Automatic crestal sinus lift by motorised impaction device

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Introduction

Implant placement on the upper jaw is often confronted with insufficient bone linked to the physiological pneumatisation of the maxillary sinuses at molar sites. Sinus lift is frequent, which may or may not be linked to the contribution of biomaterials. In this clinical case we consider the use of a new automatic device: Osteo Safe® (Anthogyr). It is an instrument that facilitates axial lifting by means of a motorised handpiece, associated with straight impaction inserts or bayonets (Fig. 1).

Case report

The patient undergoing treatment is 56 years of age. He presents with hypercholesterolemia that is being treated with statins, as well as an allergy to penicillin. The treatment site in section 2 (Fig. 2) presents (Fig. 3) an additional wisdom tooth on radiological examination, ankylosed with a resorption process of its structure. No symptomatology is observed and there is no communication with the buccal environment. Its intrasinusal emergence could potentially be at risk during an extensive filling by lateral means. Owing to the crestal approach and the limited and localised increase at the apex of implants, it was decided to leave it *in situ*.

The cone beam shows a bone height of 6 mm measured at sites 26 and 27 (Figs. 4 & 5). Conventional premedication is prescribed (antibiotic therapy + corticotherapy flash + level-one anal-

Fig. 1: Osteo Safe® Kit.
Fig. 2: Preoperative clinical view.
Fig. 3: Preoperative panoramic view.
Figs. 4 & 5: Preoperative subsinus height at 26–27.


Fig. 1

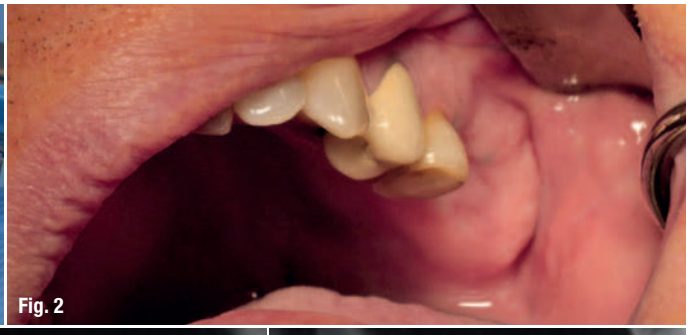


Fig. 2

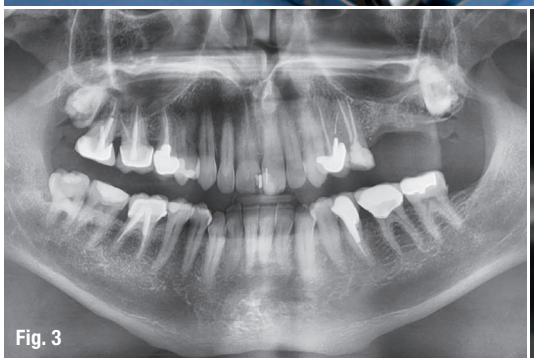


Fig. 3

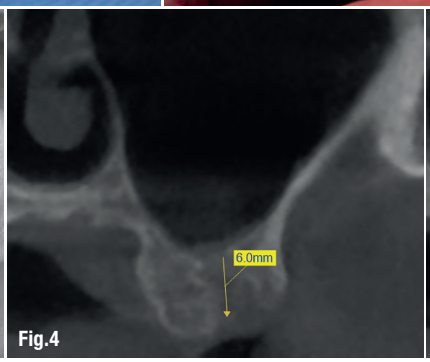


Fig.4

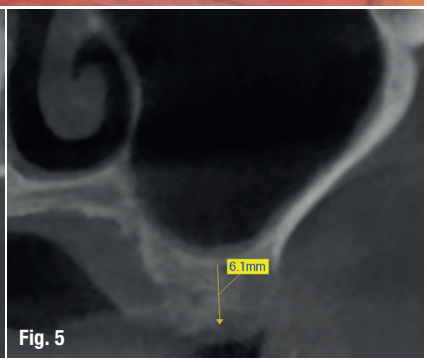


Fig. 5

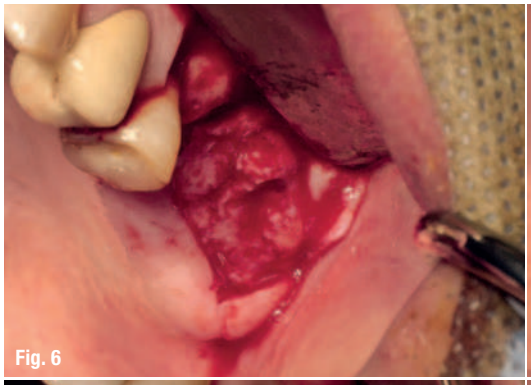
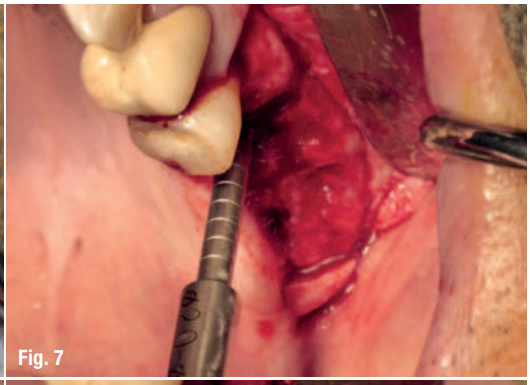


Fig. 6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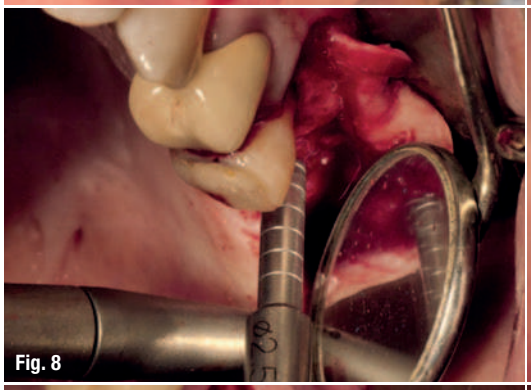
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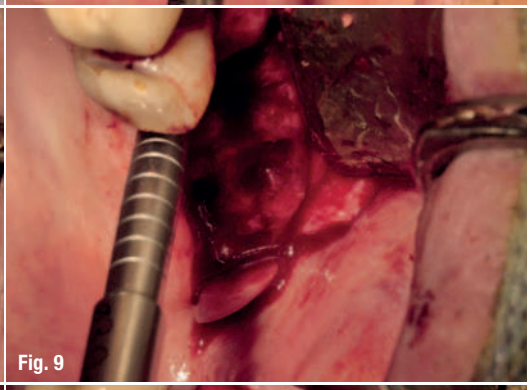


Fig. 9

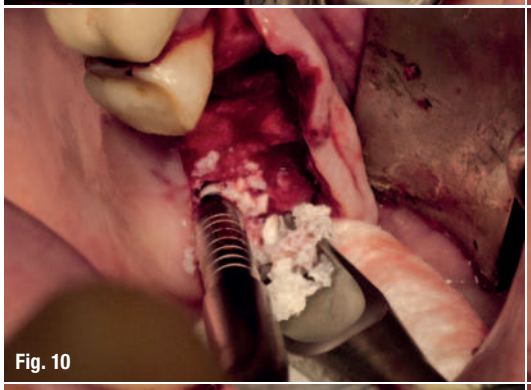
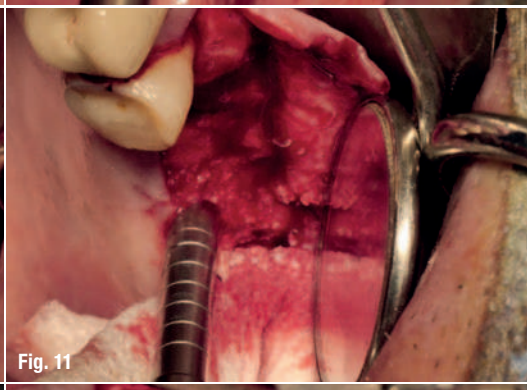


Fig. 10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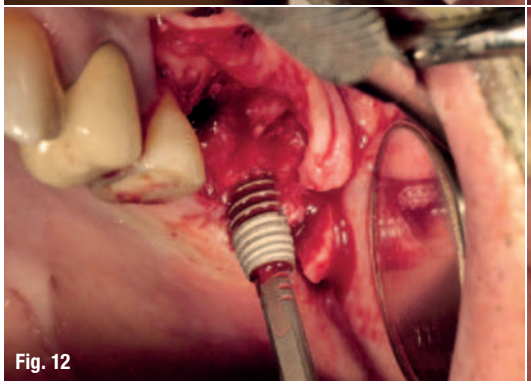
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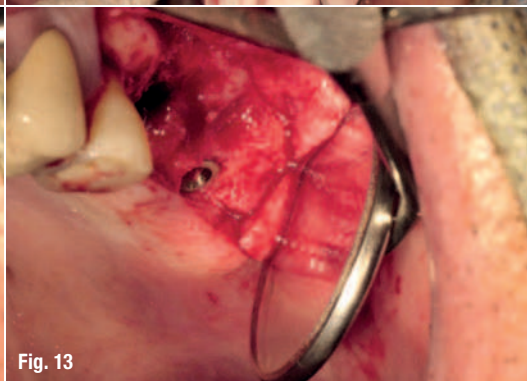
Fig. 13

Fig. 6: Open-flap view.
Fig. 7: 1st Osteo Safe® insert (diameter 2.0–2.8 mm).
Fig. 8: 2nd Osteo Safe® insert (diameter 2.5–3.3 mm).
Fig. 9: 3rd Osteo Safe® insert (diameter 3.0–3.9 mm).
Fig. 10: Biomaterial filler.
Fig. 11: Lifting the membrane by condensation.
Fig. 12: Implant placement.
Fig. 13: Implant in place.

gesic + mouthwash). A thick skin flap is indicated (Fig. 6). The molar sites are indexed and mechanised osteotomes of increasing diameters are used to widen the sites and the fracture of the sinusal floor (Figs. 7, 8 & 9). A biomaterial is used in order to lift the membrane by condensation (Figs. 10 & 11).

The osteotomies must not penetrate the sinusal cavity and in this case must not exceed 5 mm of insertion. This dimension corresponds to 6 mm measured initially, minus 1 mm for safety. The volume of material inserted depends on the gain that is required, namely for a gain of 4 mm, around 0.5 cc per implant site in this particular case. Implants with dimensions of 4.6/10 mm are inserted at sites 26 and 27, while maintaining the bleeding on contact with the implant (Figs. 12 & 13). Hydrophilia of the implant surface must be noted.

Figs. 14 & 15: Stable bone volume at the implant apex in 26–27.
Fig. 16: Simeda customised abutments.
Fig. 17: Customised abutments in the patient mouth.
Fig. 18: X-ray control of the customised abutments.
Fig. 19: Ceramo-metallic crowns.

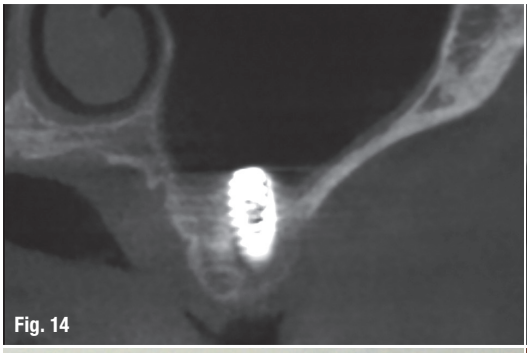
Fig. 14

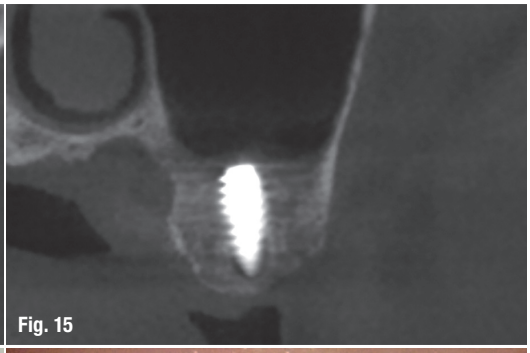
Fig. 15


Fig. 16

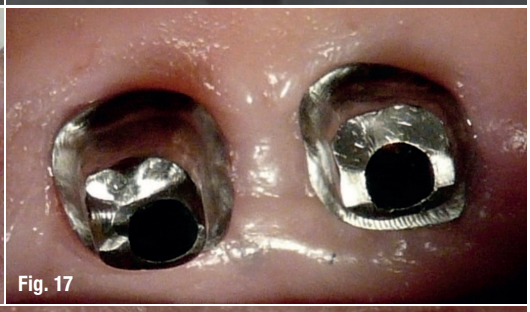
Fig. 17

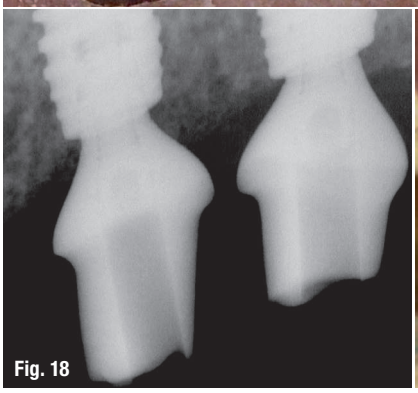
Fig. 18

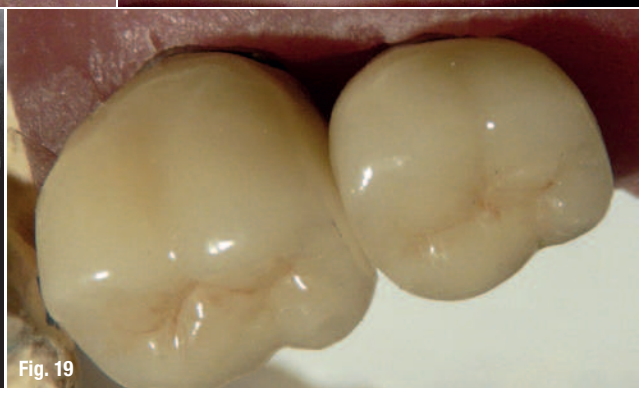
Fig. 19

Postoperative effects are moderate and the pain is contained by level-one analgesics (Paracetamol); the symptoms abated within 48 hours. The X-ray controls every four months show stabilised bone volume at the apexes of the implants (Figs. 14 & 15).

The patient is then given an appointment to take impressions. Two short pop-in transfers and a closed impression holder were used, with the aim of inserting two separate crowns. A retroalveolar control X-ray was taken, although there was no doubt about the correct positioning of the transfers.

Two customised abutments (made by Simeda, Anthogyr) with a juxtagingival homothetic preparation (Fig. 16) were ordered. The prosthodontist, Christophe Gigandet, made two single ceramo-metallic crowns with non-precious metal frameworks (Fig. 19). The abutments were placed in the patient's mouth and adjusted with strict adherence to the gingival contour (Fig. 17).

An X-ray was taken to check how well the structures had adapted (Fig. 18). The points of contact and the occlusion were examined. After filling the access cavities of the abutments, the crowns were sealed with glass ionomer cement (GC FujiCEM 2). The juxtagingival limits facilitate an easy and complete cleaning of the cement excess.

Conclusion

The Osteo Safe® mechanised procedure enables better control of the power of impacts in these crestal sinus lift indications. This system significantly reduces the learning curve as a result of the regularity of the impacts at constant power (non-operator dependent).

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