

The Straumann® Bone Level Tapered Implant ø2.9 mm in daily clinical practice

Kay Vietor¹

The “SmallOne” [Straumann® Bone Level Tapered Implant ø2.9 mm] is specifically engineered to address esthetic challenges in compromised situations such as narrow interdental spaces or reduced bone availability. The SmallOne possesses the outstanding mechanical strength of our Roxolid® material and the extensive healing potential of our SLActive® surface. This made it possible to engineer an implant with a diameter as narrow as 2.9 mm that is reliable without compromising on strength. New prosthetic components in a unique oval design address the esthetic challenges. They provide enough space for surrounding soft tissue to achieve pleasing esthetic results in the anterior region. With the SmallOne you can treat your patients with confidence and offer an ideal treatment solution to increase patient acceptance.

Initial situation

The patient was a healthy, non-smoking, 19-year-old male, with dental agenesis of teeth 12 and 22 (Figs. 1, 2). The patient underwent an orthodontic treatment due to a progeny tendency from 02.08.05 – 01.09.09 with a removable orthodontic appliance. Treatment with a fixed orthodontic appliance was performed from 29.11.2013 – 11.04.2016. After the orthodontic treatment was completed, appropriate gaps were made between the roots and the crowns of the adjacent teeth. The patient showed very limited gap widths and unfavorable interradicular space conditions. Initial marginal bone thickness in the gaps was approx. 4.5mm (Fig. 4) with apical thinning (Figs. 5,6).

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Figure 1



Figure 2

Treatment planning

After discussing the situation with the patient, it was agreed that two small-diameter (2.9 mm) implants would be placed in positions 12 and 22, followed by fixed restoration. The position of the implants was carefully assessed using the CBCT technique (Figs. 5–8), and a 3D surgical drilling template was developed and printed to facilitate the drilling process (Figs. 9–12). Postoperative temporary prostheses were created to avoid gingival pressure and to secure the positional stability of the adjacent teeth (Fig. 3).



Figure 3

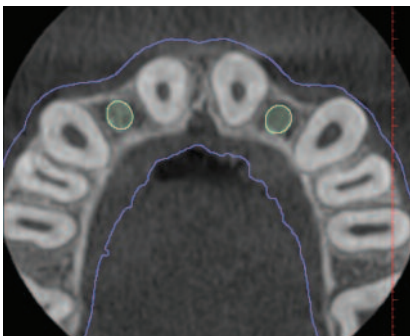


Figure 4

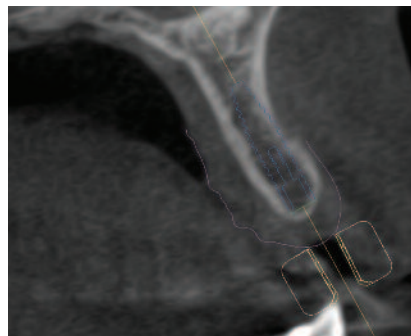


Figure 5

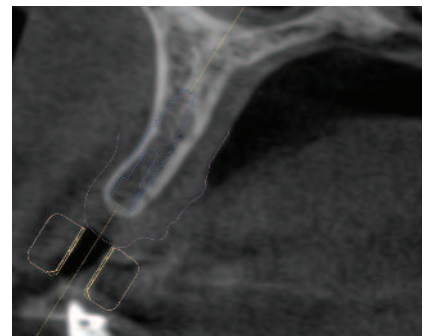


Figure 6

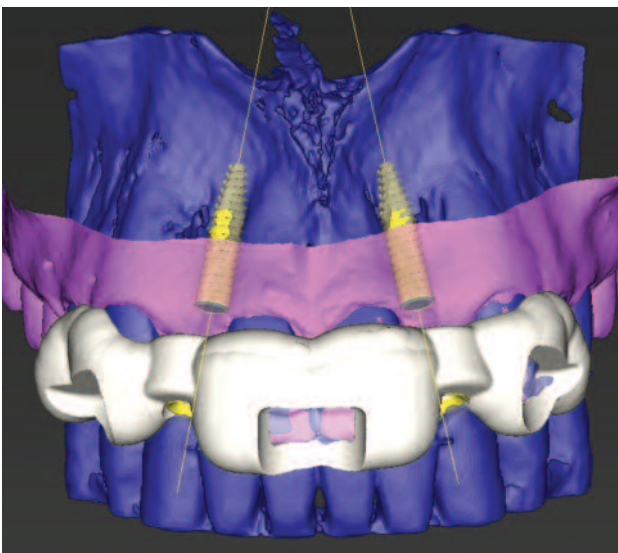


Figure 7

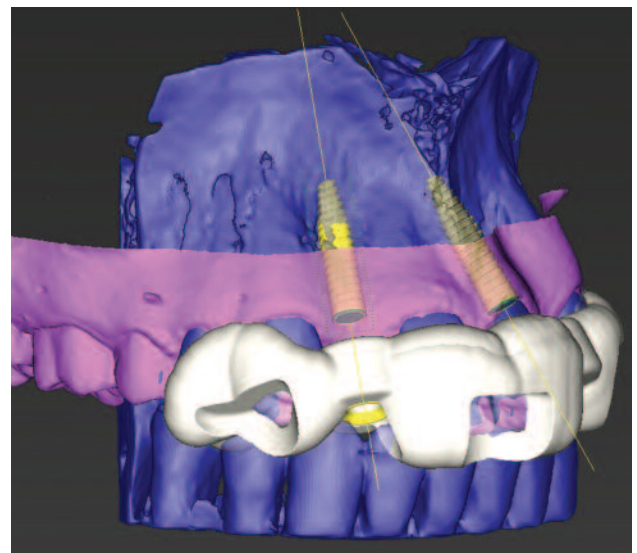


Figure 8

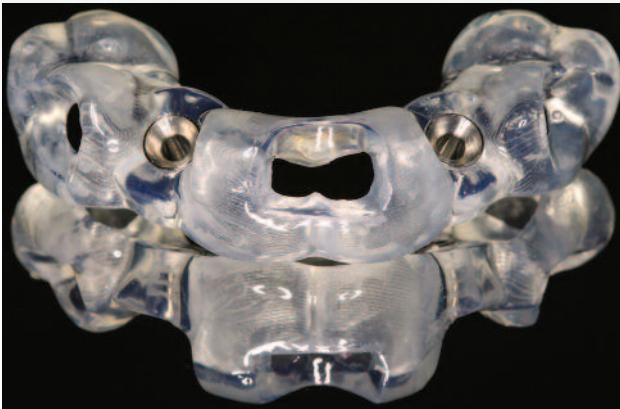


Figure 9



Figure 10

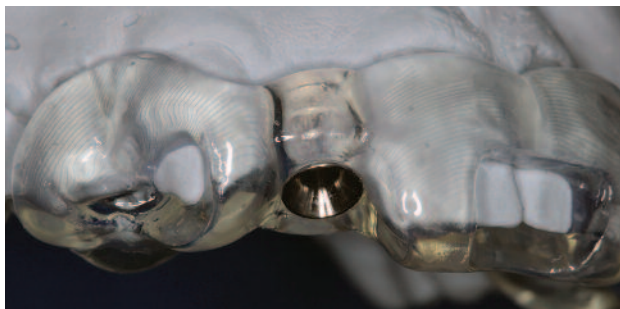


Figure 11



Figure 12

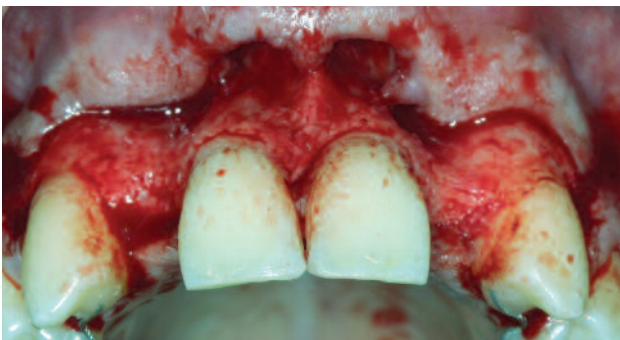


Figure 13

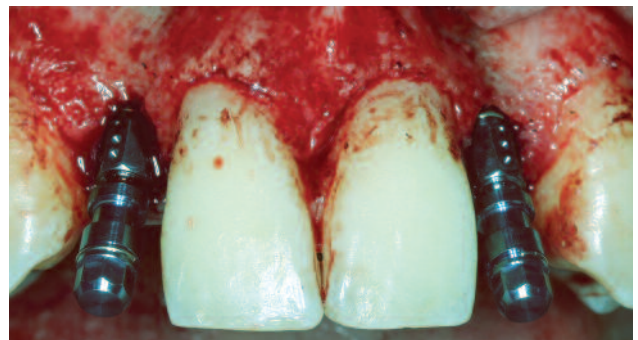


Figure 14



Figure 15

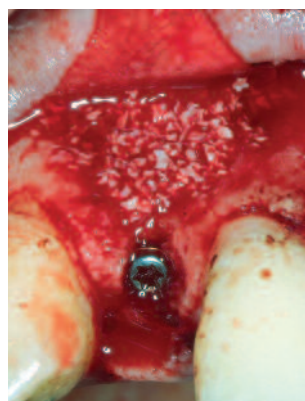


Figure 16

Surgical procedure

The implants were placed under local anesthesia, and the implant bed was prepared using a 3D-perforated surgical drilling template. Two small-diameter Straumann implants (Bone Level Tapered, Roxolid®, SLActive® 2.9mm/12mm) were placed in positions 12 and 22 using the open flap technique (Figs. 13, 14) followed by bone augmentation with autologous bone chips and a bone xenograft (Figs. 15, 16). Jason® membranes and apical titanium pins were used to



Figure 17

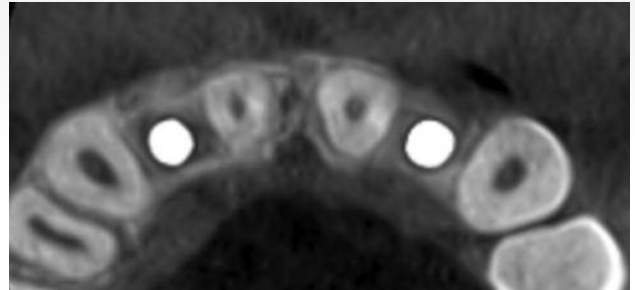


Figure 18



Figure 19

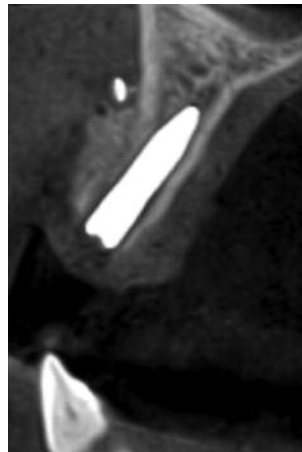


Figure 20



Figure 21



Figure 22



Figure 23

stabilize augmented regions. The respective protective caps were placed on the abutment part of each implant. The flap was repositioned and the wound closed with stress-free tight sutures (Fig. 17). The patient was prescribed antibiotic (2x

600mg clindamycin for 7 days) and anti-inflammatory (ibuprofen 400mg) therapy. The exact position of the implants was further checked and confirmed using the Ultra Low Dose CBCT technique (Figs. 18–20)



Figure 24



Figure 25

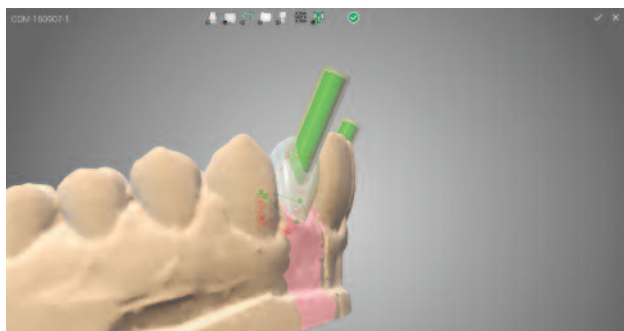


Figure 26



Figure 27



Figure 28



Figure 29

Prosthetic procedure

After 9 weeks of healing, a minimally invasive surgical procedure (puncture incision and displacement of the tissue) was performed in positions 12 and 22, and healing screws (SC H3.5) were placed (Figs. 21,22). An impression was then taken to produce temporary crowns for better gingiva formation and profiling (Fig. 23). Following the impression-taking (Figs. 24,25), individual restorations were designed and produced with Straumann® CARES® Visual software 10.1 (Figs. 26,27) and then placed in position.

Final result

Both the patient and practitioner were satisfied with both his extra-oral and intra-oral appearance after treatment. This was manifested by very good gingival development and also good pink/white esthetics (Figs. 28,29). Despite very limited gap widths and the unfavorable interradicular space conditions, the final result was very positive.

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