The Sinus implant. A case series on Neoss 6.5 mm ProActive implant for sinus elevation

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This article presents five cases where a one-visit approach is used for sinus elevation surgery. The article also summarizes the clinical outcome of the 99 patients treated with the Neoss ProActive 6.5 mm implants. One implant of the 161 placed has failed, resulting in a survival rate of 99.4%.

INTRODUCTION
Sinus elevation procedures that aim at increasing the available bone in the upper jaw for implant anchorage have historically been very invasive and time consuming.

A novel method where tooth extraction, sinus lift, placement of wide implants (ProActive 6.5 mm implants, Neoss, Harrogate, UK) and placement of the healing abutment are done in one single visit, has been described. This method is less invasive and the combined healing time can be reduced to 3-4 months.¹

The aim of the present article is to present clinical cases where this novel surgical procedure is used, and to report preliminary results on the use of Neoss ProActive 6.5 mm implants, predominantly in sinus elevation procedures.

CASE REPORTS
Five clinical cases are presented where the one-visit sinus lift procedure is utilized. Three of the cases were done using the lateral approach and the remaining two cases using the crestal approach.

Case 1: One-visit lateral sinus lift. 52 years old female with severe periodontitis. This case was treated in June 2013 and it was the first patient ever to be treated with a Neoss ProActive 6.5 mm implant.


B: Initial radiograph shows periodontal problems and limited residual bone height below the sinus.

C: First upper molar extracted.
Case 1: continued

D: CBCT after extraction.

E: A small lateral window is drilled using a specialized drill kit (Sinus Lateral Approach Kit, Neobiotech).

F: A resorbable collagen membrane (Bio-mend, Zimmer Biomet) is fitted to protect the very thin Schneiderian membrane.

G: Collagen membrane in place

H: The augmentation is filled with a hydrated particulate allograft (Puros, Zimmer Biomet).

I: The first Neoss ProActive 6.5 x 11 mm implant.

J: Implant insertion.

K: Good primary stability is achieved (ISQ 80/75). Compaction of graft material is achieved.

L: The lateral window is covered with a resorbable collagen membrane (CopiOs, Zimmer Biomet)

M: CBCT after implant placement. After 4 months of healing, ISQ increased to 85/85.

N-O: Clinical situation 2 years post-loading.
Case 2: One-visit lateral sinus lift. 50 years old female with severe periodontal problems in the first molar area.

A: Residual bone height 2 mm only.
B: A lateral window (Ø 5.5 mm) is drilled.
C: The Schneiderian membrane has been lifted, and the implant osteotomy is prepared.

D: The last drill in the drill sequence is the 6.5 mm Counterbore.
E: Fitting of collagen membrane.
F: Collagen membrane in place covering the Schneiderian membrane.

G: Augmentation filled with particulate allograft.
H: Insertion of a 6.5 x 9 mm implant. An insertion torque of 40 Ncm and ISQ 66 is reached, indicating good stability.
I: A PEEK healing abutment is connected, and the flap is closed.

J: Radiograph at implant placement. Note the limited bone height.
K: After 4 months, at time of loading, ISQ has increased to 77. Note the increase in bone quality around implant.
L: Clinical situation 12 months after loading.
**Case 3: One-visit lateral sinus lift.** 84 years old female. Decay in the premolar area, molar teeth missing. Patient already had implants 20 years ago. Wanted fixed teeth while not undergoing too many operations.

**A:** CBCT image of clinical situation before treatment.

**B:** CBCT analysis. Residual bone height is 3mm in the first premolar area, 2.5 mm in the second premolar area, and only 1.5 mm in the first molar area.

**C:** Initial situation.

**D:** First and second premolars extracted.

**E:** Lateral window opened to expose the Schneiderian membrane. Two cysts (arrows) to be removed.

**F:** Sinus membrane lifted and cysts removed.

**G:** The two implant sites are prepared. Note the extremely thin sinus floor (1.5 mm) in the molar area.

**H:** After filling with allograft material, a ProActive Tapered 4 x 13 mm implant is inserted in the first premolar area.

**I:** Insertion of a ProActive 6.5 x 11 mm implant in the first molar area.

**J:** Implant insertion parameters.

<table>
<thead>
<tr>
<th>Implant dimensions</th>
<th>First premolar</th>
<th>First molar</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stability (ISQ)</td>
<td>70</td>
<td>83</td>
</tr>
<tr>
<td>Insertion torque</td>
<td>32 Ncm</td>
<td>23 Ncm</td>
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</table>

**K:** Seated implants.
Case 3: continued

L: Healing abutments connected to the implants. Allograft material covering the perforated bone.

M: Grafting material covered with a collagen membrane (Biomend, Zimmer Biomet).

N: CBCT image directly after implant placement. Note the grafting material on top of the sinus floor.

O: After 4 months, the graft has been regenerated to bone and ISQ has increased from 70 to 77 and from 83 to 86.

P-Q: Clinical situation 17 months after loading.

Case 4: One-visit crestal sinus lift. 37 years old male with root resorption on first molar.

A: Upper first molar with root resorption. Residual sinus floor height 3 mm.

B: First molar extracted. Augmentation with crestal approach through the implant osteotomy.

C: Note the decreased invasiveness of the procedure compared to the lateral window cases.

D: Insertion of a ProActive 6.5 x 9 mm implant. Insertion torque 48 Ncm, ISQ 68/70.

E: PEEK healing abutment connected to implant for transgingival healing directly after surgery.

F: Good soft tissue conditions after 4 months healing.
**Case 4: One-visit crestal sinus lift**

G: Implant stability (ISQ) increased from 68/77 to 76/82 after 4 months healing.

H: Radiograph after 4 months healing show new bone around the entire implant.

I: Definitive prosthesis in place.

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**Case 5: One-visit crestal sinus lift. 62 years old male. First molar missing, decay second molar area.**

A: CBCT planning for two implants in the upper molar area.

B: Residual bone height 8 mm in the upper first molar area.

C: Residual bone height 10 mm in the upper second molar area.

D: Extraction of upper second molar. Since bone height is sufficient, a crestal approach is used.

E: Insertion of a ProActive 6.5 x 9 mm implant in the first molar area.

F: Implant insertion parameters.

<table>
<thead>
<tr>
<th></th>
<th>First molar</th>
<th>Second molar</th>
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<tbody>
<tr>
<td>Implant dimensions</td>
<td>6.5 x 9 mm</td>
<td>6.5 x 11 mm</td>
</tr>
<tr>
<td>Stability (ISQ)</td>
<td>77</td>
<td>70</td>
</tr>
<tr>
<td>Insertion torque</td>
<td>42 Ncm</td>
<td>38 Ncm</td>
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</table>

G: Soft tissue closure around PEEK healing abutments for transgingival healing.

H: CBCT images (two views) directly after placement. Palatal augmentation in first molar area clearly seen in second image.

I: Clinical situation 13 months after loading.
PRELIMINARY RESULTS

Ninety-nine (99) patients were treated with the 6.5 mm Neoss ProActive implant between June 2013 and June 2017. In total, 161 implants were placed.

Lengths of the placed implants are given in Table 1. The short 7 mm implant was introduced later than the 9 and 11 mm, therefore 7 mm implants are likely under-represented in this material. However, the data clearly shows that the 9 mm implant is by far the most used length and it indicates that this length is suitable in most cases.

Indications and treatment outcome are presented in Table 2. One implant failure occurred, out of 161 placed implants, resulting in a survival rate of 99.4%.

In conclusion, this case series has shown that 6.5 mm Neoss implants can be predictably placed using a one-visit sinus lift procedure. Primary implant stability can be achieved in cases with as little as 1.5 mm residual bone.

REFERENCES


<table>
<thead>
<tr>
<th>Implant length</th>
<th>7 mm</th>
<th>9 mm</th>
<th>11 mm</th>
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<tbody>
<tr>
<td>Number of implants</td>
<td>7</td>
<td>121</td>
<td>33</td>
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Table 1: Number of implants placed of each length.

<table>
<thead>
<tr>
<th>Indication</th>
<th>Number of patients</th>
<th>Implants placed</th>
<th>Failed implants</th>
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<tbody>
<tr>
<td>Lateral sinus lift</td>
<td>40</td>
<td>91</td>
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<tr>
<td>Crestal sinus lift</td>
<td>42</td>
<td>53</td>
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<td>Extraction site</td>
<td>16</td>
<td>16</td>
<td>0</td>
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<tr>
<td>Rescue implant</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>99</td>
<td>161</td>
<td>1</td>
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Table 2: Preliminary results.