

Screw-retained restoration of a maxillary first premolar

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Dental implants are widely accepted as a successful method for replacing missing teeth. The success of dental implant treatment depends on many factors, such as implant design, surgical technique, bone quality and patient factors. The aim of this case report is to present a step-by-step description of the implant treatment and restoration of a patient who had lost a maxillary first premolar, from the initial osteotomy preparation to the final restoration.

Case presentation

A 71-year-old female patient presented to our practice with a heavily restored dentition. She had lost her crowned maxillary right first premolar due to root fracture three months before (Fig. 1) and wanted a fixed restoration. Pre-op radiographic assessment confirmed that

there were no anticipated issues (Fig. 2). After a detailed examination, a treatment plan was drawn up. We decided to place a screw-retained crown supported by an OmniTaper EV implant (Dentsply Sirona).

A full-thickness envelope flap was raised with relieving incisions, and the initial small round guide drill was used to mark the implant position. The site was enlarged with OmniTaper drills of different diameters, following the recommended drilling protocol. The initial osteotomy preparation was performed with a 2 mm diameter OmniTaper drill at no more than 1,500rpm and with copious external irrigation with saline according to the surgical protocol. The site was then enlarged with a 3 mm diameter OmniTaper drill and next with a 3.4 mm diameter OmniTaper drill. Final enlargement was performed with a 3.8 mm diameter OmniTaper drill (Fig. 3).

An OmniTaper try-in implant was then inserted to verify the insertion path and appropriate depth of 13.0mm (Fig. 4). Cortical preparation was performed with a 3.8 mm diameter OmniTaper crestal drill as appropriate for bone density. The crestal drill was used up to the first mark, representing a 2 mm countersink appropriate for the bone density encountered (Fig. 5).

An OmniTaper EV OsseoSpeed implant with a pre-mounted TempBase EV was then inserted into the site (Fig. 6). The TempBase EV was removed, and a cover screw EV was placed (Figs. 7&8). The wound was

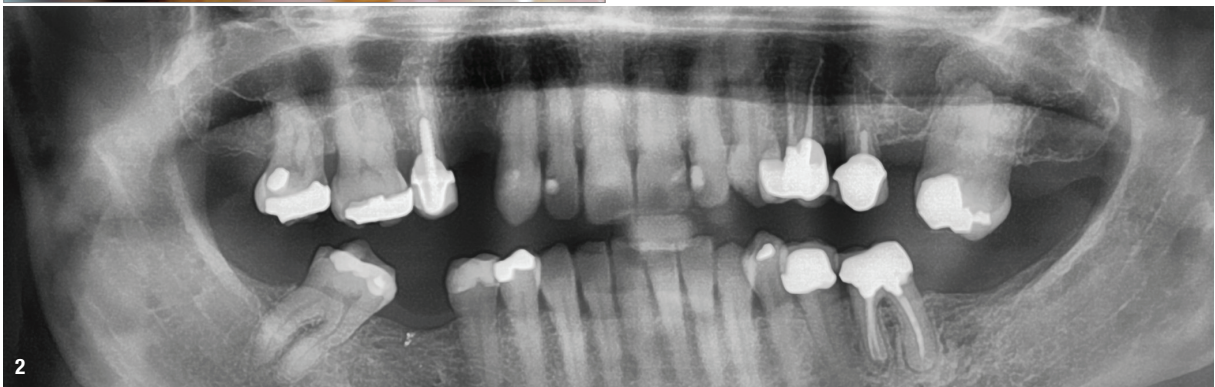


Fig. 1: Situation before surgery. **Fig. 2:** Pre-op radiographic assessment confirming a well-healed situation.

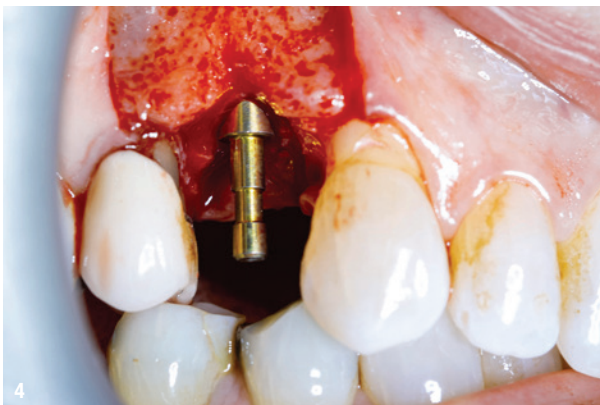


Fig. 3: Final enlargement performed with a 3.8 mm diameter OmniTaper drill. **Fig. 4:** Insertion of an OmniTaper try-in implant with a diameter of 3.8 mm to verify the insertion path and appropriate depth.

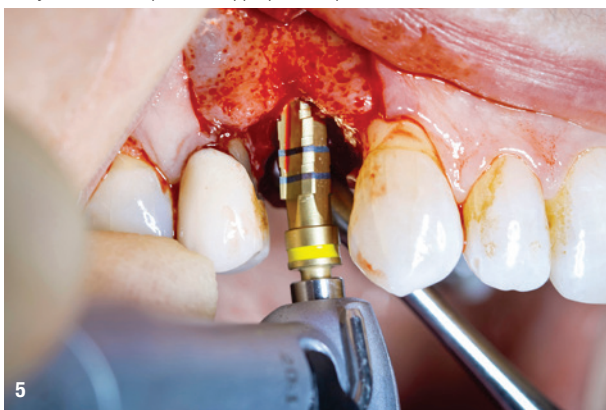


Fig. 5: Cortical preparation with a 3.8 mm diameter OmniTaper crestal drill. **Fig. 6:** OmniTaper EV OsseoSpeed implant with pre-mounted TempBase EV.

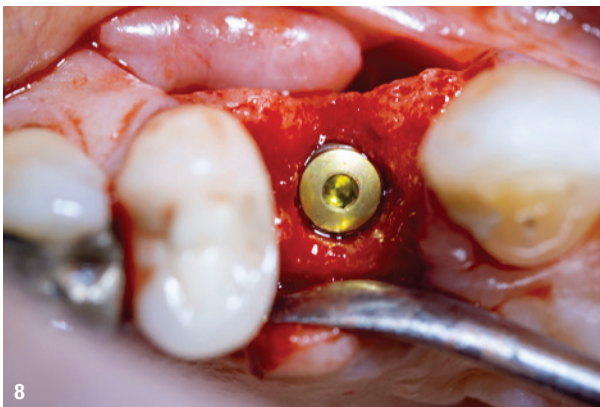


Fig. 7: Implant (3.8 × 13.0 mm) in site #14 and the TempBase EV removed. **Fig. 8:** Cover screw EV (M) *in situ*.



Fig. 9: HealDesign EV (M) abutment placed. **Fig. 10:** Atlantis IO FLO inserted for capture of a digital impression with Primescan.

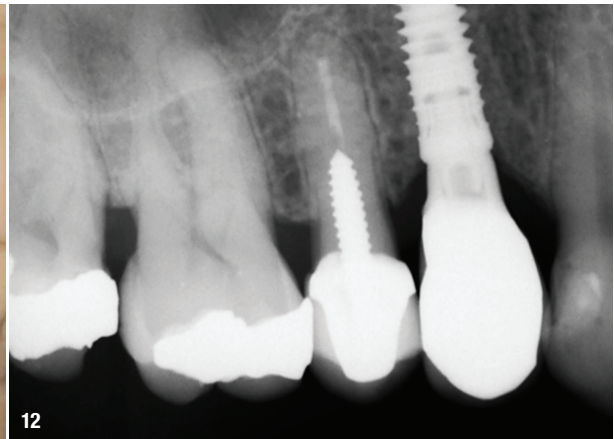
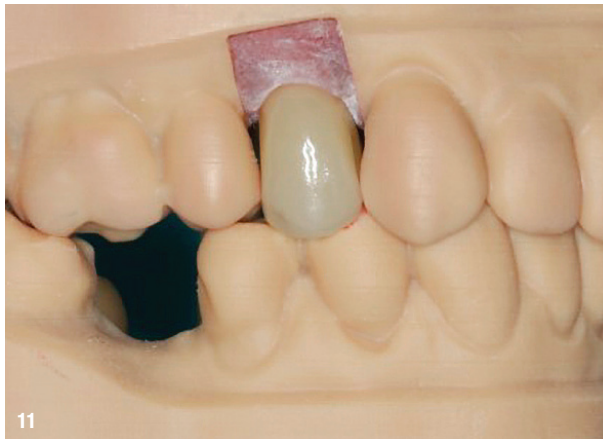


Fig. 11: Atlantis CustomBase solution, consisting of an Atlantis crown, an Atlantis abutment and an Atlantis abutment screw, supported on an implant analogue on the model. **Fig. 12:** Radiographic evaluation verifying the final restoration.

closed with PGA sutures. Three months later, second-stage surgery was performed, and a HealDesign EV abutment was placed (Fig. 9).

A digital impression using an intra-oral scanner (PrimeScan, Dentsply Sirona) was then captured using the Atlantis IO FLO for a digital restorative workflow (Fig. 10). An Atlantis CustomBase solution, consisting of an Atlantis crown, an Atlantis abutment and an Atlantis abutment screw, was fabricated (Fig. 11). After seating, a radiographic evaluation was performed to verify the final restoration (Fig. 12). The final restoration showed excellent soft-tissue adaptation and an aesthetic outcome (Fig. 14). The patient was extremely satisfied with the outcome of the treatment and the fixed restoration.

Conclusion

This case report highlights the successful placement of an OmniTaper EV implant in a patient with a heavily restored dentition. The use of an intra-oral scanner and impression components for the prosthodontic and technical digital workflow allowed for precise planning and execution of the treatment plan. The use of the OmniTaper drill system allowed for efficient and predictable

placement of the implant, while the Atlantis CustomBase solution provided a customised restorative option for the patient.

The success of this case is a testament to the importance of careful treatment planning, precise execution of the surgical protocol and the use of advanced digital technology in implant dentistry. Like with any implant case, close collaboration between the surgical and restorative teams is critical to ensuring a successful outcome for the patient.

about the author



Dr Anthony Bendkowski is an oral surgery specialist in practice limited to implant reconstructive surgery with two clinics in London and the south-east of England. He has over 30 years of experience in both the surgical and restorative management of implant cases. He is a past president of the Association of Dental Implantology, an examiner for the Royal College of Surgeons of Edinburgh Diploma in Implant Dentistry and a contributor to the postgraduate dental implant programme at Brighton and Sussex Medical School in the UK. He is co-chair of Bromley, Bexley and Greenwich LDC and an honorary consultant at King's College Hospital NHS Foundation Trust in London in the UK.



Fig. 13: Excellent soft-tissue adaptation and an aesthetic outcome.

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