

Sinus Floor Augmentation

4. What should be done if the sinus membrane becomes perforated?

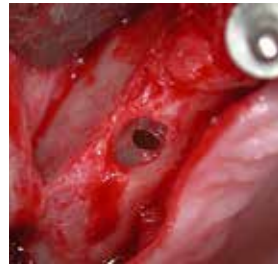


Fig. 1 Frequent nose blowing test allows early detection of a perforation.



Fig. 2 The sinus mucosa is elevated further around the site of the rupture.



Fig. 3 The site of the rupture decreases in size due to the elevation/detachment of the mucosa.



Fig. 4 The Geistlich Bio-Gide® membrane is inserted in a funnel-shape...



Fig. 5 ...and spread over the site of the rupture.



Fig. 6 X-ray image 2 1/2 years after surgery.

5. Instruments



Fig. 1 Benex sinus elevators (Article Nos. 41.848.41 and 41.848.42).



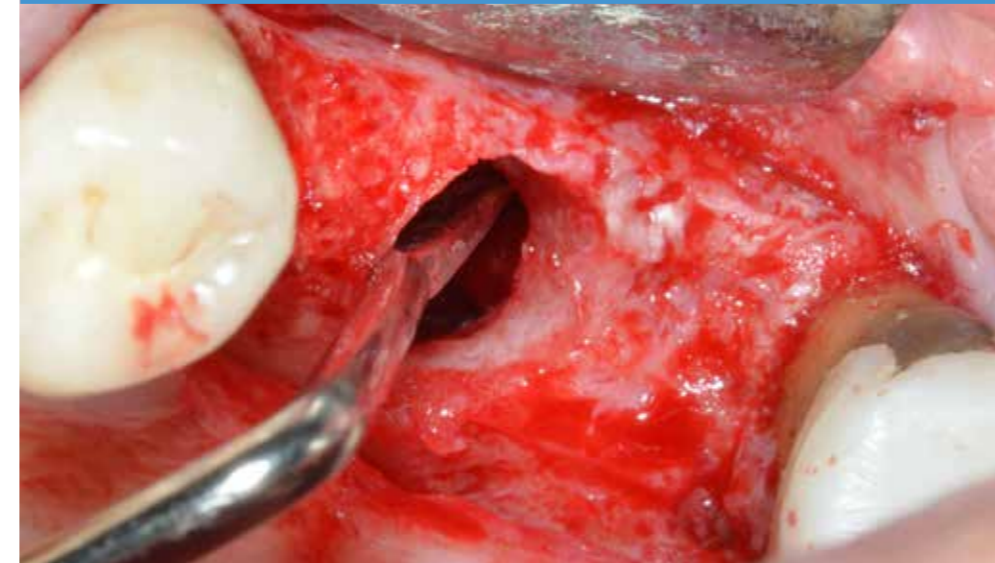
Fig. 2 Profile drills for Straumann TE implant. The instrument tip has to be rounded, must not be allowed to cut.

6. Obtainable from

Benex Sinus Elevators
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Treatment concept by Dr. Benno Syfrig, Private practice, Lucerne

- > Sinus floor augmentation with the Benex elevators and Geistlich Bio-Oss®
- > Demonstration of the transcresal, single-step procedure



1. Indication profile

Augmentation technique subject to residual bone height	<ul style="list-style-type: none"> ■ Standard implantation without augmentation: > 8 mm residual bone height ■ Osteotome technique: not applied ■ Single-step procedure: > 2 - 3 mm bone height ⊗ Single-step procedure: with any residual bone height ■ Dual-step procedure: < 2 - 3 mm bone height
Use of autologous bone	<ul style="list-style-type: none"> ■ Yes ⊗ No
Membrane application	<ul style="list-style-type: none"> ■ through the lateral fenestration ⊗ In the event of perforations to the sinus membrane in order to cover the tears
Implant loading	<ul style="list-style-type: none"> ■ 2 months after implantation with two-step procedure ■ 4 months after augmentation and implantation ⊗ 6 months after augmentation and implantation with single-step procedure

Literature references

- 1 Katsuyama H., Jensen S.S (2011). Mögliche Behandlungsformen zur Anhebung des Kieferhöhlenbodens (Possible treatment options for elevating the sinus floor). ITI Treatment Guide, Vol 5 Quintessence Publ.
- 2 Summers R.B. A new concept in maxillary implant surgery: the osteotome technique. 1994; Compendium 15(2):152, 154-156, 158 passim; quiz 162
- 3 Syfrig B. Eine neue Operationstechnik für eine minimal-invasive Sinusbodenaugmentation (Benex-Sinuslift): prospektive Einzelzentrum-Kohortenstudie (A new surgery technique for minimally invasive sinus floor augmentation (Benex Sinus Lift): prospective single site cohort study. Deutscher Ärzte-Verlag, zzi,Zahnärztl Impl, 2010; 26(1)
- 4 Tatum O.H. Jr. Maxillary and sinus implant reconstructions. 1986; Dent Clin North Am 30(2): 207-29

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Further indication sheets

- > To obtain free of charge please contact: fragen@karrdental.ch

Background information

Dr.med., med.dent. Benno Syfrig:

"For implantation in an atrophied, lateral maxilla a sinus floor augmentation often cannot be avoided. There are various known surgery methods for sinus floor elevation. The methods of choice are the lateral fenestration technique or the transcrestal technique and a single-step or dual-step procedure (H.Katsuyama, ITI Treatment Guide, 2011). Guidelines for choosing techniques in the literature often match the ITI-Treatment Guide. The crucial factors in choosing techniques are the subantral bone height and the sinus floor profile (flat or inclined). The method shown here can be performed with any residual bone height and with any sinus floor anatomy. The surgical access is analogous to the transcrestal technique (Summers, 1994), but implant site preparation and elevation of the Schneiderian membrane is done in accordance with the lateral fenestration technique (Tatum, 1986). The sinus graft consists of just bone replacement material (Geistlich Bio-Oss®) without any autologous bone being added."

2. Focus of this case presentation

- > Step-by-step depiction of sinus floor augmentation with Geistlich Bio-Oss® with concurrent implantation, transcrestally using Benex Sinus Elevators.

3.1 Surgical procedure: subantral bone height over 3 mm



Fig. 1 Preoperative X-ray image.



Fig. 2 Trepanation of the alveolar ridge with the implant drill down to the sinus corticalis.



Fig. 3 The finest, convex osteotome is used to make perforations in the sinus corticalis at the edge of the canal (predetermined breaking points).



Fig. 16 Buccal view 23 months after surgery.



Fig. 17 Palatal view 23 months after surgery.



Fig. 4 Then the sinus is split open, max. one millimeter above the sinus floor corticalis. First with the convex, then with the concave, broad osteotome.



Fig. 5 Elevation of the sinus mucosa with the Benex Sinus Elevator.



Fig. 6 Nose blowing test: inhaling.



Fig. 7 Nose blowing test: exhaling.



Fig. 8 The implant bed is widened with the profile drill and the implant position is determined.



Fig. 9 The bone substitute is introduced (Geistlich Bio-Oss®, 0.25 - 1 mm).



Fig. 1 Preoperative image, excerpt from OPT. Subantral bone height < 3 mm.



Fig. 2 The sinus access is produced with a round diamond drill, without implant drill.



Fig. 3 Detaching/Elevating the sinus mucous membrane with the Benex Sinus Elevator.

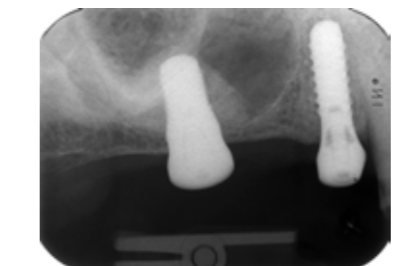


Fig. 13 X-ray verification after surgery.



Fig. 14 Site 14 days after surgery when the stitches are removed.



Fig. 15 Site 4 months after surgery.

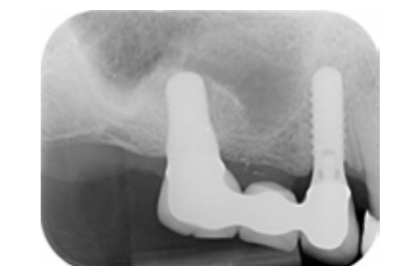


Fig. 16 X-ray verification 7 years after surgery.



Fig. 17 Buccal view 7 years after surgery.



Fig. 18 Palatal view 7 years after surgery.



Fig. 10 Pulsating prodding motions with the fine, convex osteotome distribute the Geistlich Bio-Oss® particles beneath the mucosa.



Fig. 11 Verification with the mirror before insertion of the implant.



Fig. 12 Wound closure with 2 backstitch sutures.



Fig. 4 The mucosa is detached circularly with the end of the instrument (constant contact with the bone)...



Fig. 5 ...and elevated with the back of the instrument...



Fig. 6 ...up to approx. 5 mm from the crestal level.

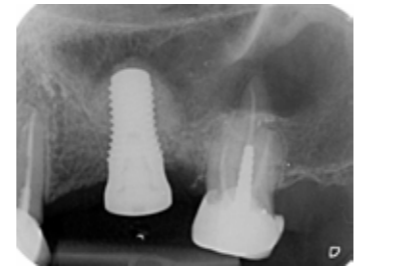


Fig. 13 X-ray image immediately after surgery.



Fig. 14 Clinical situation 7 weeks after surgery.

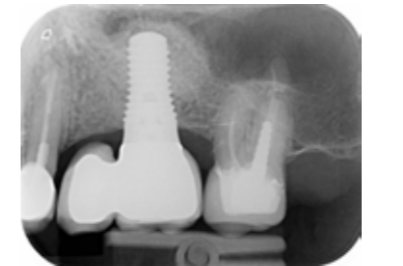


Fig. 15 X-ray image 23 months after surgery.



Fig. 7 Then the access is widened with the profile drill...



Fig. 8 ...and the mucosa is raised further with the Benex Elevators...



Fig. 9 ...up to approx. 8 mm from the crestal level.



Fig. 10 The final implant position is determined with the profile drill.



Fig. 11 Geistlich Bio-Oss® granules (0.25 - 1 mm) are introduced.



Fig. 12 Excess particles are removed and the implant is inserted.

3.2 Surgical procedure: subantral bone height under 3 mm