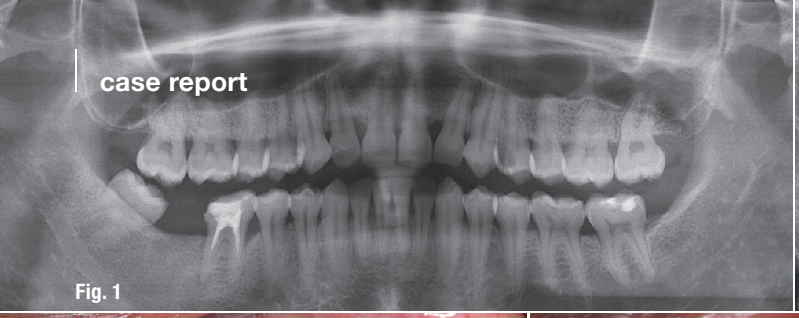


Fig. 1

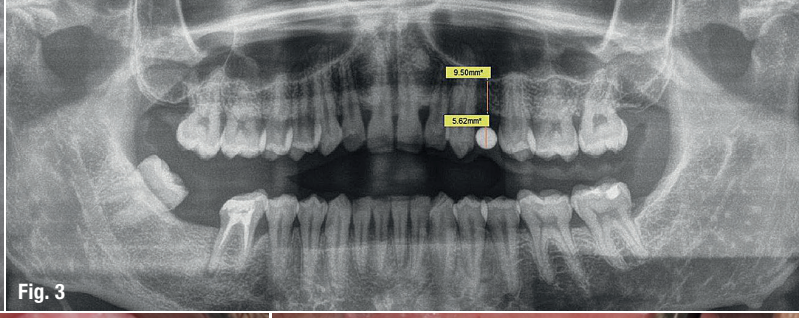
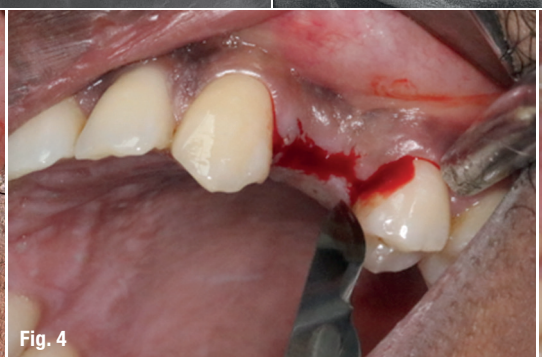


Fig. 3

Fig. 2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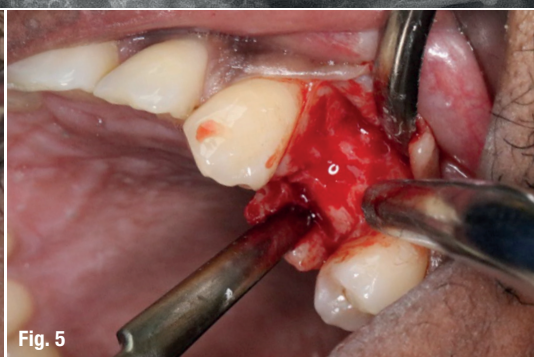
Fig. 5

Fig. 1: Radiograph of the initial clinical situation. **Fig. 2:** Clinical situation after extraction and healing. **Fig. 3:** Planning of the implant in region #24. **Fig. 4:** The crestal incision of the gingiva was made. **Fig. 5:** A mucoperiosteal flap was reflected.

Two-stage implant therapy for single-tooth restoration

Simon Lehner, Germany

The choice of implant is a decisive factor for a successful treatment outcome. Careful planning, taking into account the patient's wishes, is a prerequisite for this. The following article describes the placement of a single-tooth implant in region #24. During surgery, the buccal bone wall proved insufficient and lateral augmentation was necessary. The author explains the choice of implant used in this case.

The patient, a man aged 36, presented to the dental practice. He complained about pain in his left upper jaw. The initial radiograph indicated that the extraction of tooth #24 would be inevitable (Fig. 1). The patient was informed in detail about the implications, and various possible treatment options were discussed. The patient expressed his wish for a fixed restoration and decided on a single-tooth implant in region #24. A tapered bone level implant (Straumann) with a length of 8.0 mm and a diameter of 3.3 mm was chosen. This implant has clinically proven features and unique advantages. Owing to its tapered implant body, the implant achieves good primary stability in soft bone and fresh extraction sockets. The implant is designed in a way that crestal bone preservation is optimised. This allows for simplified handling and attractive aesthetic results. Furthermore, patient-specific limitations in the anatomy of the jaw can be successfully overcome with this implant.

Another special feature of the implant is its material composition. This implant is made of a titanium–zirconium alloy (Roxolid), which is more stable than pure titanium and has good osseointegration properties. The moderately rough SLA surface, which is sandblasted, large-grit and acid-etched during the manufacturing process, additionally accelerates the osseointegration process. Implants with a rough surface have a higher bone-to-implant contact and higher biomechanical and functional stability.

Planning and surgical procedure

After extraction of tooth #24 and a complication-free wound healing period (Fig. 2), the implantation was planned (Fig. 3). After opening the gingiva in region #24 by means of a crestal incision (Figs. 4 & 5), the implant bed was prepared (Figs. 6–8). Depending on the bone density (D1 = very hard bone, D4 = very soft bone), different drilling protocols should be used for the implant. This provides the necessary flexibility to adapt the preparation of the implant bed to the individual bone quality and the individual anatomical situation. The conical implant is placed press fit into the under-prepared implant bed. In the next step, the implant was inserted (Figs. 9 & 10). The implant shoulder should ideally be positioned ap-

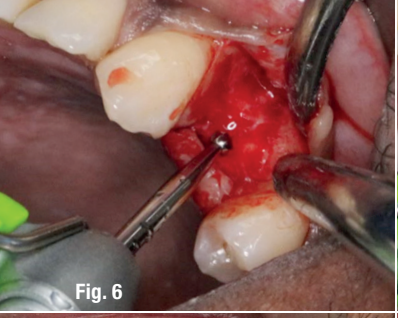
Fig. 6

Fig. 7

Fig. 8

Fig. 9

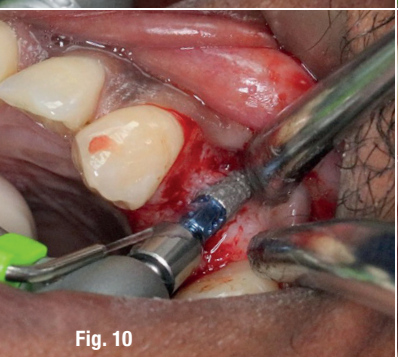
Fig. 10

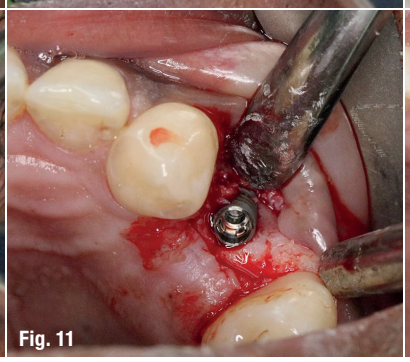
Fig. 11

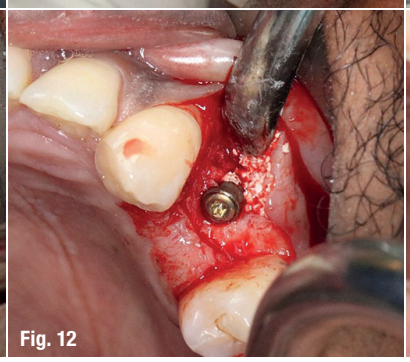
Fig. 12

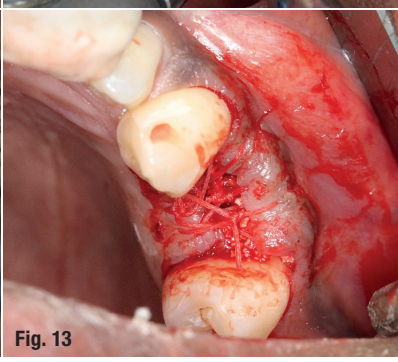
Fig. 13

Figs. 6–8: The implant bed was prepared. **Figs. 9 & 10:** The implant was inserted. **Fig. 11:** Primary stability was achieved, and there was a visible buccal bone defect. **Fig. 12:** Lateral augmentation was done, and the healing cap was placed. **Fig. 13:** The surgery site was closed with sutures.

proximately 3–4 mm subgingival to the expected gingival margin in the aesthetically relevant area.

The implant used in this case can be inserted either manually or by means of a contra-angle handpiece. A maximum insertion speed of 15 rpm is recommended. Care must be taken to align the drilled hole to the blue transfer part exactly orofacially. The implant was inserted with high primary stability (Fig. 11). Since the buccal bone wall was found to be insufficient during the implant procedure, lateral augmentation (cerabone granules, 0.5–1.0 mm, botiss biomaterials) was necessary (Fig. 12). The surgical site was closed with sutures (Fig. 13), and the patient was informed in detail about postoperative care. He was prescribed Sympal (25 mg; BERLIN-CHEMIE) for inflammation and pain relief and CEFUROXIM AL (500 mg; ALIUD PHARMA) to prevent infection. Alternatively, the patient could have been prescribed 600 mg of ibuprofen or Novaminsulfon drops (N1; ratiopharm).

Conclusion

The implant used for this case is suitable for immediate and early restoration of single-tooth gaps within the confines of the indication. Good primary stability and suitable occlusal loading during the healing period are key for successful osseointegration of the implant (Fig. 14). The design allows for optimal preservation of crestal bone and soft-tissue stability. The unique nature of the implant enables fast and predictable osseointegration. For immediate provisional restoration, the prosthetic portfolio offers a wide range of provisional and final abutments (Fig. 15).

Fig. 14

Fig. 15

Fig. 14: Post-op radiograph. **Fig. 15:** The long-term provisional restoration was inserted using Temp-Bond (Kerr).

about the author

Germany-based dentist **Simon Lehner** has been specialising in oral surgery since 2013. He studied dentistry at the University of Ulm in Germany between 2001 and 2002 and at the Medical School of Hannover (Medizinische Hochschule Hannover) between 2003 and 2007. He is a member of several dental expert societies, including Bundesverband Deutscher Oralchirurgen (BDO) and Deutsche Gesellschaft für Zahn-, Mund- und Kieferheilkunde (DGZMK). Today, he leads a private practice in Ravensburg in Germany.

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