

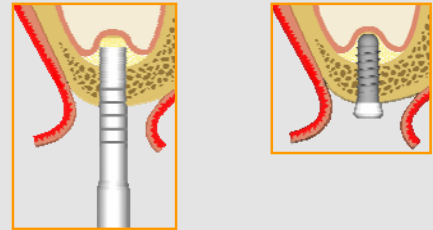
R. NEDIR <sup>(1)(2)</sup>, L. VAZQUEZ <sup>(2)</sup>, N. NURDIN <sup>(1)</sup>  
 S. SZMUKLER-MONCLER <sup>(1)</sup>, J.P. BERNARD <sup>(2)</sup>, M. BISCHOF <sup>(1)(2)</sup>

(1) CdR Clinique de Soins Dentaires  
 Swiss Dental Clinics Group, Vevey  
 Switzerland

(2) Department of Stomatology and Oral Surgery  
 School of Dental Medicine, University of Geneva  
 Switzerland.

## OBJECTIVES

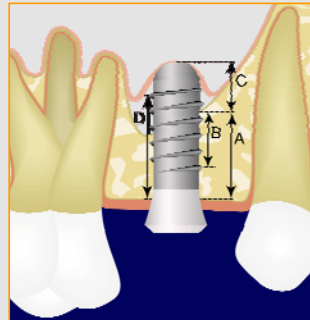
Few accurate data are available in the literature about bone preservation and bone level changes of implants placed with an osteotome sinus floor elevation (OSFE) procedure in the resorbed posterior maxilla. The aim of the present prospective pilot study was to assess the three-year bone levels around ITI-SLA implants placed with an OSFE technique without grafting material and to evaluate the predictability of the procedure. Implant success rate, gained endo-sinus bone, implant length protruding into the sinus and crestal bone loss (CBL) were measured and analyzed. It is the first prospective study that reports a 3-year follow-up implant placement with an OSFE without grafting material.



OSFE procedure gives access to the sinus membrane through a crestal approach with sinus osteotomes. This technique is less invasive and less time consuming than lateral sinus lift procedure.

## MATERIAL & METHODS

- Number of patients:** 17 consecutive patients
- Mean age:** 54.2 ± 9.6 years (from 38 to 69 years)
- Procedure:** OSFE without grafting material
- Implants:** 25 Straumann SLA implants  
 10, 8 and 6 mm in length
- Implantation sites:** 16 molar sites  
 9 premolar sites
- Residual bone height:** 5.4 ± 2.3 mm (A see figure)
- Protruding length:** at least 2 mm
- Healing period:** 3.1 ± 0.4 months
- Restorations:** 4 single crowns  
 13 fixed partial dentures



Parameters measured on radiographs:

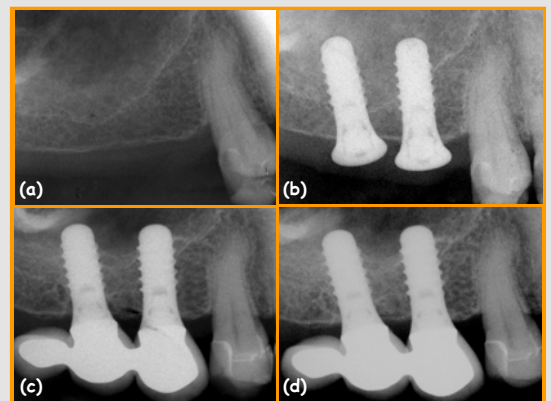
- A:** residual bone height under the sinus.
- B:** distance from the most coronal implant thread to the most apical visible implant-bone contact.  
 B increase: endo-sinus bone gain.
- C:** implant length protruding in the sinus.
- D:** distance from the most coronal bone-implant contact to the most apical implant thread.  
 D decrease: crestal bone loss.

## RESULTS

Measured parameters	Endo-sinus bone height B (mm)	Implant protruding length C (mm)	Crestal bone height D (mm)
after implant placement	2.5 ± 1.9	4.9 ± 2.1	7.4 ± 1.4
After 1 year	5.0 ± 1.4	2.2 ± 1.1	6.1 ± 1.3
After 3 years	5.6 ± 1.5	1.8 ± 1.1	6.4 ± 1.4

Parameters measured on the radiographs taken immediately after implant placement, at the 1-year and 3-year control.

Three years after placement, all implants fulfilled success criteria. The mean endo-sinus bone gain was 3.1 ± 1.5 mm. The residual protrusion length was reduced to 1.8 ± 1.1 mm and the mean CBL was 0.9 ± 0.7 mm.



Radiographic evolution of sinus demarcation:

- (a) before implant placement
- (b) immediately after placement
- (c) after 1 year
- (d) after 3 years

## CONCLUSION

All implants gained endo-sinus bone during the first year (mean increase of 2.5 ± 1.2 mm) and this gain has slightly increased for most of them over the two following years of survey. Endo-sinus bone gain reached 3.1 ± 1.5 mm after 3 years. Despite absence of grafting material, implants were embedded into newly formed bone tissue. This autogenous bone has grown through a natural repair mechanism within the dome space created by the implant. The CBL was limited after one year and remained stable after three years. Implant apex tended to level with the sinus floor. Although treated maxilla exhibited low bone height at implant placement, the endo-sinus bone gained during the first year and maintained along the following two years led to a predictable long-lasting implant function. OSFE without grafting material is a promising technique to treat atrophic maxillae situation with low residual bone height.