed to assess the therapeutic and prognostic impact of mucosal alterations in the maxillary sinus.

## CONFLICTS OF INTEREST

**Interest link in the last three years, with the following companies :**

**Research support/Scientific studies: NON**

**Consultancy, Expert: NON**

**Trainings, Teaching: NON**

**Advertising documents: NON**

**Invitation to national or international congresses: NON**

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**Patent or product inventor:NON**