CASE REPORT
01 | 2019

Immediate implantation in the aesthetically challenging region

» Dr. Christian Hammächer
Aachen, Germany

CASE REPORT

Immediate implantation in the aesthetically challenging region

» **Today, immediate implantations and immediate treatments satisfy patient requirements for particularly rapid treatment options. Following extensive analysis and assessment of the tissue structures and the patient's risk profile, an immediate implantation is a clinically tried-and-tested treatment concept in certain indications. In this respect, the macro design of an implant and the precision of the connection geometry are both of considerable importance. As the requisite primary stability is often attained via the lower third of the implant body in the palatal region as a result of the anatomical situation in the maxillary anterior region, the implant should feature a pronouncedly conical section and a self-tapping compression thread design.**

Case description

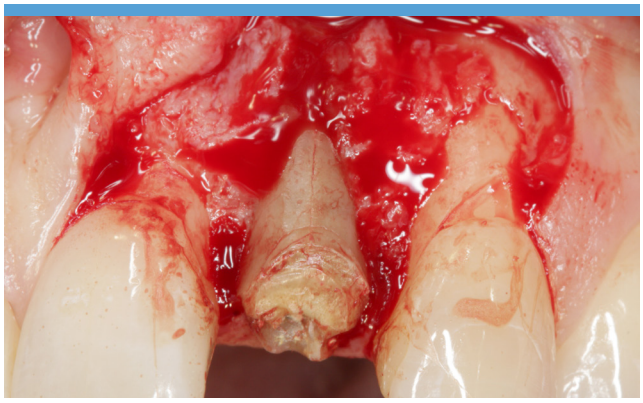
A 35-year-old patient presented in our practice with a fractured left lateral maxillary incisor. An apical resection had been performed on the tooth some years previously. The radiological assessment and the lack of sufficient supragingival dental hard tissue (unsatisfactory ferrule effect) combined with the associated questionable prosthetic value resulted in the decision to extract the tooth. Despite the high smile line, the patient did not want a new crown on the contralateral second incisor for aesthetic reasons. As no apical or periodontal infection was identified, the patient presenting with a generally speaking thick biotype was promised an immediate implantation. This was performed following reflection of the mucoperiosteal flaps and minimally invasive removal of the tooth with a periotome and extraction forceps. A pronounced hard tissue defect was identified in the buccal wall. The CAMLOG® PROGRESSIVE-LINE implant (Ø 3.8 mm / L 13 mm) was then implanted immediately in a palatal direction with the aid of a prosthetic orientation template. Thanks to the conical design and corresponding thread geometry, it proved possible to attain a palatal implant position with outstanding primary stability in the compromised bone bed (50 Ncm, iChiropro and ISQ value 78, Osstell ISQ). The configuration of the burs is well suited to the collection of bone chips. In addition, autologous bone was harvested with a scraper. The augmentation in the vestibular region and the incongruity defect was performed together with the bovine bone substitute material and a cross-linked bovine membrane. A 4-mm-high gingiva former was introduced for the open healing. The soft tissue was closed with vertical mattress and simple interrupted sutures (Prolene 5/0). The patient was temporarily supplied with an interim denture. The sutures were removed after 12 days.

Following a healing-in period of five months, it was possible to begin the prosthetic treatment. The impression was taken with a single open tray and a polyether-based precision impression material (Impregum). The monolithic lithium disilicate crown (IPS e.max) was cemented on an individual CAD/CAM abutment made of zirconium dioxide ceramic on a titanium adhesive basis with a self-adhesive composite cement (RelayX™). This was followed by careful removal of all excess cement.

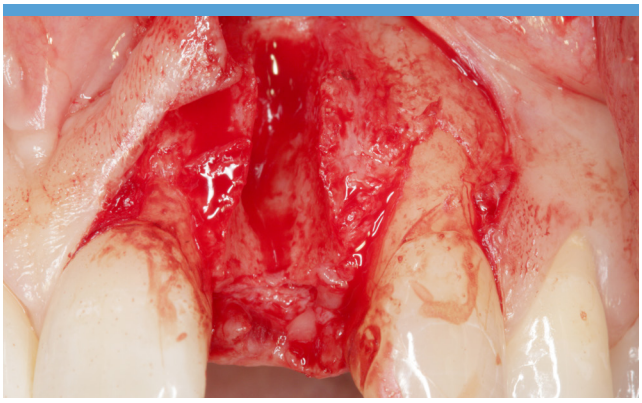
Dr. Christian Hammächer
» Dentist

1. Starting situation: Following an apical resection performed years earlier, tooth 22 fractured. A restoration on the basis of a root post had a poor long-term prosthetic prognosis due to the lacking ferrule effect.

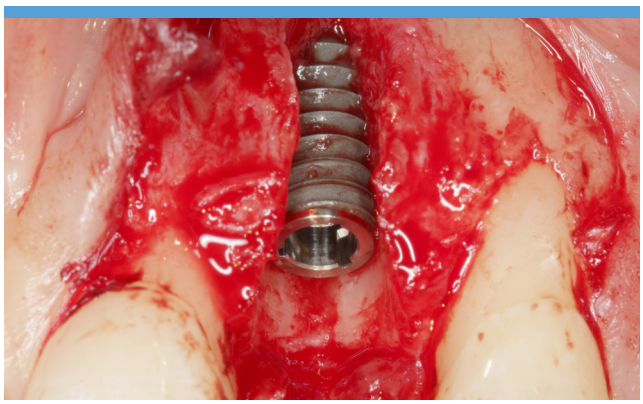
2. The dental x-ray shows the situation following the apical resection. At the time of the tooth fracture, there was no appreciable apical or periodontal infection identified and so, following a corresponding clinical assessment, the patient could be promised an immediate implantation following extraction.



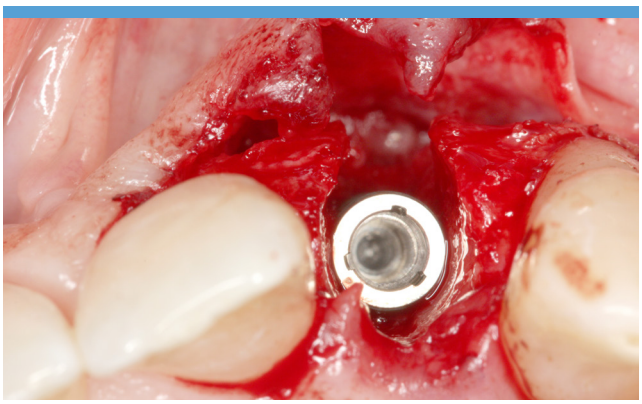
3. Following the incision and reflection of a mucoperiosteal flap, a pronounced hard tissue defect was identified in the buccal wall. The tooth root was extracted minimally invasively using a periotome and forceps.



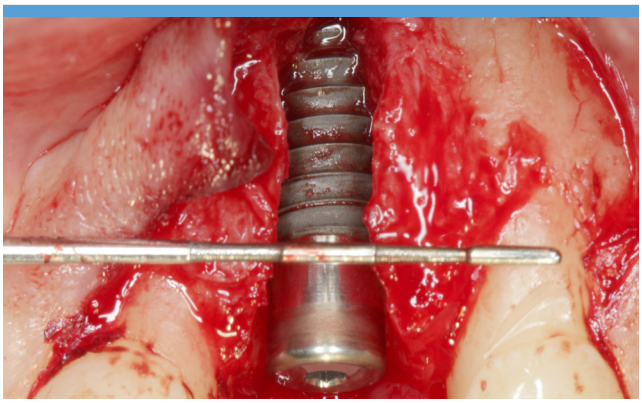
4. Following the extraction, the alveolus was curetted thoroughly. Correct three-dimensional positioning of the implant is an essential criterion for the success of an implantation. For this to occur, it must be inserted into the palatal section of the alveolus. Optimal positioning was attained with the help of an orientation template produced prior to the surgery.



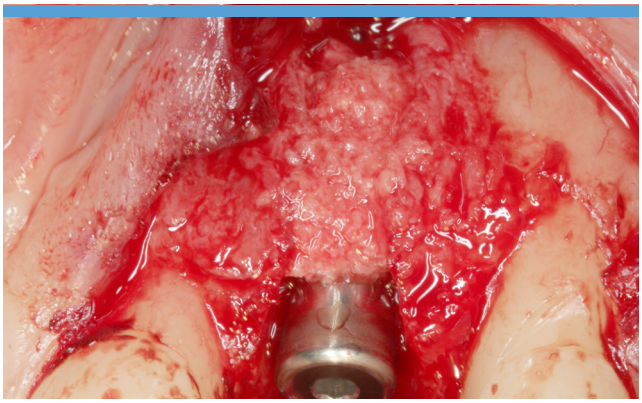
5. The implant bed for the insertion of the CAMLOG® PROGRESSIVE-LINE implant (Ø 3.8 mm / L 13 mm) was prepared as per the surgical protocol. Thanks to the self-tapping, cantilevered thread design and the pronouncedly conical design of the implant body tip, it proved possible to anchor the implant stably in the three-walled alveolus. The stability measurement revealed an ISQ value of 78 and an insertion torque of 50 Ncm.



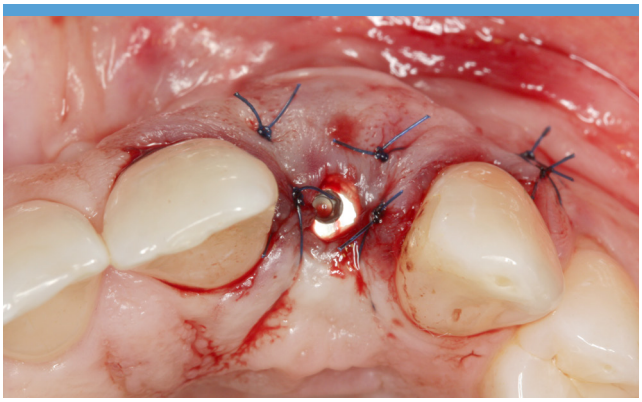
6. Thanks to the sufficient horizontal and vertical bone available, the implant could be positioned three-dimensionally correctly. The palatal orientation of the positioning avoids angular insertion in the direction of the buccal wall. This positioning offers sufficient volume for the reconstruction of an anatomically correct buccal alveolar wall.



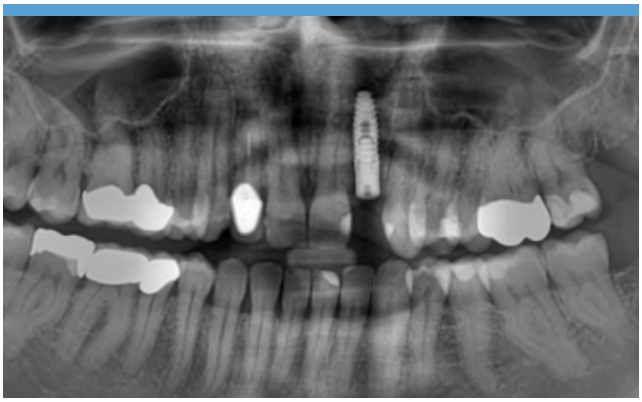
7. Correct vertical positioning of the implant is essential for the preservation of the functional, aesthetic and permanently stable reconstruction. To this end, the implant shoulder was positioned around 3-4 mm below the cementoenamel junction. The open healing is performed with a 4-mm-high gingiva former.



8. The implant is initially covered with autologous bone to reconstruct the alveolar bone and the incongruity defect. The configuration of the PROGRESSIVE-LINE burs is well suited to the collection of the autologous bone chips. Additional bone can be harvested from the operating site using a scraper.



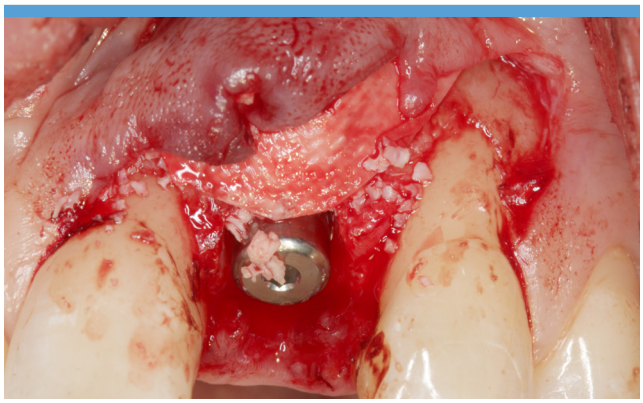
11. The augmented area, which ultimately also determines the position of the soft tissue, is generally overcontoured in order to counteract the change in volume during the reconstruction process. The optimal palatal orientation of the positioning is clearly visible when observed from below.



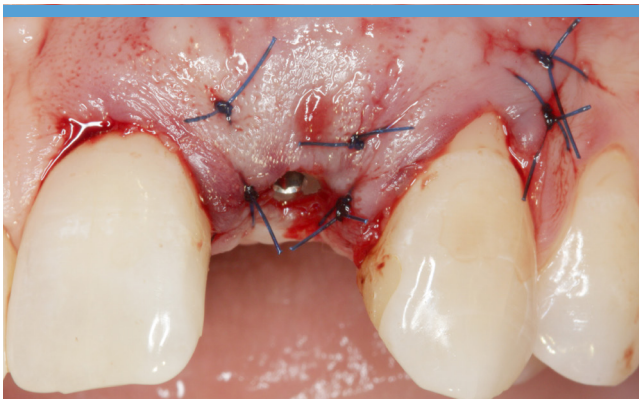
12. A panoramic radiograph was performed for control purposes following the surgery. The patient was supplied with an excellently supported interim denture for the healing-in period.

15. The CAD/CAM zirconium abutment on a CAMLOG® adhesive titanium base was inserted and tightened to 20 Ncm. The light colouration of the gingiva is indicative of the light pressure that the subgingival sections of the abutment are exerting evenly on the soft tissue.

16. The crown-abutment interface ultimately came to rest around one millimetre subgingivally all the way around. The anatomically shaped emergence profile of the abutment establishes the foundations for a permanently stable, aesthetic restoration. It supports the gingiva all the way around with moderate pressure. Good blood flow is restored to the area around five minutes after the insertion.



9. The buccal hard tissue defect was restored with a mixture of autologous bone and bovine bone substitute material and covered with a cross-linked collagen barrier membrane before the closure of the soft tissue.



10. The soft tissue was closed tightly around the gingiva former with vertical mattress and simple uninterrupted sutures. In addition to the three-dimensional implant positioning, the surgical reconstruction of hard and soft tissue is important for a harmonious, aesthetic restoration.

13. The clinical situation: Following the healing, the peri-implant soft tissue remained completely free of irritation and both the buccal bone and attached gingiva were anatomically shaped and sufficiently dimensioned five months after the surgery.

14. An impression was taken of the implant for the production of the final restoration with a single tray and implant post for the open impression-taking technique. An individual CAD/CAM zirconium abutment on an adhesive basis was produced in the laboratory. The focus was on the design of the subgingival sections, which support natural red-white aesthetics among other criteria.

17. The lithium disilicate crown was permanently inserted with self-adhesive composite luting cement (N. Mirschel, Impladent laboratory). The crown was painted carefully with a layer of cement. The precise positioning of the "preparation margin" meant the minimal excess cement could be removed simply and without leaving any traces.

18. It is absolutely essential to remove all excess cement in order to prevent cement-induced periimplantitis effectively. One week after insertion of the restoration, a harmonious "red-white ratio" and stably attached gingiva are visible. As the approximal contacts are optimally positioned based on the Tarnow rule, the papilla tips will develop after the maturing period of the soft tissue, which can take up to four months.

Final observations

Thanks to its external geometry and thread design, the PROGRESSIVE-LINE implant is ideally suited to immediate implantations and allows outstanding primary stability even in compromised bone situations.

Following clinical consideration, implantation with simultaneous augmentation is possible in difficult anatomical situations when high primary stability of the implant is attained.

The adaptation of the drilling protocol to suit the situation is another important aspect in the attainment of primary stability. Whilst the bone condensing is attained with the help of osteotomes, for example, in other implant systems, this implant can be simply inserted into an underprepared implant bed without any further measures. The desired bone compression is attained by means of the conical tip of the implant body and the cantilevered thread design. In conclusion, it can be stated that the new PROGRESSIVE-LINE implant is an extremely welcome addition to the CAMLOG portfolio.

Dr. Christian Hammächer

The Dental Clinic for
Implantology, Periodontology and
Prosthetics
Schumacherstraße 14
52062 Aachen
Tel.: +49 241 - 51 888 500
www.praxiszentrum-aachen.de

- Specialist in implantology and prosthetics
- Lectureship at the Clinic for Dental Prosthetics and Biomaterials at Aachen University Hospital
- Consultant for the German Association of Oral Implantology's (DGI)/German Academy of Practice and Science's (APW) Implantology Curriculum.
- Consultant for the German Association of Oral Implantology's Implantology Continuum
- Consultant for continuous education on the board of the German Association of Oral Implantology e.V.
- Main working areas: Implantology, hard and soft tissue management on teeth and implants, implant treatment in the aesthetic region, perioprosthetics, implant prosthetics, periimplantitis therapy

MAKE NO BONES ABOUT IT.

CONFIDENCE IN ALL BONE QUALITIES: PROGRESSIVE-LINE

SPECIALIST IN SOFT BONE:

- Apical conical area for high primary stability in soft bone
- Thread up to the apex, ideal for immediate implantation
- Thread design with deeply engaging thread flanks
- Flexible drill protocol for preferred stability

WWW.CAMLOG.COM

a perfect fit™

camlog

Subject to change · X.J7237.03/2019 Rev.00

DISTRIBUTOR
CAMLOG Vertriebs GmbH | Maybachstr. 5 | 71299 Wimsheim | Germany
info.de@camlog.com | www.camlog.de

CUSTOMER SERVICE
Phone 07044 9445-100 | Fax 0800 9445-000

HEADQUARTERS
CAMLOG Biotechnologies GmbH | Margarethenstr. 38 | 4053 Basel | Switzerland
Phone +41 61 565 41 00 | Fax +41 61 565 41 01 | info@camlog.com | www.camlog.com

camlog