Ceramic Healing Abutments

Successful rehabilitation of a partially edentulous dental-phobic patient with bone level tapered implants, simultaneous bone augmentation and the use of a ceramic healing abutment

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Anxiety and fear toward the dentist and dental treatment are both very relevant characteristics that contribute to avoidance of dental care. Therefore, it is important for us and our staff to understand and practice effective ways to help patients with these conditions, as well as look for solutions to overcome their fears and offer them a pleasant patient experience in our practice.

The following clinical case presents the successful restoration of the dental function and esthetics in a male patient with dental phobic and chewing difficulty as his main chief complaint. The treatment included an implant-supported dental bridge using the Straumann® Bone Level Tapered (BLT) implants and a Ceramic Healing Abutment (CHA) in combination with a horizontal bone augmentation.

Wound stability and an uneventful soft tissue healing are important components for a successful augmentation procedure. The new ceramic healing abutments are made of zirconia and provide a favorable peri-implant environment that allows an excellent soft tissue attachment. Furthermore, their material makes it less prone to plaque formation and consequently, enhance soft tissue healing. These characteristics and an effective patient communication made it possible to fulfill our patient's expectations in an efficient and simple way

Initial situation

A 59-year-old male patient presented to our practice with the chief complaint of chewing difficulty and poor esthetic due to missing teeth in the lower jaw. His medical history revealed a pharmacological therapy and diet control for hypertension and hypercholesterolemia. Additionally, he reported dental phobia due to previous variety of problems associated with the fear of dental care.

The clinical evaluation of the third quadrant showed teeth with gingival recession, mobility, as well as loss of tooth substance. The patient manifested pain and discomfort in the area of the tooth- borne partial fixed restoration (tooth #34 & #36). A limited amount of keratinized tissue was shown by the anterior area of the 3rd quadrant. The oral hygiene was evaluated as regular.


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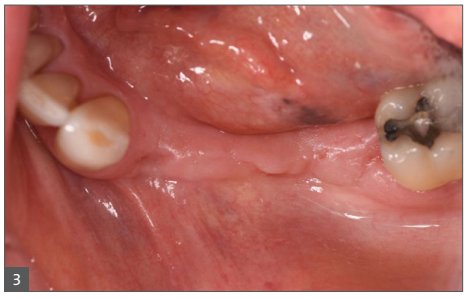
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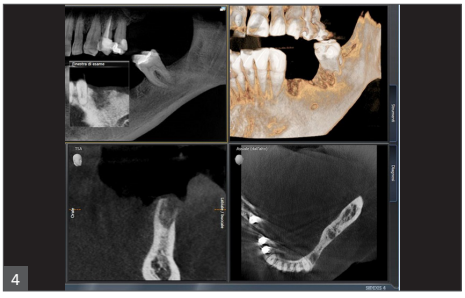
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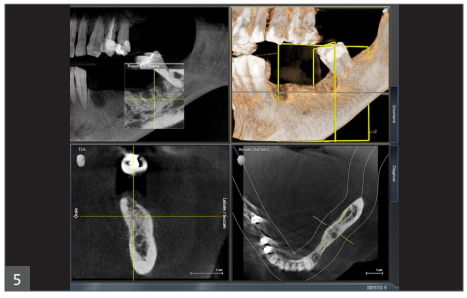
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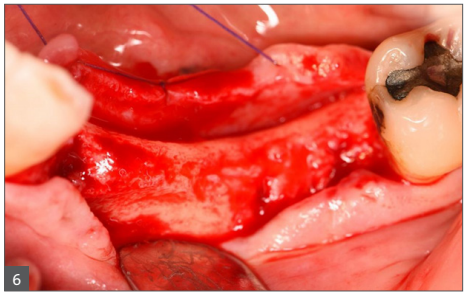
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The radiographic evaluation showed images compatible with widening of the periodontal ligament of teeth #34 and #36 and root remnants (tooth #37) (Fig. 1).

The patient manifested his interested in a predictable long-term solution that includes the restoration of function and aesthetics but at the same time, a minimally invasive treatment approach with an uneventful healing period.

Treatment planning

When dealing with patients with dental phobia in our practice, as a first phase of the treatment, we manage them with psychotherapeutic interventions, pharmacological interventions (sedation or general anesthesia), or a combination of both, depending on the level of dental anxiety, patient characteristics and clinical situation. For this particular case, an effective communication was the key to transmit confidence and no use drugs was needed.

The cause-related therapy included a dental prophylaxis, oral hygiene instructions, and extraction of remnants (#38) and the hopeless teeth (#34 & #36).

Eight weeks later, the clinical evaluation showed a limited amount of keratinized tissue in the vestibular area of #34 and an irregular shape of the edentulous ridge (Figs. 2 & 3).

An implant-supported fixed restoration was planned in positions #34 and #36. For this, a CBCT was performed in order to evaluate the bone quality and quantity for implant placement (Figs. 4 & 5). The assessment showed acceptable vertical bone availability in both locations, however limited horizontal availably for the placement of implant #34. Given these conditions, a simultaneous bone augmentation was planned for this site using a xenograft and a collagen membrane and a ceramic healing abutment.

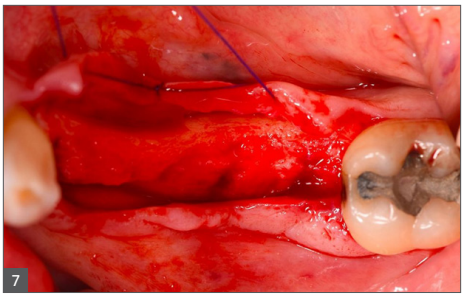
For the implant #36, better anatomical conditions were presented and a conventional surgical approach without augmentation procedures and a titanium healing abutment was planned.

Regarding the second quadrant, a dental implant was planned in position #36. Given the conditions of dental phobia and anxiety of the patient, this procedure was scheduled for a following phase.

Surgical procedure

Following local anesthesia (Articain 4% with Adrenalin 1:100.000), mucoperiosteal flaps were raised by means of midcrestal and intrasulcular incisions. The lingual flap was fixed with a suture in order to facilitate the visibility of the area (Figs. 6 & 7).

Mesiodistally, the implant location was at least 1.5 mm from the adjacent natural tooth, and 3.0 mm was ensured between the 2 implants. Implants' beds were prepared according to the manufacturer and each drill was used under copious irrigation, and the tip was brought back and forward in order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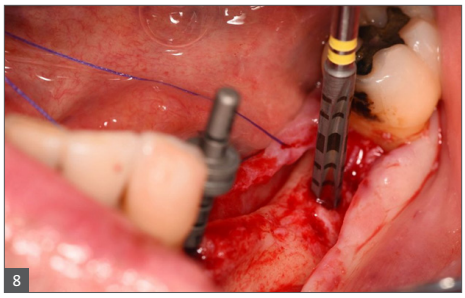
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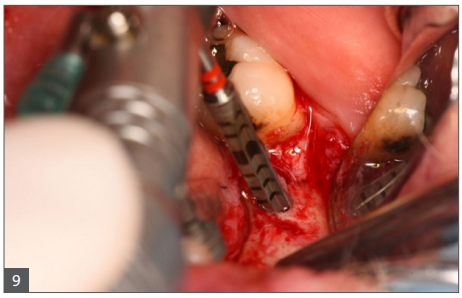
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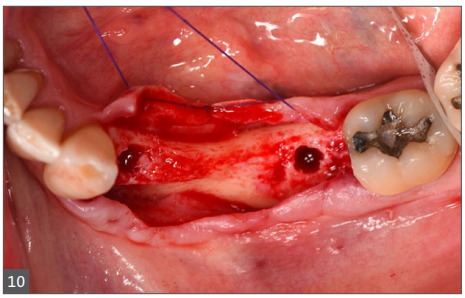
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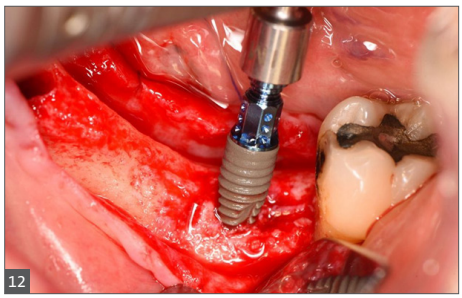
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to avoid overheating. The parallel pins were used to ensure the correct 3D position of the implants (Figs. 8-10).

Two Straumann® Bone Level Tapered ø 4.1 mm RC SLActive® Roxolid® of 12mm and 8 mm were placed in positions #34 and #36 (Figs. 11-14).

Moreover, a simultaneous bone augmentation was performed in the vestibular area of implant #34 using the Straumann® Jason Membrane and bone graft. The rational of this horizontal bone augmentation was the thin (less than 1.5 mm) remnant bone on the vestibular area (Fig. 15). The collagen membrane was stabilized with a zirconia healing abutment (RC Ø 4.5mm, H 4mm), whereas for implant #36, a titanium healing abutment (RC Ø 4.5mm, H 4mm), was screwed. The flaps were closed by primary intention by the placement of simple stitches with Vycril 5/0 (Figs.16-20).

After surgery, the patient received oral and written recommendations about medication, oral hygiene maintenance, and diet. The patient was instructed to brush the treated area with minimal trauma and to rinse twice a day with 0.15 mL 0.2% chlorhexidine for 1 minute until sutures were removed (10 days after surgery). Pharmacological prescription included paracetamol 500mg/8 hours and Amoxicillin 500mg before and after the surgery (according to AHA guidelines recommendations)

After 10 days, the patient attended for a follow-up visit and sutures were removed (Fig. 21). The patient reported no pain nor complications and the healing was uneventful.

Prosthetic procedure

The lockdown due COVID-19 took place during the healing period, and for this reason the patient was not able to attend to our practice for a period of four months.

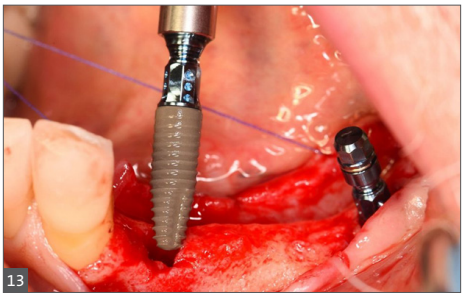
The patient presented to our practice with an excellent healing of tissues without signs of inflammation. The oral hygiene was optimal particularly in the anterior area. The clinical assessment showed a wide amount of keratinized tissue in the location of the bone augmentation procedure, surrounding the ceramic healing abutment (Figs. 22-26).

Both healing abutments were removed, and ideal emergency profiles were appreciated. Digital impressions were taken with the 3Shape TRIOS® intraoral scanner using the respective scan-bodies (Fig 27).

Afterwards, our dental technician designed and produced a screwed retained prosthesis with a metallic structure using CAD/CAM, allowing an optimal oral hygiene (Fig 28).

The prosthesis was screwed with a final torque of 35 N/cm, and chimneys were protected with cotton pellets and covered with composite (Figs. 29-34).

Finally, a periapical radiograph was taken in order to ensure the correct fit and optimal bone maintenance (Fig. 35).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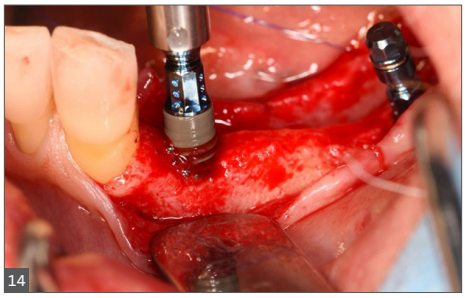
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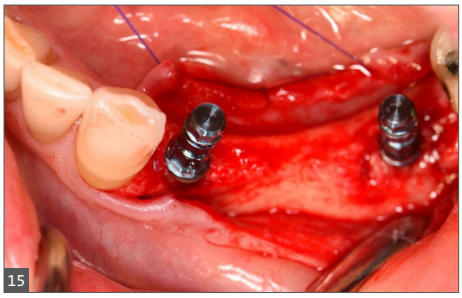
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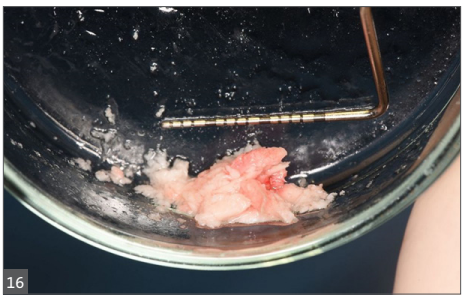
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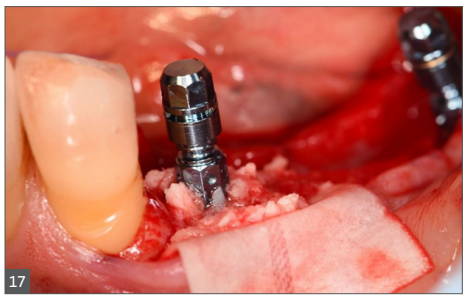
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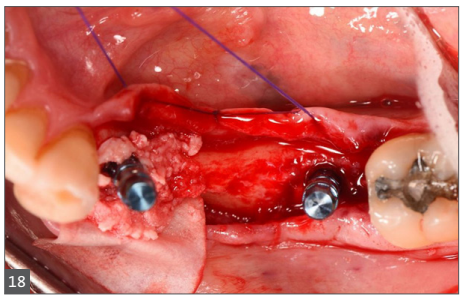
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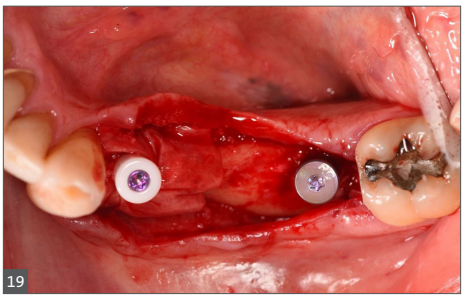
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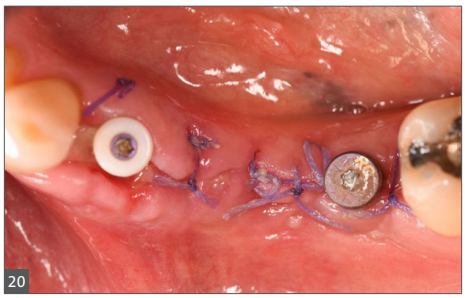
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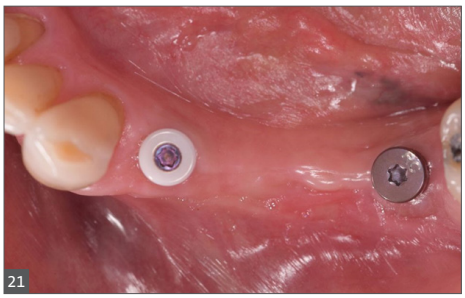
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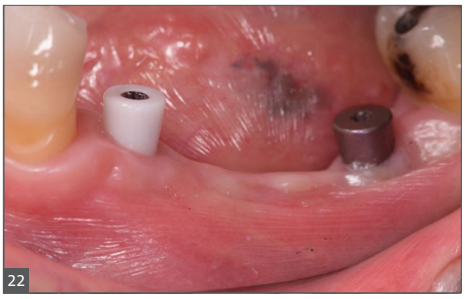
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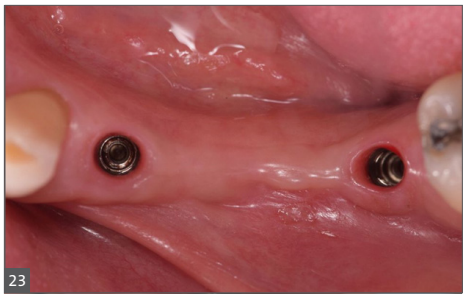
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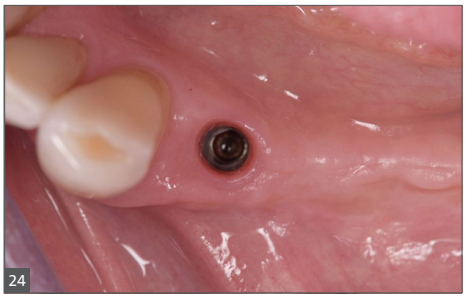
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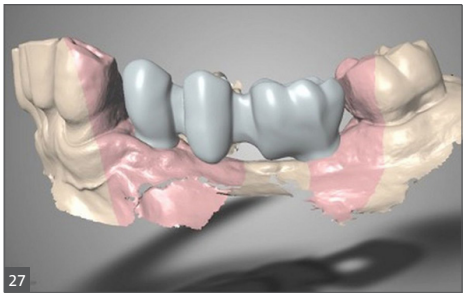
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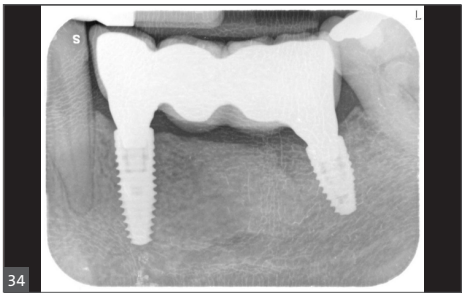
Treatment outcomes

For patients with dental phobia, empathy, listening and understanding go hand in hand. Taking time to listen to our patients' needs, concerns and fears can make them feel comfortable and relaxed during the treatment.

The treatment outcome was successful in terms of health, esthetics and function. We noted the maintenance of the peri-implant interproximal bone level and the good gingival contouring. Furthermore, our patient was very satisfied with the treatment and the improvements and now feels ready for the next phase of the implant treatment.

"I had an excellent experience using the new ceramic healing abutments. I appreciated that the plaque retention was very minimal, and the tissue behavior was optimal. Furthermore, the color of the ceramic abutment camouflages very well with the gingiva and this is very useful especially in visible esthetic areas." - Dr. Scaringi



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