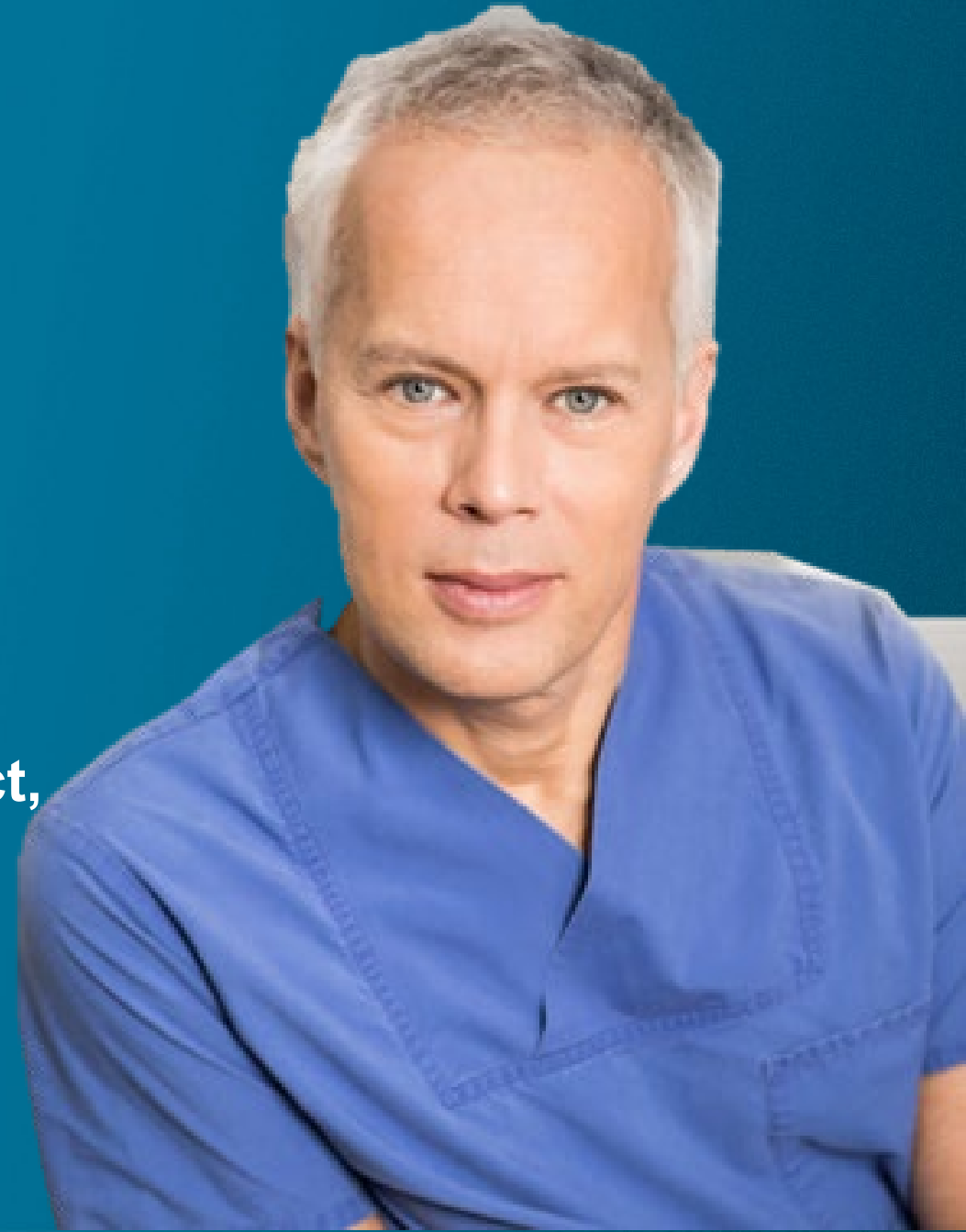


CLINICAL CASE

Horizontal ridge augmentation

using 3D printed bone, creos™ xenoprotect,
creos™ pin fixation magnesium pins and
NobelReplace® TiUltra™

Univ.-Prof. DDr. Werner Zechner, Vienna, Austria





Prof. Werner Zechner

Patient

A 39-year-old female patient with a history of periodontitis. No systemic conditions, non-smoker.

Clinical situation

The patient presents a horizontal atrophy in tooth position 46, tooth removal four years earlier by the referring dentist. Implants will be placed in tooth position 46 and 36.

Surgical solution

Horizontal ridge augmentation in tooth position 46 with a 3D-printed synthetic bone substitute, covered by a collagen membrane fixed with absorbable magnesium pins. After 6 months, a NobelReplace® TiUltra™ implant with a full zirconia crown will be placed.

Products used

creos™ syntogain 3D printed (not commercially available), creos™ xenoprotect, creos™ pin fixation, magnesium pins and NobelReplace® TiUltra™.

Surgery date

Tooth position 46: GBR 22nd October 2024; implant placement 10th of April 2025 (6 months), final prosthesis 25th of November 2025 (13 months)

Tooth position 36: GBR 26th November 2024; implant placement 12th of June 2025 (2 months), final prosthesis 25th of November 2025 (12 months)

Expected treatment time

8 months

Tooth position

46

**Initial clinical
situation**

**Horizontal ridge
augmentation**

Implant placement

Clinical outcome

Initial clinical situation



Horizontal atrophy in tooth position 46.



Spiral CT aspect of the crestal width.

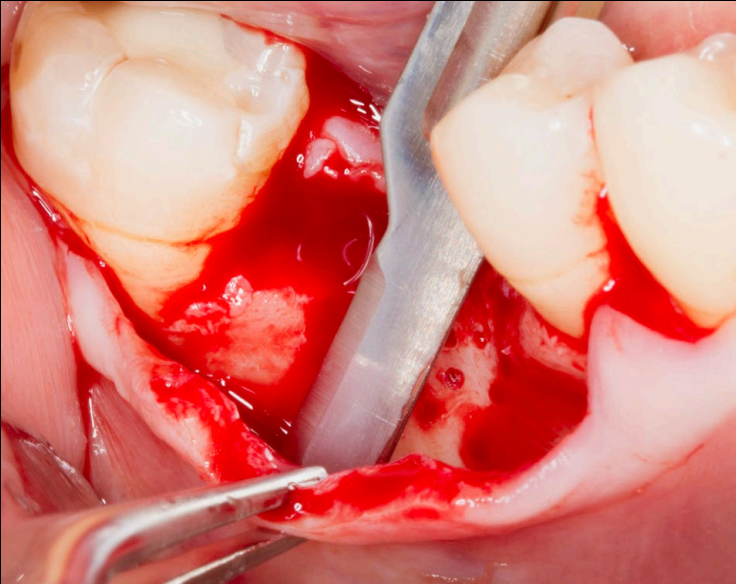
**Initial clinical
situation**

**Horizontal ridge
augmentation**

Implant placement

Clinical outcome

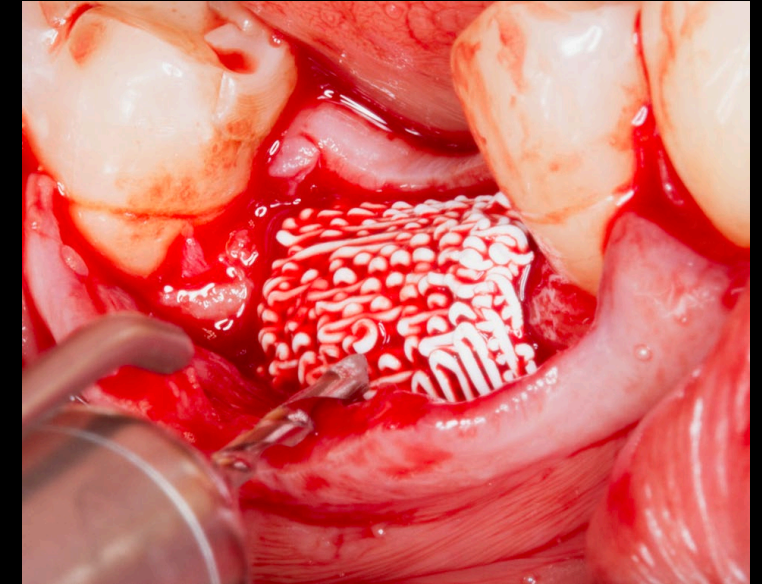
Preparation of recipient site, placement of the synthetic bone graft (tooth position 46)



Early periosteal release for a tension-free closure and reduced hematoma formation.



Opening of full thickness flap and decortication of the bone for improved vascularization.



Positioning and fixation of a 3D printed, synthetic bone graft.

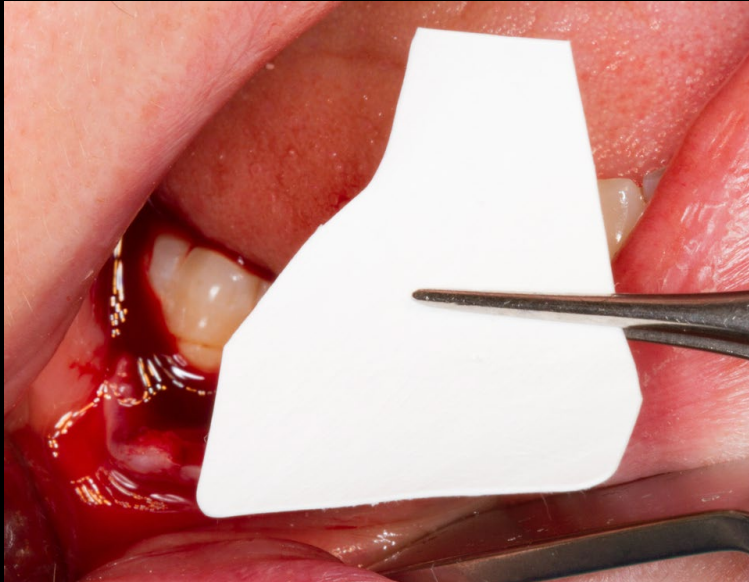
**Initial clinical
situation**

**Horizontal ridge
augmentation**

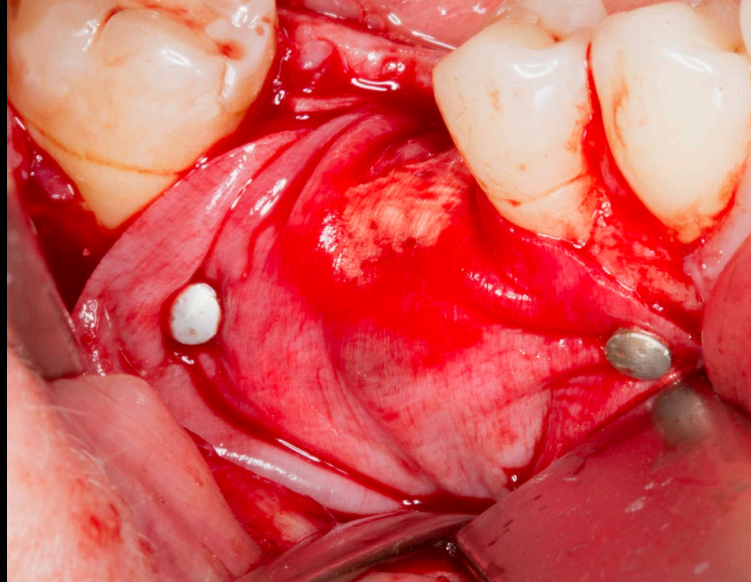
Implant placement

Clinical outcome

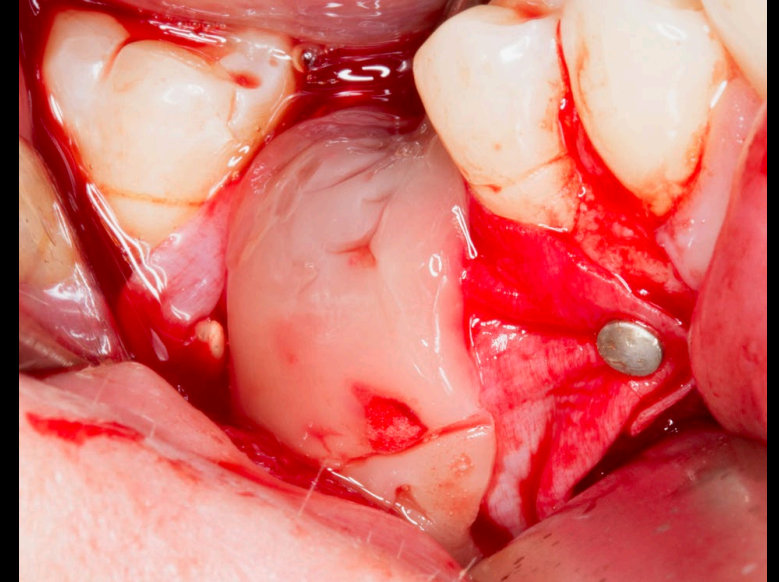
Positioning of membrane and fixation with magnesium pin (tooth position 46)



Covering of the synthetic bone graft using a creos xenoprotect collagen membrane.



Immobilization of the membrane using absorbable creos magnesium pins.



L-PRF membrane coverage on top of the collagen membrane for support of the soft tissue healing / dehiscence prophylaxis.

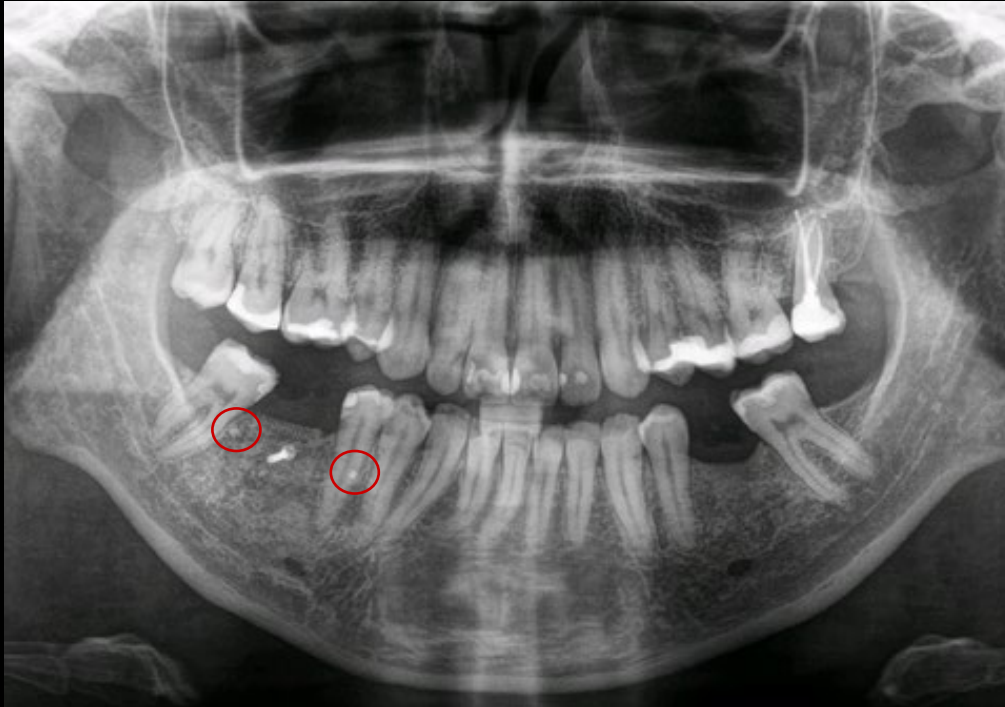
**Initial clinical
situation**

**Horizontal ridge
augmentation**

Implant placement

Clinical outcome

Outcome after the horizontal ridge augmentation (tooth position 46)



Radiographic visualization of magnesium pins on CBCT taken after the horizontal ridge augmentation.



After 14 days: Clinical situation observed at the time of suture removal following augmentation surgery.

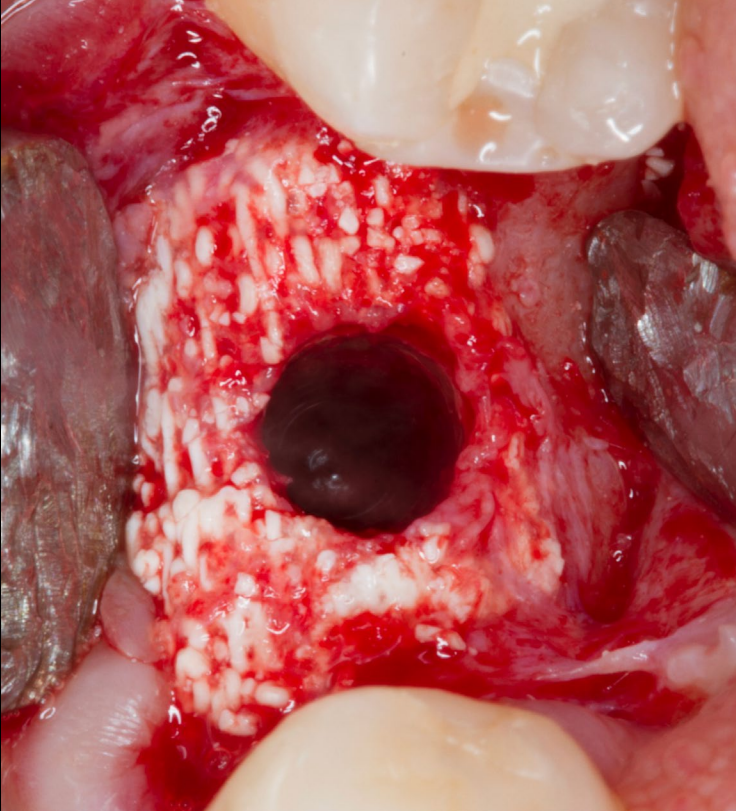
**Initial clinical
situation**

**Horizontal ridge
augmentation**

Implant placement

Clinical outcome

Implant placement 6 months after horizontal ridge augmentation (tooth position 46)



Drilled osteotomy site in the augmented bone.



Insertion of a NobelReplace® TiUltra™ implant.



7 days after implant insertion, uneventful transgingival healing with healing abutment.

**Initial clinical
situation**

**Horizontal ridge
augmentation**

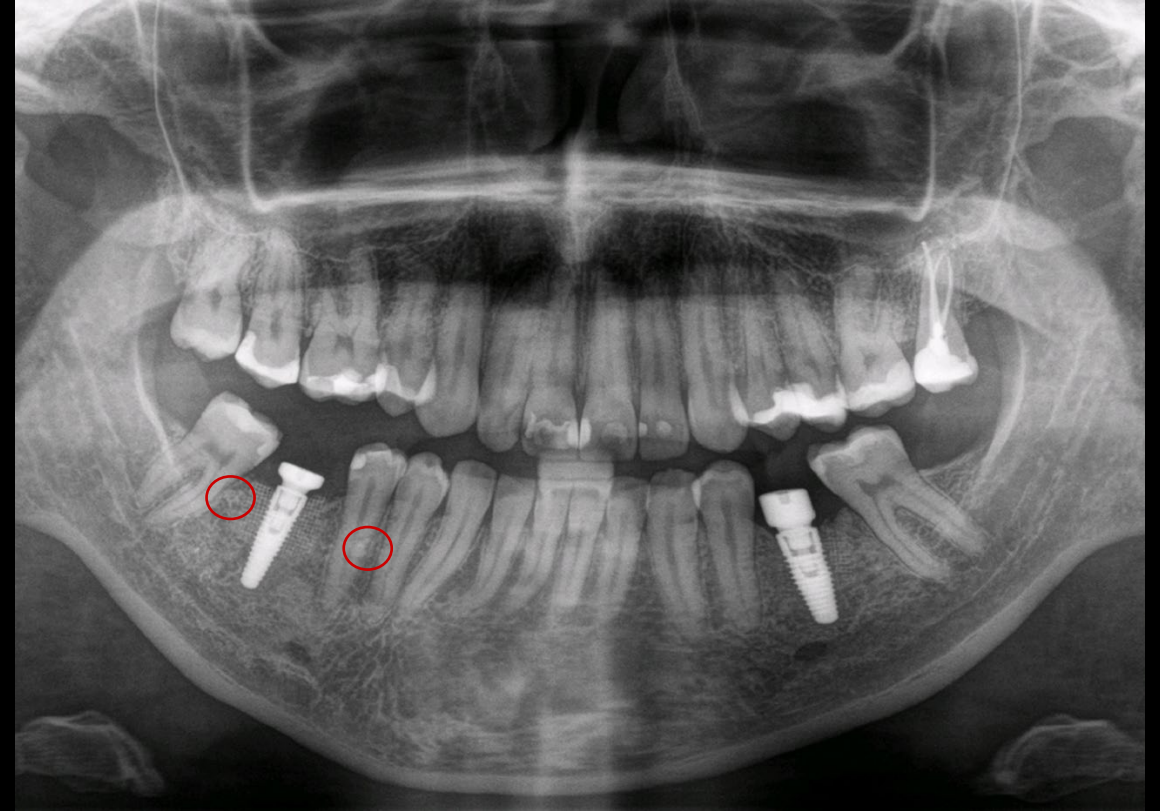
Implant placement

Clinical outcome

Follow-up: Clinical situation and CBCT



Follow-up: Clinical situation two months after implant placement (46) and seven days after implant placement (36).



Follow-Up: CBCT ten months after magnesium pin placement at position 46, showing reduced visibility of the pin, consistent with resorption. Four months after implant placement (46) and two months after implant placement (36).

**Initial clinical
situation**

**Horizontal ridge
augmentation**

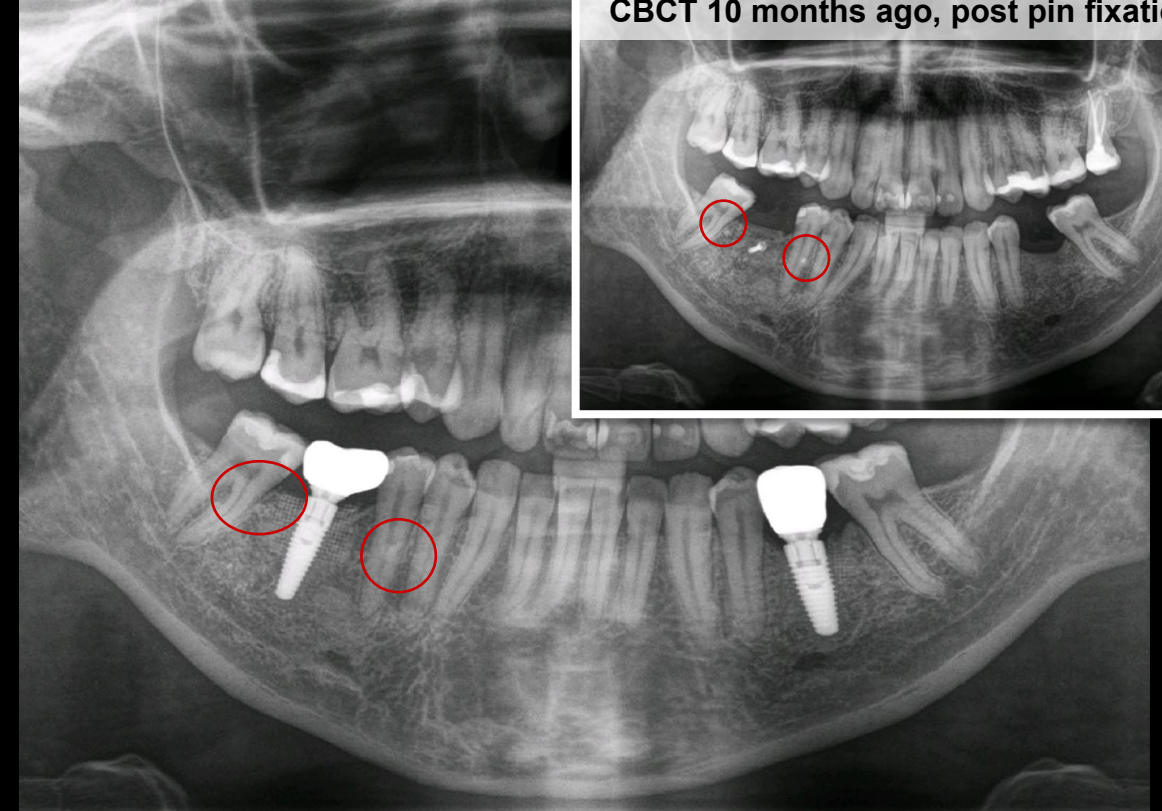
Implant placement

Clinical outcome

Referral case: Prosthetic phase completed by DDr. Ioana Brana



Clinical picture after delivery of final full-ceramic crowns still without closure of the screw channels.



CBCT after delivery of final prosthetics, with magnesium fixation pins barely visible.

**Referral case: surgical phase (GBR and implant placement) performed by Univ.-Prof. DDr. Werner Zechner;
prosthetic treatment and follow-up images courtesy of DDr. Ioana Brana.**

