

Effectively designing the aesthetic zone

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Medical history

An otherwise healthy 65-year-old male patient presented with a tooth 12 that was not worthy of preservation, and a request for implantological restoration (Figs. 1a–c). The initial situation shows a crown that is clearly angulated vestibular, and inflamed, slightly reddened and swollen vestibular mucosa with partial loss of the papillary tips. First, atraumatic extraction of tooth 12 was performed with preservation of the alveolar walls (Fig. 2a). The vestibular lamella was already resorbed due to the inflammatory process (Fig. 2b) caused by a longitudinal fracture (Fig. 2c). Complementing this, the alveolus was recon-

structed in terms of ARP (Alveolar Ridge Preservation) using autologous platelet and fibrin concentrate (platelet-rich fibrin–PRF) in combination with the β -tricalcium phosphate collagen matrix (CERASORB® Foam, curasan; Figs. 3a–c). In order to achieve optimal shaping of the soft tissue, the gap was provisionally addressed with a removable interim prosthesis.

Pre-surgical planning

After a healing phase of 6 months (Figs. 4a–c), the pre-implantological planning was carried out using digital volume tomography and an X-ray template. Evaluation

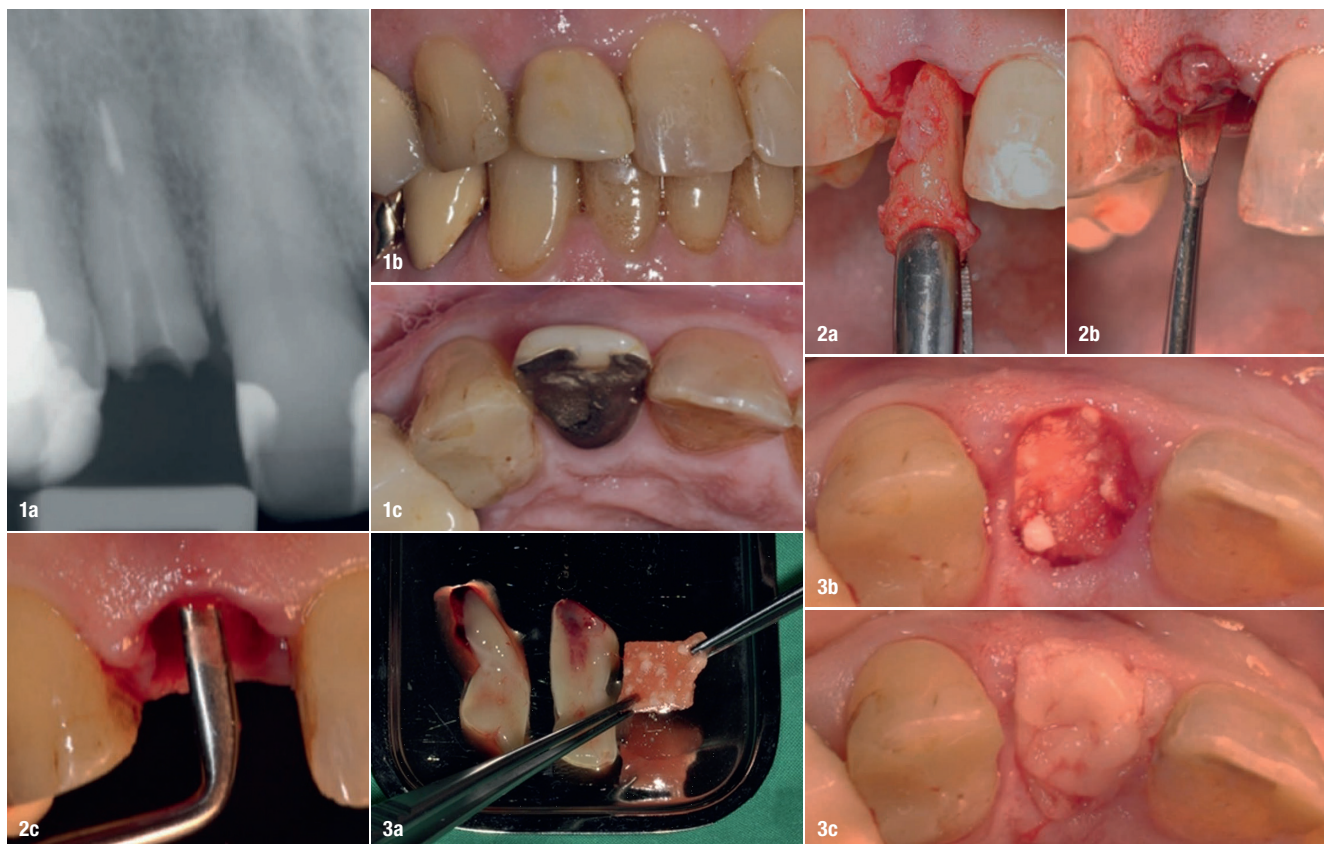


Fig. 1: The initial clinical situation with tooth 12 having a longitudinal fracture and not worthy of preservation. **Fig. 2:** Atraumatic tooth extraction (a) with curettage of the granulation tissue (b) and inflammatory loss of the vestibular bone lamella (c). **Fig. 3:** ARP using I-/A-PRF in combination with the β -tricalcium phosphate collagen matrix CERASORB® Foam (a), filling of the non-intact extraction socket with the biologised β -tricalcium phosphate collagen matrix CERASORB® Foam (b), socket seal with the A-PRF (c).

showed sufficient osseous reconstruction of the alveolar bone, allowing smooth axial alignment of the implant in accordance with the planned prosthetic crown (Fig. 5). In order to achieve an additional effect on the shaping of the soft tissue, a vestibular pedicled roll flap technique was used for implant placement (Figs. 6a–d). Thus, additional thickening of the vestibular mucosa was achieved.

Due to the very good primary stability and for soft tissue conditioning, transgingival healing was carried out with a narrow healing abutment in order to create more space for the mucosa to regenerate.

With the aid of an orienting drilling template, a maximally palatal as well as steep insertion axis of the implant was

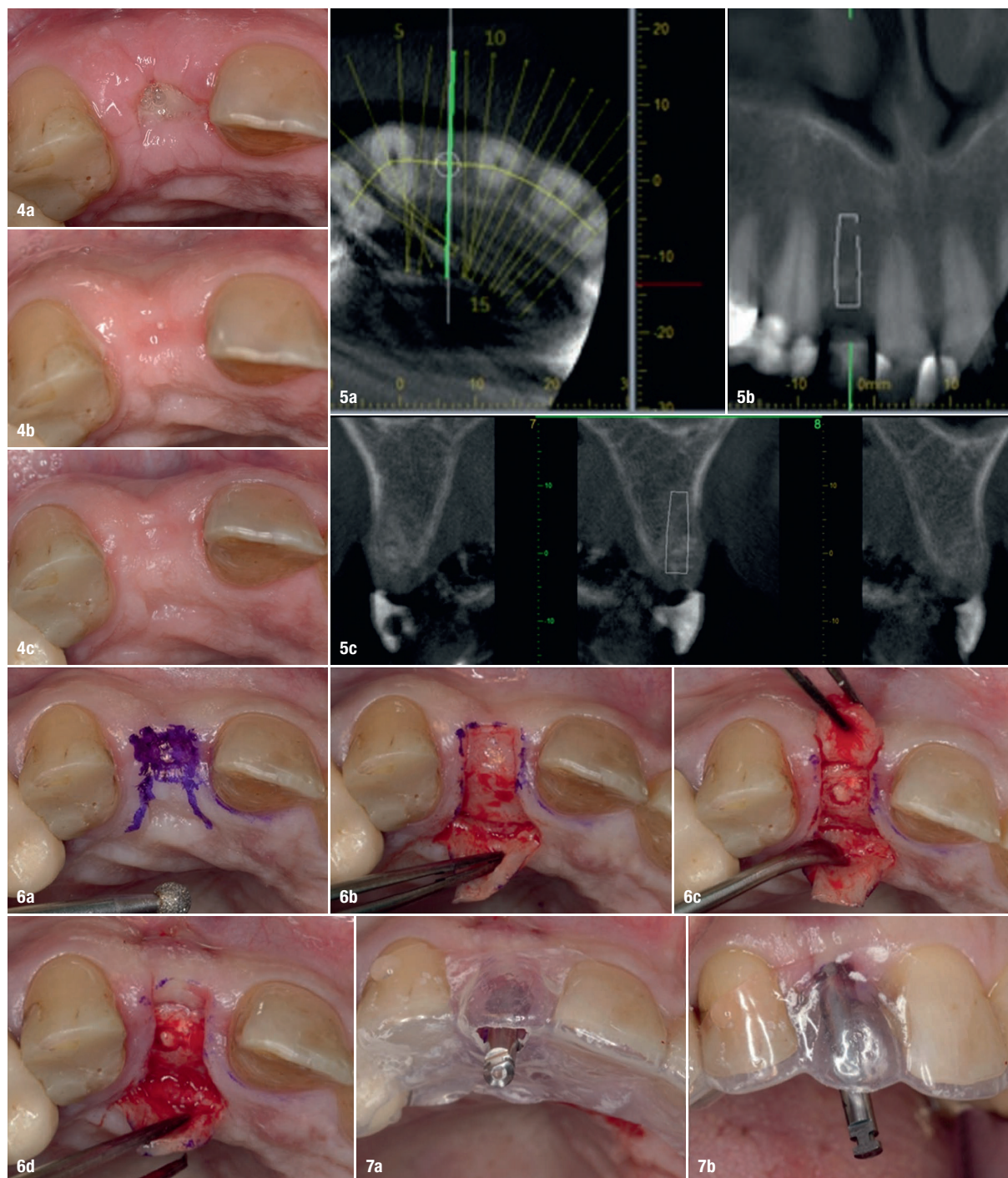
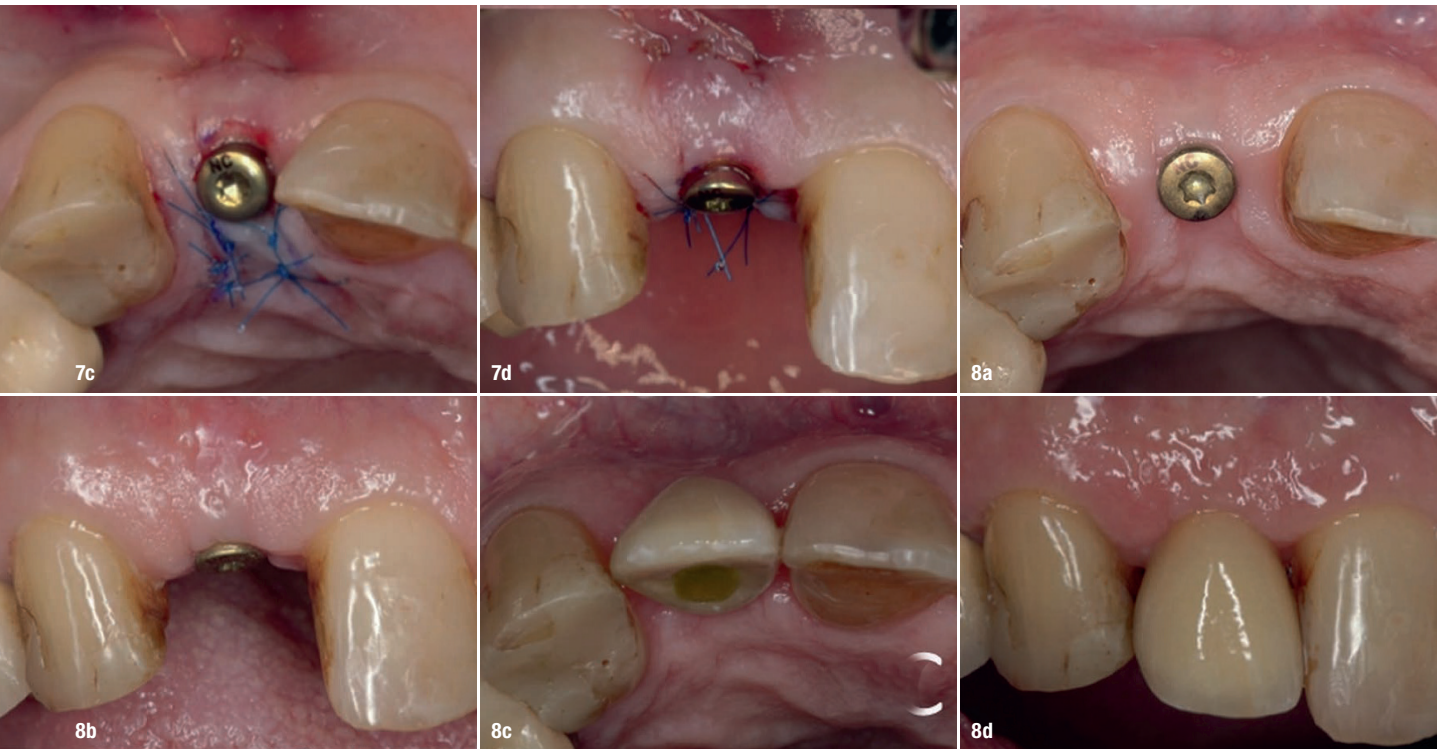


Fig. 4: Course of alveolar healing after 10 days (a), 4 weeks (b) and 6 months (c). **Fig. 5:** The planning DVT with X-ray template shows sufficient bone stock for implantation after primary prosthetic alignment. **Fig. 6:** In order to thicken the vestibular mucosa on the implant, a vestibular pedicled roll flap (a–d) was formed during implant placement. **Figs. 7a & b:** Implant placement was carried out with the aid of an orienting drilling template to ensure optimal prosthetic implant alignment.



Figs. 7c & d: In a condition of good primary stability, transgingival healing could be initiated with a narrow healing abutment. **Fig. 8:** Prior to the final restoration, bland peri-implant soft tissue with sufficient volume (**a & b**) was seen. The far-palatal and steep angulation of the implant axis allowed a screw-retained restoration in the final prosthetics (**c & d**). Four weeks after placement of the final crown, the peri-implant soft tissue situation was satisfactory, but complete reconstruction of the papilla tips was not achieved.

selected in order to enable screw-retained restoration with the future crown and simultaneously achieve a broad vestibular hard- and soft-tissue volume (Figs. 7a–d). Thus the implant axis deviates significantly from the former natural tooth axis. A tapered implant design with a diameter of 3.3mm was selected in order to both account for the clinical dimension of the gap and guarantee high primary stability of the implant for transgingival healing.

Prosthetic restoration

After a healing phase of three months, the final prosthetic restoration was initiated under satisfactory hard- and soft-tissue conditions (Figs. 8a & b). By implementation of the pre-prosthetic planning of the implant axis, it was possible to achieve a screw-retained solution for the single-tooth crown (Figs. 8c & d). The final prosthetic restoration is a fully ceramically veneered high-gold crown for avoidance of an adhesive gap. Replacement of the adjacent plastic filling on tooth 23 could have been considered for harmonisation of the aesthetics. Nevertheless, the patient's aesthetic requirements were met, especially in view of the initial clinical situation. The patient was very satisfied with the result, although objectively no reconstruction of the papilla tips was achieved. However, further "maturing" of the papillae over the course of time is to be expected.

about the author



Prof. Bilal Al-Nawas is a Germany-based dentist specialised in maxillofacial and plastic surgery. From 1986 to 1996, he has been studying medicine and dentistry in Frankfurt, Saarbrücken and Zurich. He obtained a PhD in dentistry in 1993 and a PhD in medicine in 1997. Today, he is the Medical Director and Head of the Department for Oral and Maxillofacial Surgery, Plastic Surgery at the University Medical Center of the Johannes Gutenberg-University Mainz.

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