

Guided **one-stage** and **two-stage** implant placement in the anterior zone

A three-year follow-up

Dr Paula Corvello, Brazil

Certain situations do not allow for immediate placement of implants in the anterior region, mainly when the buccal plate is absent and/or the periodontal phenotype is very thin. In these cases, choosing the surgical technique and biomaterials based on the clinical situation is critical. Furthermore, it is crucial to respect tissue healing times before proceeding to the next phase of treatment.

The following case report describes one-stage and two-stage guided implant placement in a patient with high aesthetic expectations who had to have his maxillary central incisors extracted owing to vertical fractures. The Straumann Bone Level Tapered (BLT) implant, which has an apically tapered and self-tapping design, was used in this clinical case. Its features make it particularly suitable for situations involving poor bone quality or, fresh extraction sockets, where primary stability is critical.

Initial situation

A healthy 72-year-old non-smoking male patient who took no medication came to our clinic having noticed gingival inflammation and bleeding in the area of his two central incisors a few months before. He had previously visited another dentist, who concluded after the clinical and radiographic assessments that the teeth presented vertical fractures and, therefore, needed to be extracted. The patient stated that he would like to have them restored in the shortest possible time and for pleasing aesthetics to be maintained until the end of treatment. The extra-oral examination revealed a low smile (Fig. 1). The intra-oral and CBCT examination showed the vertical root fractures of teeth #11 and 21. Moreover, tooth #21 presented with an active fistula and loss of the buccal bone plate (Figs. 2 & 3).

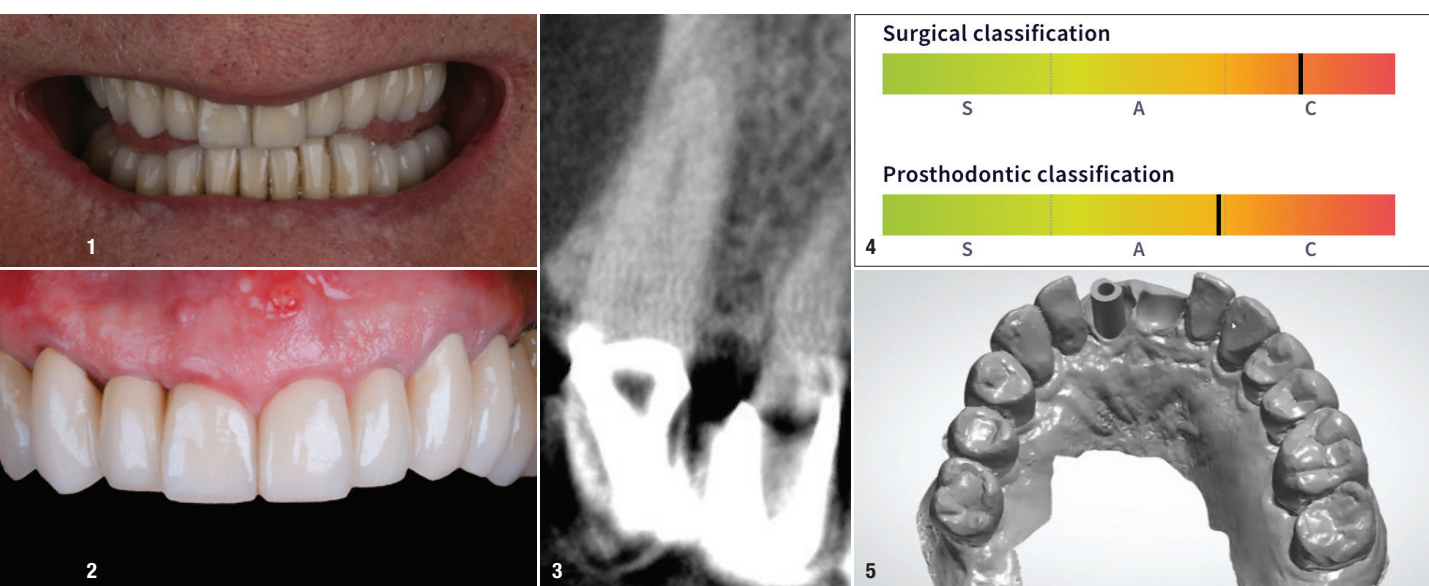


Fig. 1: Initial image of the patient's smile. **Fig. 2:** Clinical image of the maxillary dental arch. **Fig. 3:** CBCT image of tooth #21. **Fig. 4:** Final SAC classification. **Fig. 5:** Intra-oral scan image, occlusal view.

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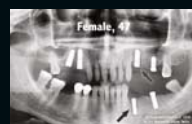
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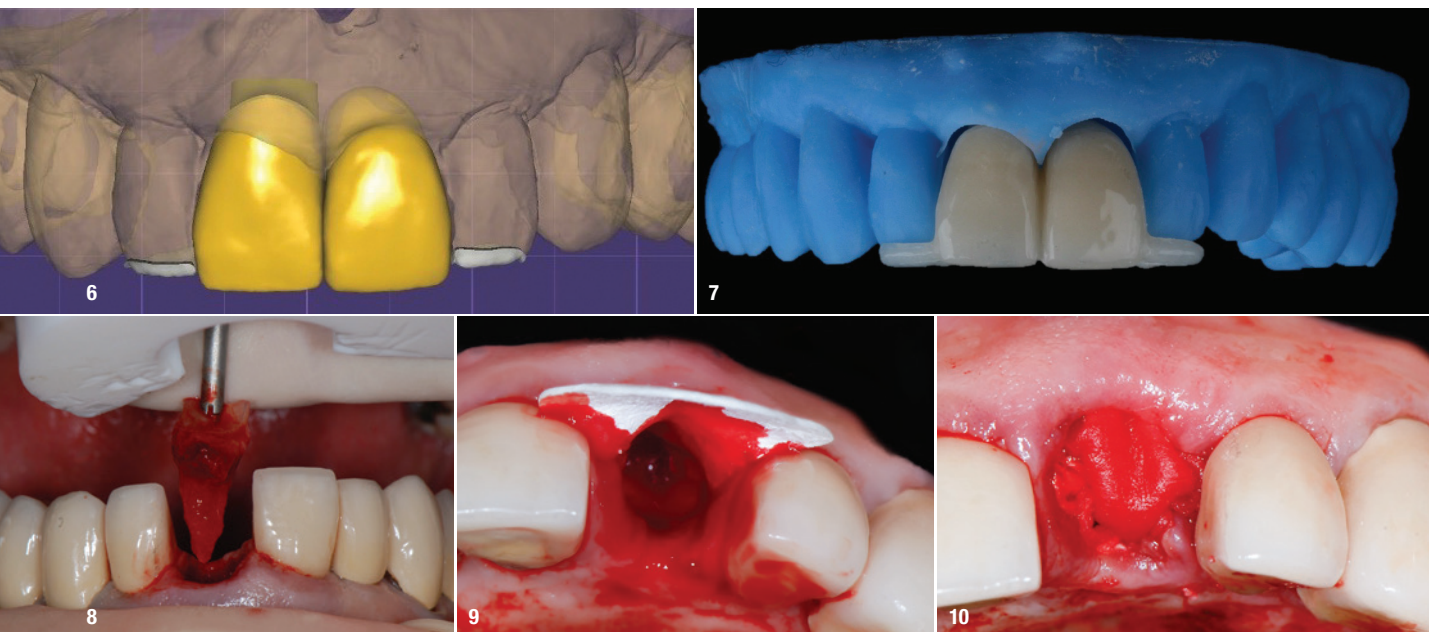


Fig. 6: Digital treatment planning. **Fig. 7:** Immediate screw-retained splinted provisional restoration. **Fig. 8:** Atraumatic extraction of tooth #21. **Fig. 9:** Jason membrane in the mouth. **Fig. 10:** Jason membrane covering the cerabone used together to preserve the extraction socket.

The case was assessed using the SAC classification, which provides an objective, evidence-based framework for assessing the potential difficulty, complexity and risk of an implant-related treatment involved in individual implant dentistry cases in an easy-to-use process. It also helps clinicians with patient selection and treatment planning. The patient was classified as a complex surgical case and advanced prosthodontic case (Fig. 4).

Treatment planning

After a thorough discussion of the various treatment options with the patient, it was decided to perform digital planning, which included guided immediate implant placement in one site and guided delayed implant placement in the other (Figs. 5 & 6). The workflow included the following steps:

- minimally invasive extraction of tooth #21 with alveolar curettage, followed by socket preservation with the bone substitute cerabone and Jason membrane (both botiss biomaterials);
- minimally invasive extraction of tooth #11, followed by immediate placement of a Straumann BLT implant (diameter: 4.1 mm; length: 12.0 mm; SLActive; Roxolid) into the site and filling of the gap between the implant and buccal bone with cerabone, and delivery of provisional screw-retained splinted crowns on implant #11 in the same visit (Fig. 7);
- placement of a Straumann BLT implant (diameter: 3.3 mm; length: 12.0 mm; SLActive; Roxolid) in site #21 after tissue healing;
- delivery of the final screw-retained crowns on implants #11 and 21; and
- yearly follow-up visits for clinical and radiographic assessment and reinforcement of oral hygiene instructions.



Fig. 11: Atraumatic extraction of tooth #11. **Fig. 12:** Placement of the implant during the guided procedure. **Fig. 13:** Clinical occlusal view after immediate implant placement in tooth #11 and socket preservation of tooth #21.

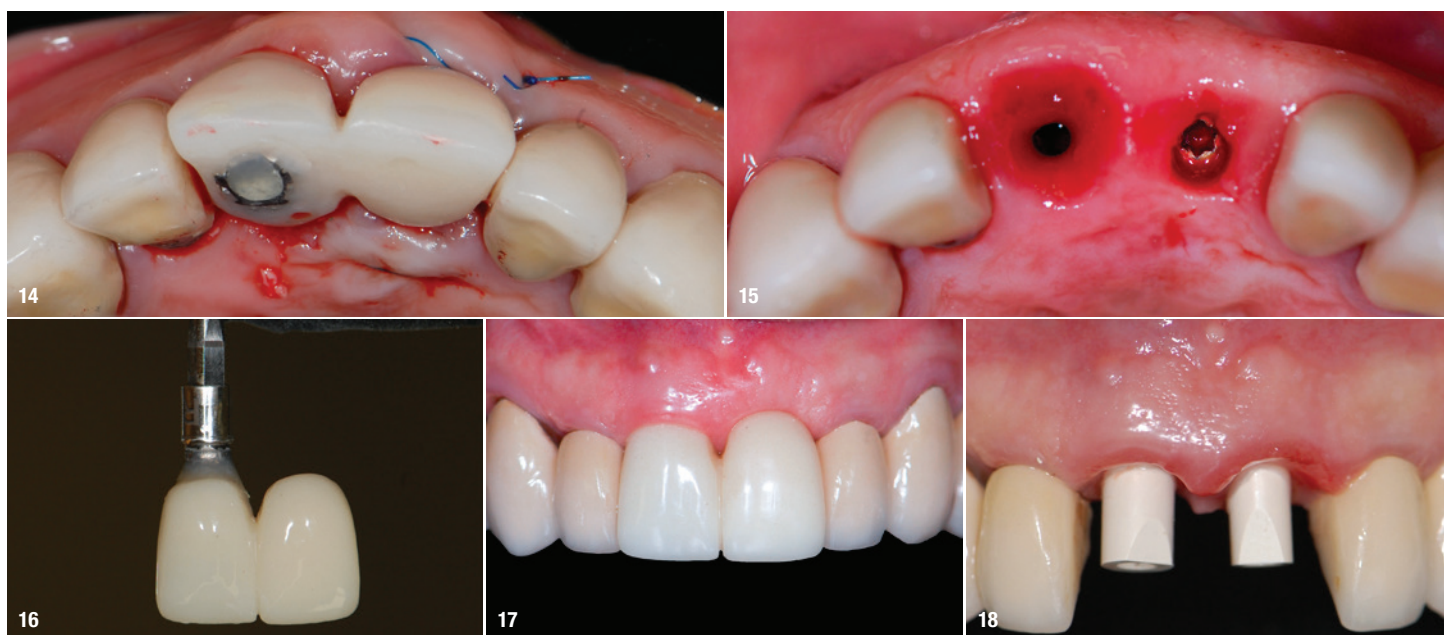


Fig. 14: Immediate screw-retained splinted provisional restoration placed. **Fig. 15:** Clinical occlusal view four weeks post-op. **Fig. 16:** Customised new provisional restoration. **Fig. 17:** Frontal view of provisional restoration. **Fig. 18:** Placement of scan bodies on the implants.

Surgical procedure

The surgical guide was checked for proper fit before administering local anaesthesia with 2% lidocaine with 1:100,000 adrenaline. Tooth #21 was extracted gently in order to preserve the remaining bone, and careful alveolar curettage was done to remove all infected tissue (Fig. 8). The socket preservation was performed with cerabone and a Jason membrane (15 × 20mm), which was stabilised with sutures (Figs. 9 & 10). Afterwards, tooth #11 was also extracted with minimal trauma (Fig. 11). The surgical guide was then seated. The implant axis and depth were defined, and the drilling protocol was performed following the manufacturer's instructions. The implant was placed considering the high gingival margin of the lateral incisors. Finally, the gap between the implant and buccal bone was filled with cerabone (Figs. 12 & 13). After implantation into site #11

and confirming optimal primary stability, an immediate screw-retained splinted provisional restoration was placed (Fig. 14). The appropriate occlusal load was checked.

The patient came back four weeks after surgery for a follow-up visit. The soft-tissue healing was uneventful. Following our treatment plan, an implant was inserted into site #21, taking into consideration a minimal distance of 1.5 mm from the implant shoulder to the adjacent tooth at the bone level and a minimal distance of 3.0mm between the implants (mesiodistally; Fig. 15).

After the soft-tissue healing, a new provisional restoration was individualised and polished on an analogue of implant #11 before being placed to a torque of between 15 Ncm and 35 Ncm. The aesthetic result was very satisfying for the patient (Figs. 16–18).



Fig. 19: Occlusal view of digital impression. **Fig. 20:** Final abutments. **Fig. 21:** Final crowns.



Fig. 22: Clinical frontal view of the final crowns. **Fig. 23:** Final image of the patient's smile.

Prosthetic procedure

Three months later, scan bodies were placed directly on the implants, and a digital impression was taken (Figs. 19 & 20). The colour for the final crowns was chosen with the patient. The STL files, colour assessment and laboratory prescription were sent to the dental technician. The master model was 3D-printed, and the crowns were fabricated. The substructure and emergence profile of the crowns were optimal and met the patient's expectations; thus, the final crowns were screwed in, and a radiographic control was performed. The periapical radiograph demonstrated an optimal fit (Figs. 21–25). Instructions on oral hygiene were given, and the occlusion was checked.

Treatment outcomes

For cosmetic reasons, the patient was very concerned about losing both anterior teeth. He thought that the treatment was going to be long owing to the reconstruction required. For him, it was a relief to have a provisional restoration at all times. It has been three years since we

treated him with dental implants, and he is very satisfied with the treatment outcome. Oral hygiene is not an issue for him, and this restoration allowed him to smile and talk with confidence again.

Author's testimonial

In my daily practice, the Straumann BLT implants enable me to achieve optimal primary stability in fresh extraction sockets and immediate aesthetics owing to the possibility of placing a provisional restoration with confidence. As a result, high patient satisfaction is obtained. Furthermore, in cases of patients with limited anatomy, it is the ideal implant to provide a less invasive and time-saving treatment.

about the author



A specialist in temporomandibular dysfunction and orofacial pain, **Dr Paula Chiattonne Corvello Vidal** graduated from the Federal University of Pelotas in Brazil in 2005 and in 2007 became a specialist in oral and maxillofacial surgery and traumatology at the Lutheran University of Brazil. In 2009, she defended her master's degree in oral rehabilitation with an emphasis in implantology at the same university. Since graduating, she has worked in her own private clinic. She has taught in the specialisation course in implantology at the Associação Brasileira de Odontologia, seção Rio Grande do Sul (Rio Grande do Sul section of the Brazilian association of dentistry) since 2009 and is a member of the postgraduate faculty of IMED Porto Alegre. She is an International Team for Implantology fellow and speaker and director of the International Team for Implantology Porto Alegre II study club.

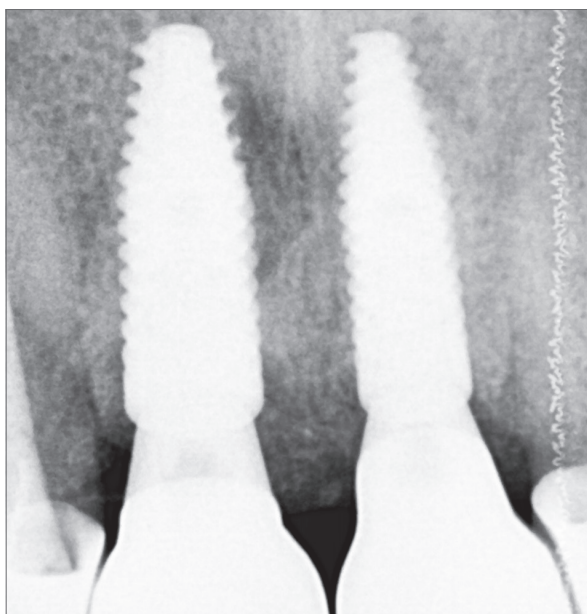


Fig. 24: Periapical radiograph four months post-op.

contact

Dr Paula Corvello

Porto Alegre, Brazil

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