

The atrophic crest

Vestibular cortical stabilisation with bone graft

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Introduction

The insertion of implants in atrophic bone crests can easily create fenestrations in the coronal part of the implant site. For this reason, many authors advocate using GBR (guided bone regeneration) to prevent possible dehiscence in the post-surgical phase and to guarantee the survival of implants, which is attributed to adequate bone thicknesses in the cortico-vestibular portion of the crest.¹⁻² Vestibular bone loss is frequently caused by the technique used to prepare the implant site, that, for insertion of an implant of Ø3.75 mm diameter, usually anticipates an osteotomy with a drill of at least Ø3.2 mm diameter.³ In these cases, the use of self-tapping implants and auto-condensers enables us to reduce the osteotomy to a Ø2.8 mm diameter drill, making it possible to save at least 0.4 mm of vestibular cortical bone, fundamental in obtaining an optimal aesthetic and functional result that is long-lasting.⁴

Case overview

A patient, female, 45-years old, non-smoker, without any particular problems in her medical history, presented complaining about a problem in the mandibular left quadrant. The physical examination revealed bridge decementation of the teeth 35, 36 and 37. Simply redoing this bridge as impossible, due to the absence of an adequate ferrule as well as uncertainty regarding the long-term prognosis for tooth 37. It was decided, therefore, to replace tooth 36 with an implant and GBR with a resorbable membrane and heterologous graft.

Extraoral examination

The patient was normotrophic with regard to soft tissues and the perioral musculature without significant asymmetries of the face.

Intraoral examination

Intraoral examination showed a good level of oral hygiene, some signs and facets of dental wear as well as an absence of mobility problems (Fig. 1).

X-ray examination

The preoperative oral X-ray (Fig. 2) suggests that tooth 37 has an uncertain long-term prognosis as bridge abutment. The CBCT (Figs. 3a & b) shows the crestal bone to be very thin, but of adequate height for the insertion of an implant of 13 mm in length.

Materials used

- The following materials were applied:
- NeO implant Ø3.75 x 11.5 mm (Alpha-Bio Tec., Israel) in zone 36
 - Resorbable collagen membrane
 - Xenograft
 - PTFE 4-0 suture (Omnia, Italy).

Treatment objectives and work plan

The treatment plan included a pre-implant hygiene session. Proper positioning of the implant will require

Fig. 1: Frontal view of the patient.

Fig. 2: Ortho-panoramic X-ray.



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Figs. 3a & b: CBCT with implant planning.

Fig. 4: Flap incision.

Fig. 5: Occlusal view of the gap.

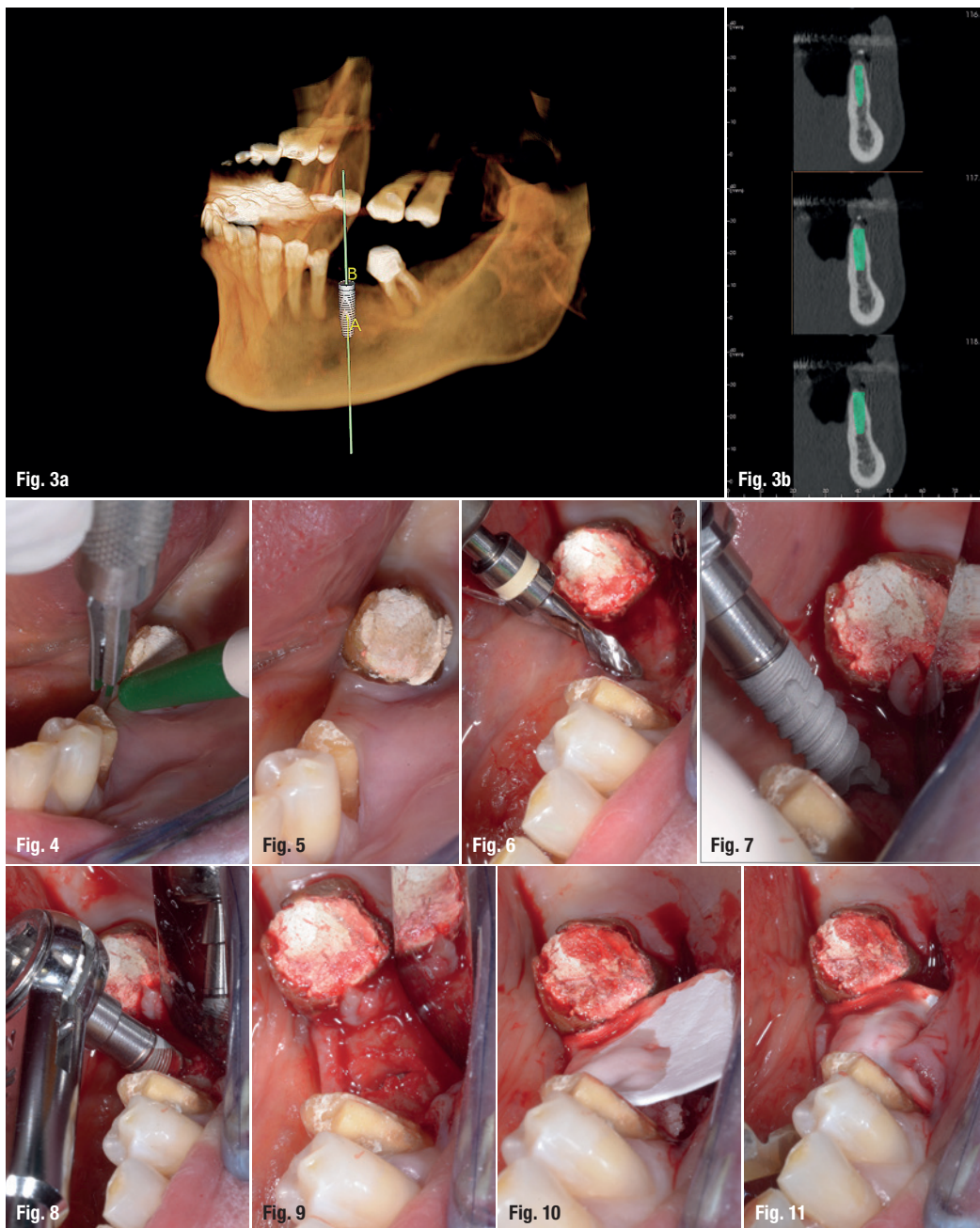
Fig. 6: Preparation of implant tunnel.

Fig. 7: Manual insertion of the implant.

Fig. 8: Subcrestal insertion of the implant.

Fig. 9: Subcrestal insertion of the implant.

Figs. 10 & 11: Regeneration with resorbable membrane and heterologous bone.



an increase in volume from the vestibular side for the restoration of correct tissue harmony and a correct emergence profile of the prosthetic crown. Several post-surgical follow-up visits are planned at two, four, seven and 14 days to disinfect the incision with chlorhexidine and to check for possible dehiscence of the flap. The prosthetic phase will be carried out approximately four months after the positioning of the implant and consists of a zirconia and ceramic crown on a titanium abutment.

Surgical phase

After plexus anaesthesia, performed with mepivacaine 1:100.000 both in the vestibular and lingual fornx, a crestal incision was made without releasing

cuts, so as not to reduce the vascularisation of the flap, as predicted by the CBCT (Figs. 3a, b & 4).

Flap incision

The bone crest appears very thin, but of adequate height for the insertion of an implant of 13 mm (Fig. 5). In order to minimise possible vestibular fenestration in the sub-crestal positioning of the implant of $\varnothing 3.75 \times 11.5$ mm, we decided upon a 13 mm preparation of the site, beginning the drilling sequence with a 2 mm stop drill. The osteotomy was stopped at the 2.8 mm diameter drill (Fig. 6). The implant was inserted using a manual ratchet and stabilised in a sub-crestal position with approximately 50 Ncm of torque (Figs. 7-9).

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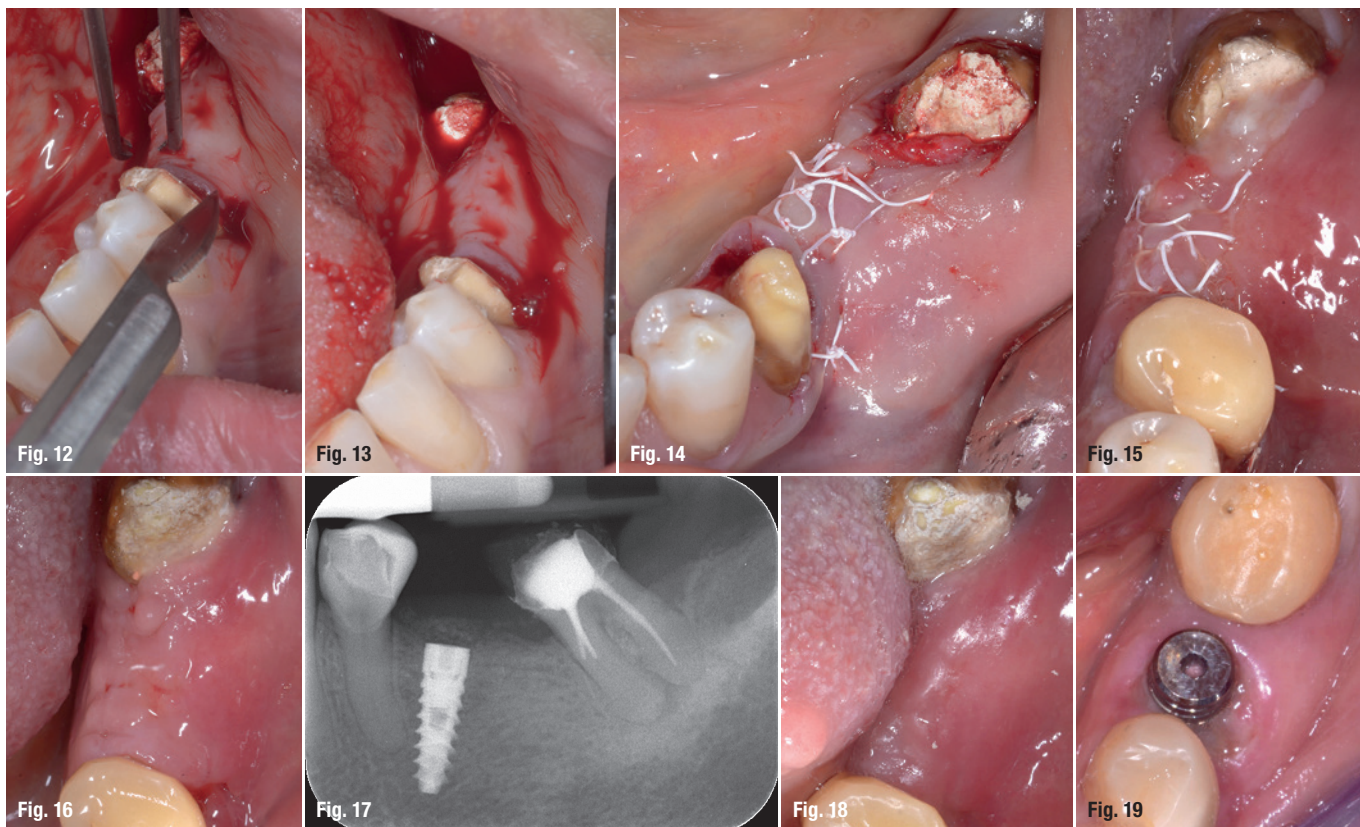
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Figs. 12 & 13: Release of the flap and primary intention closure.
Fig. 14: Suture.
Fig. 15: Suture follow-up at 15 days.
Fig. 16: Suture removal at 15 days.
Figs. 17 & 18: X-ray and tissue healing after four months.
Fig. 19: Healing abutment.

Although no vestibular fenestration was observed at the time of surgery, it was decided to increase the vestibular cortical bone thickness, since some portion of this bone is usually resorbed after implant placement. First, the resorbable membrane was stabilised lingually and, after filling the relevant zone with heterologous bone, the membrane was folded down on the vestibular side to protect the graft (Figs. 10 & 11).

The surface of the membrane was then disinfected with a 0.2% chlorhexidine solution, and the flap was closed passively in order to obtain a first degree closure without traction on the suture (Figs. 12 & 13).

Two lines of sutures were executed, the first with horizontal external mattresses, later stabilised by a second line of separate points more coronal to the first (Fig. 14). The patient was discharged with the following drug regimen: rinses with 0.12% chlorhexidine dielugonate for 60 seconds twice a day, antibiotic therapy with amoxicillin and clavulanic acid—one tablet of 875 mg twice a day, ice on the first day and a semiliquid diet for the first week. At 15 days after surgery, follow-up was performed to verify the healing of the tissues (Fig. 15).

After removal of the suture, the site did not show signs of dehiscence of the wound (Fig. 16). The successful osseointegration of the implant is visible on the four-month follow-up X-ray and all tissues ap-

pear to be well healed (Figs. 17 & 18). A healing abutment was then inserted (Fig. 19).

Outcome

The case will be finalized and updated in the next few months with the delivery of the final prosthetics to the patient.

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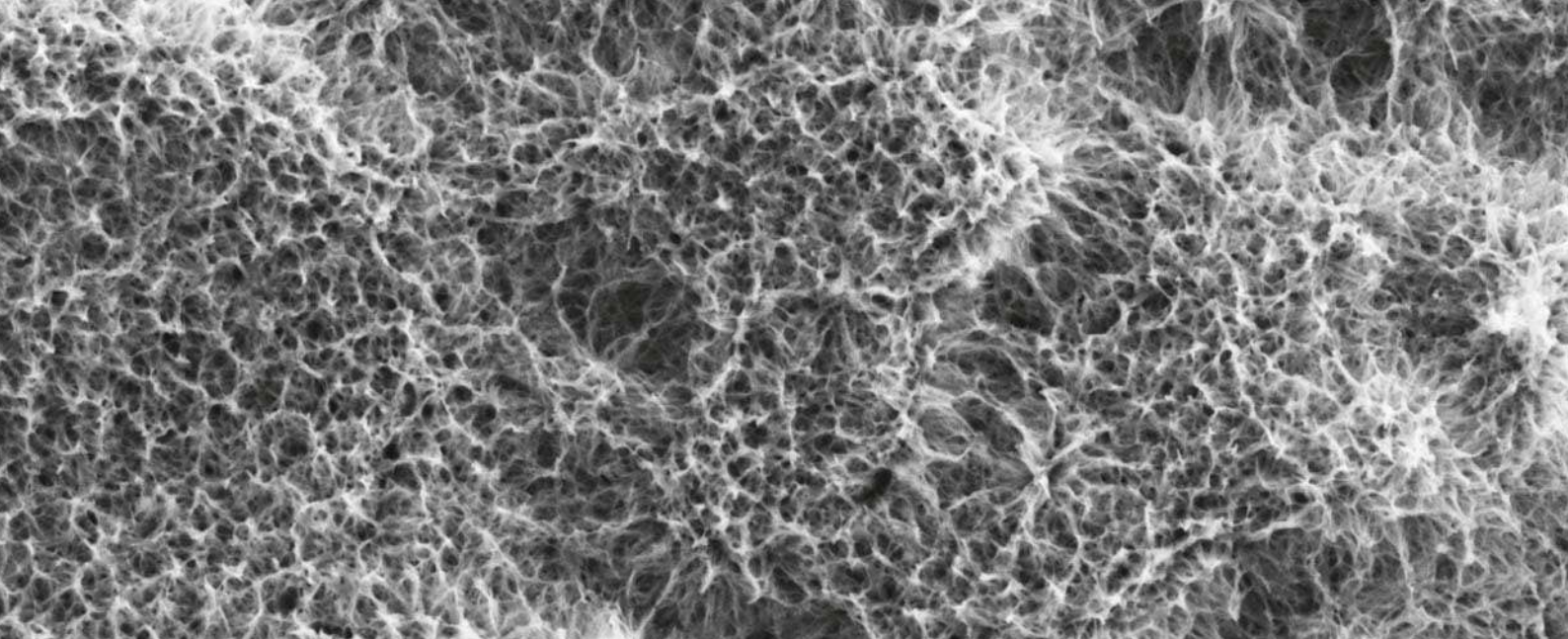
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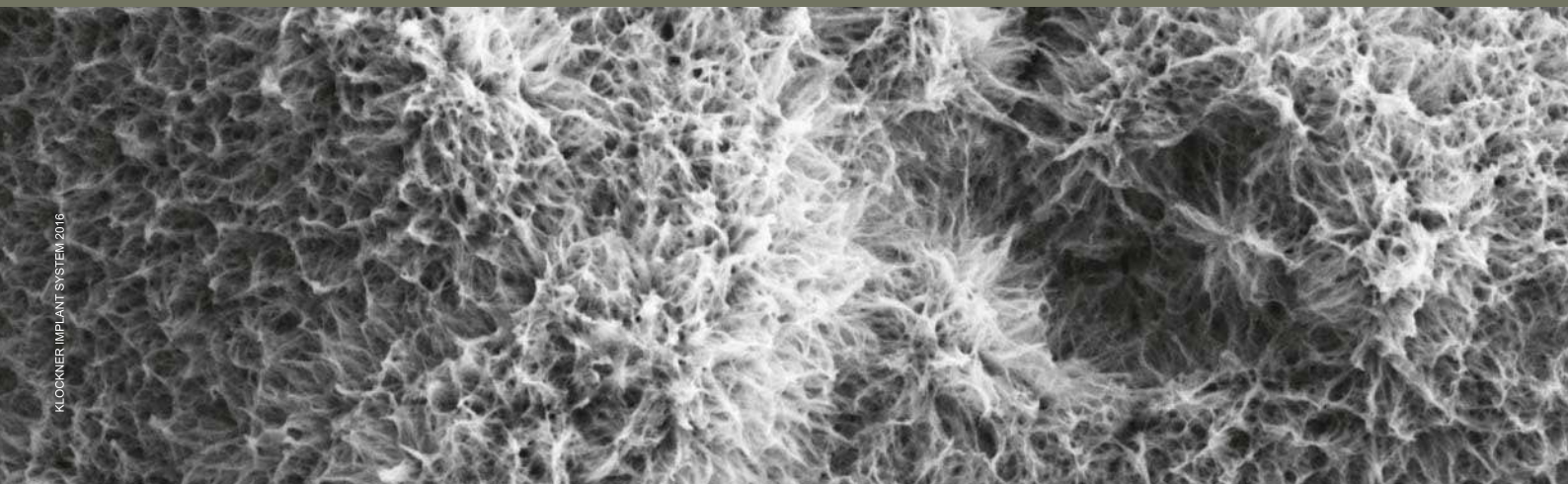


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