

Minimally invasive tooth extraction

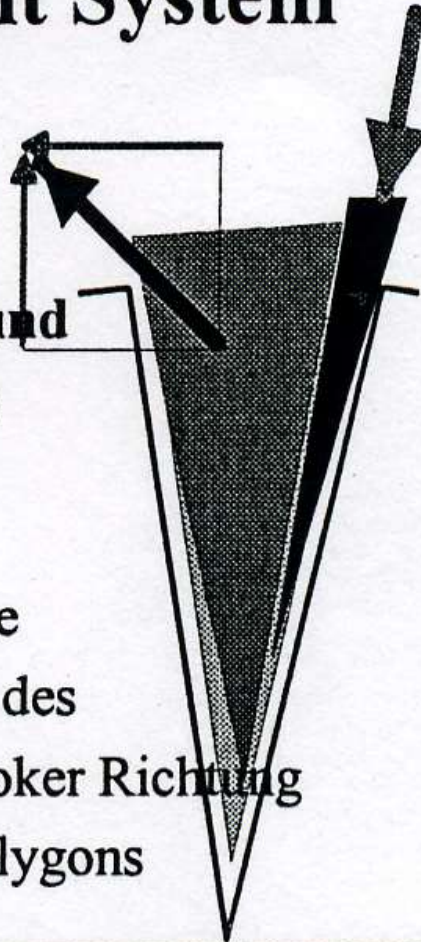
aus: Pajarola, 2000
„Eine Anleitung zur schonenden Zahnentfernung“

Zahnextraktion mit System

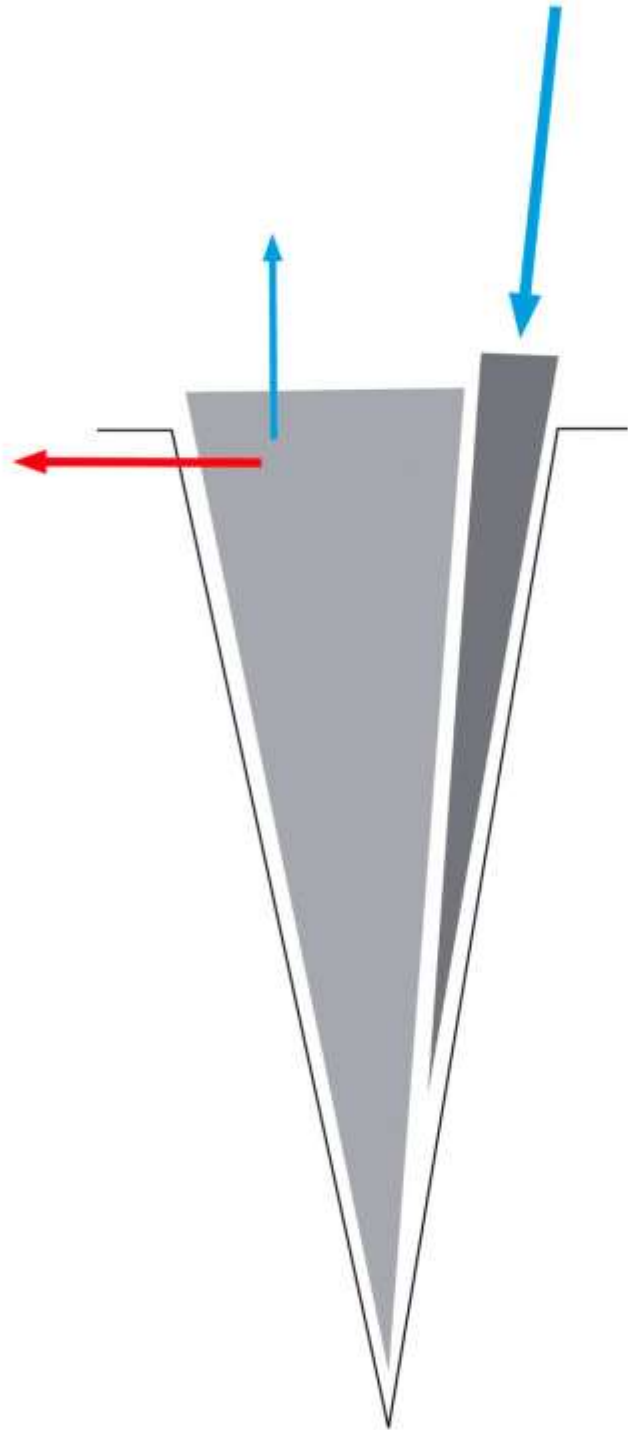
- Physik:
 - **Beachtung physikalischer und mechanischer Grundlagen:**
 - Kräftepolygon:

Bei starrer Umgebung und ohne Reibung erfolgt die Bewegung des keilförmigen Körpers in reziproker Richtung
Berücksichtigung des Kräftepolygons

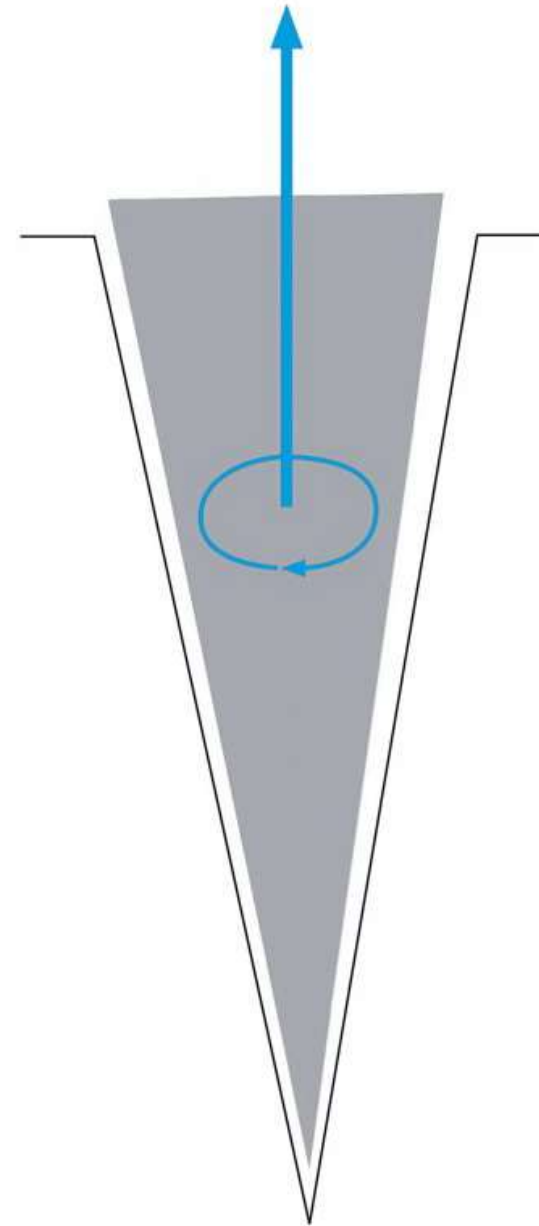
ZPO 2000

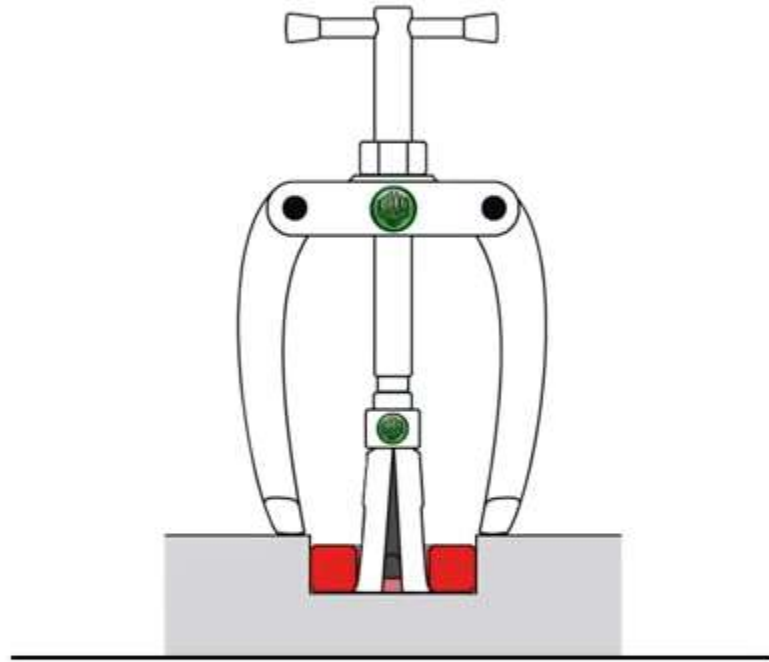


«Die minimalinvasive Implantattherapie beginnt nicht erst beim Implantieren, sondern startet bereits vor der Zahnextraktion», so PD Dr. Ronald Jung.



Length extraction along the root axis with Benex



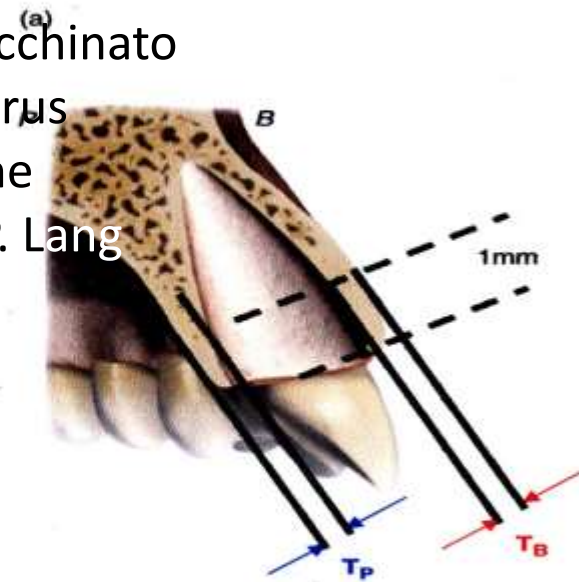


Im Normalfall wird der Innenauszieher mit einer Gegenstütze kombiniert. Die Gegenstütze benötigt eine Abstützhilfe um das abzuziehende Teil.



Guy Huynh-Ba
 Bjarni E. Pjetursson
 Mariano Sanz
 Denis Cecchinato
 Jorge Ferrus
 Jan Lindhe
 Niklaus P. Lang

Analysis of the socket bone wall dimensions in the upper maxilla in relation to immediate implant placement



palatal bony walls. It is obvious that the frequency distribution curve of the palatal bony wall width is shifted to the right as compared with the one for the buccal bony wall width, indicating a wider bony plate on the palatal aspect.

The vast majority of the buccal bony walls (71%) had a width of 0.5–1 mm. Only 6.5% of the buccal walls displayed a width of 2 mm or more. For the palatal bony walls, the vast majority (60.2%) had a width within 0.5–1 mm as well. However, a width of 2 mm or more was a common finding (20.5%).

On the buccal aspect, 0.5 mm wide walls represented the most often encountered value (40.9% of the sites).

A subset analysis performed to discriminate anterior (canine to canine) and posterior sites (premolars) showed a mean width

Fig. 1. Measurement of the width of the palatal and buccal socket walls

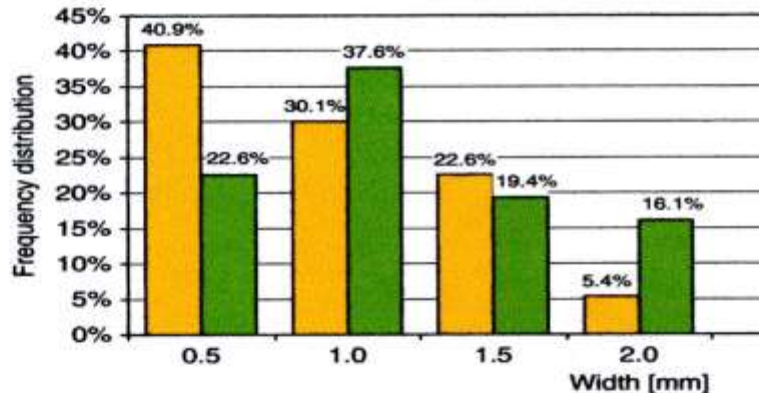
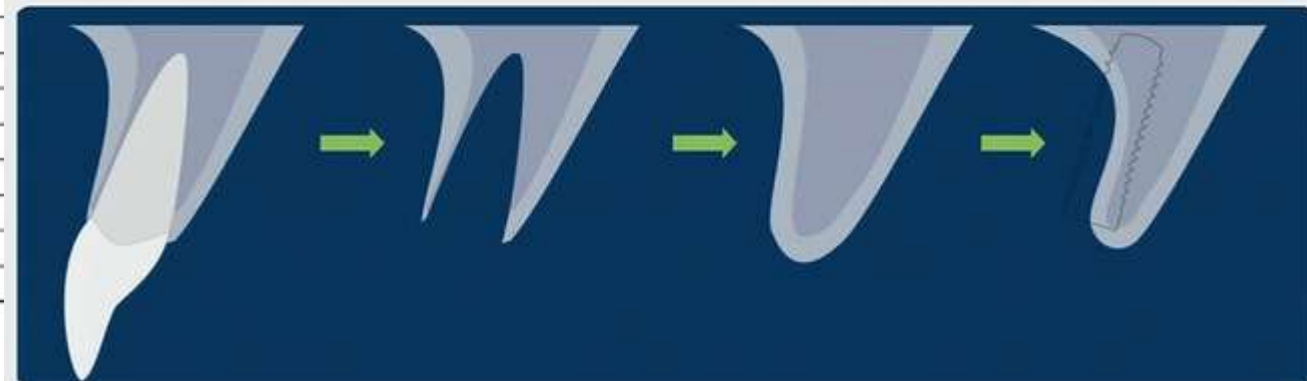


Fig. 2. Frequency distribution of the widths of the buccal and palatal bony walls.

Most resorption first 4 months Chen et al, 2004



bone wall width, there was an obvious shift to the right for the frequency distribution



Minimally Traumatic Extraction Techniques

Eduardo R. Lorenzana



Eduardo R. Lorenzana

Extraction Techniques

Anchor-and-pulley vertical extraction device



Periotome



Drill to prepare channel > 7 mm



Anchor



Traction cable



Hand screw



Extraction

Menu

- Instrumentation
- Techniques
- Tooth Sectioning
- Advanced Luxation Techniques
- Periotome - 01
- Periotome - 02
- Periotome - 03
- Powered Periotome - 01
- Powered Periotome - 02
- Proximator
- Piezosurgery - 01
- Piezosurgery - 02
- Vertical Tooth Displacement
- Orthodontic Extrusion
- Anchor-and-Pulley Vertical Extraction Device - 01
- Anchor-and-Pulley Vertical Extraction Device - 02**
- Anchor-and-Lever Device - 01

Minimally Invasive Extraction Techniques

Eduardo Lorenzana



ITI
Congress
Australasia
Melbourne
September 2-3
2016



Minimally Invasive Extraction Techniques

Dr. Eduardo Lorenzana

Private Practice, San Antonio, TX

Adjunct Asst. Professor, Baylor College of Dentistry

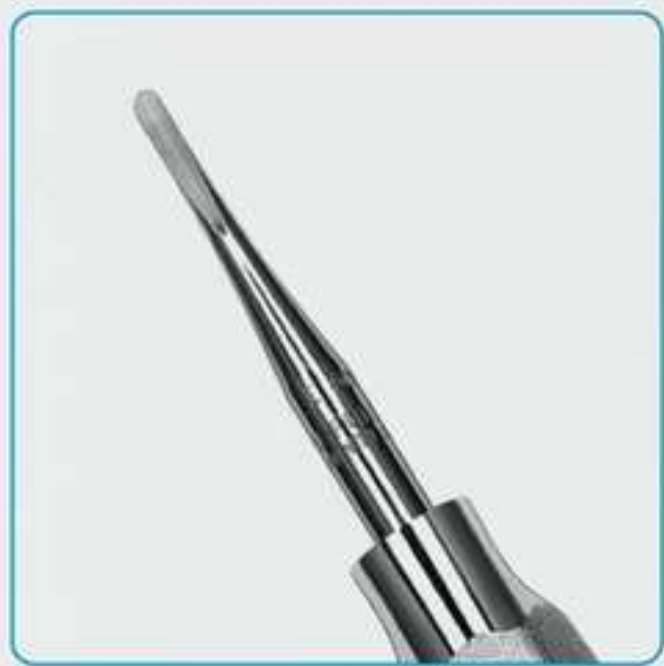
Faculty, Preceptorship in Oral Implantology, UTHSCSA Dental School



- Luxation
- Elevation



Traditional Instrumentation



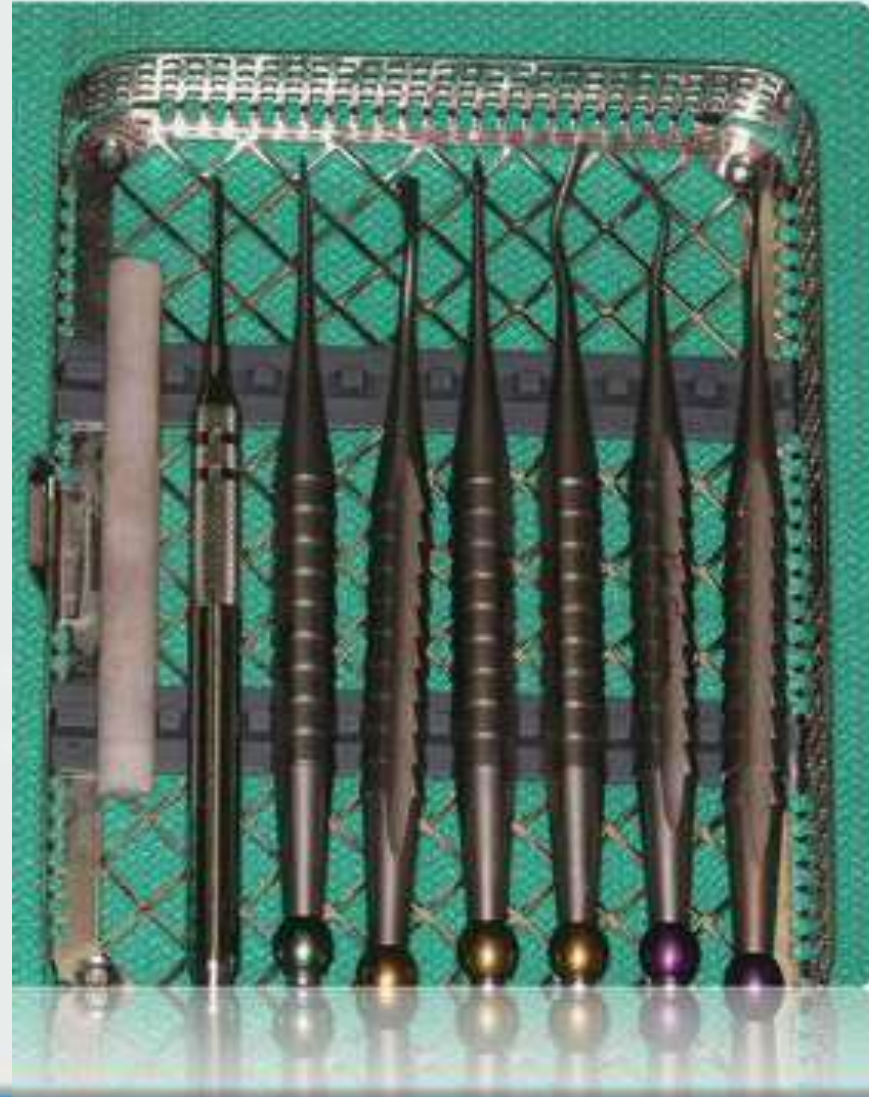
- Periotome
- **Powered** periotome
- Proximators
- Powered luxation
- Piezosurgery



Minimally Invasive Extraction Techniques

Eduardo Lorenzana

Proximators



Minimally Invasive Extraction Techniques

Vertical Tooth Extraction

- Minimally invasive
- Avoid ostectomy
- Gentle on soft tissue, bone
- Patient-friendly

*and important
lapless extraction*



- Flapless surgery
- ∅ buccal expansion
- ∅ aggressive removal of bone







Tooth Extraction

No huge effort



Tooth Extraction

No huge effort

Game with patience



- 1 Bone adhering to the periosteum
- 2 Alveolar deficiency with bone regeneration

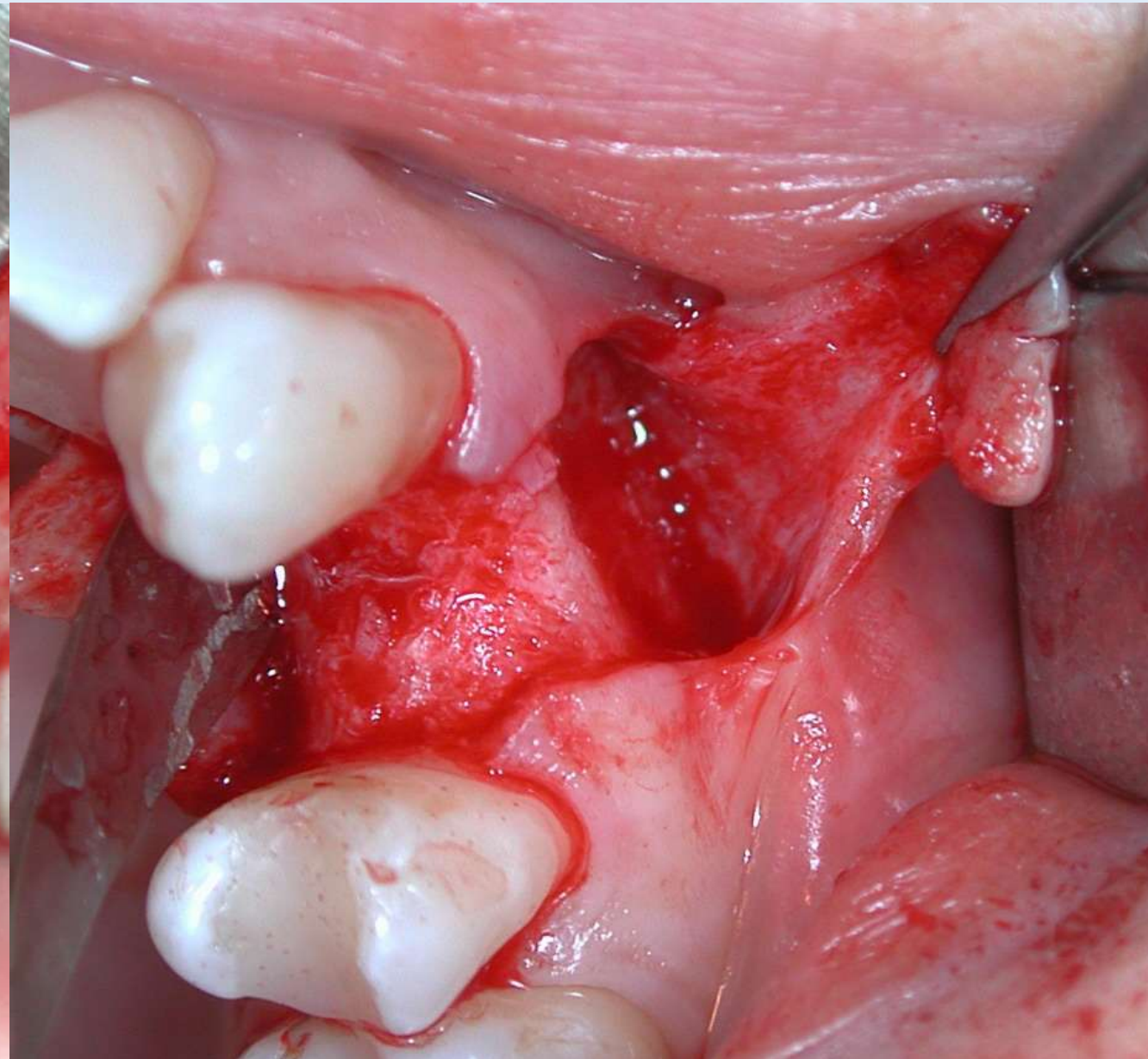
1



2

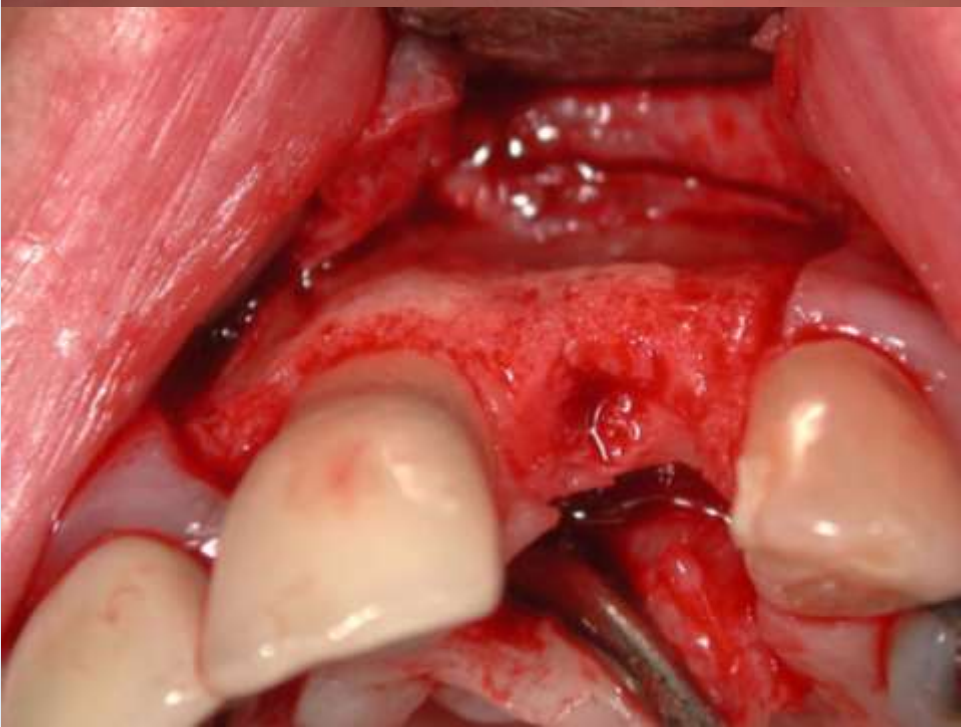


- 1 Knochen am Periost anhaftend
- 2 Alveolenwanddefekt in Reparation





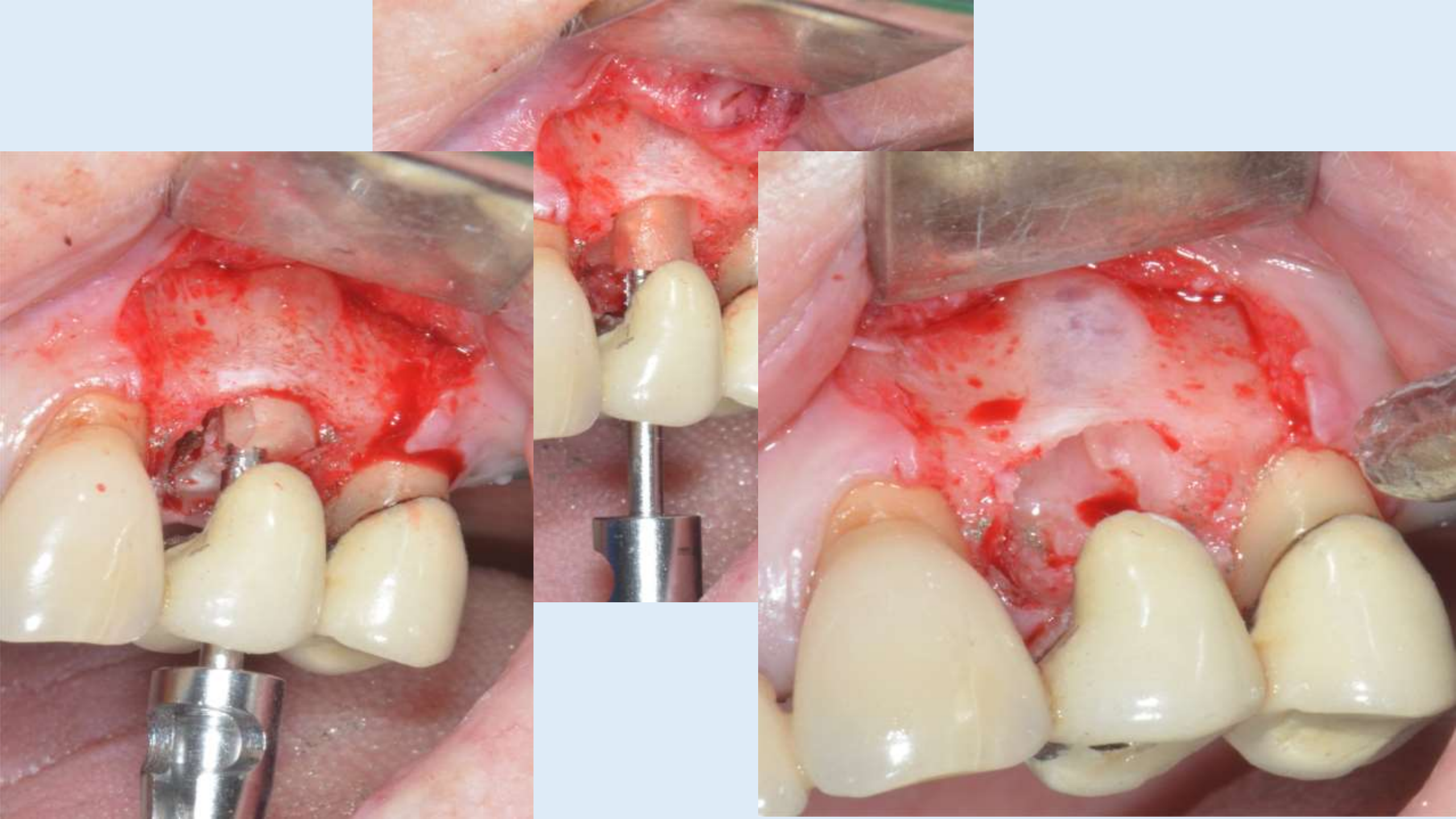


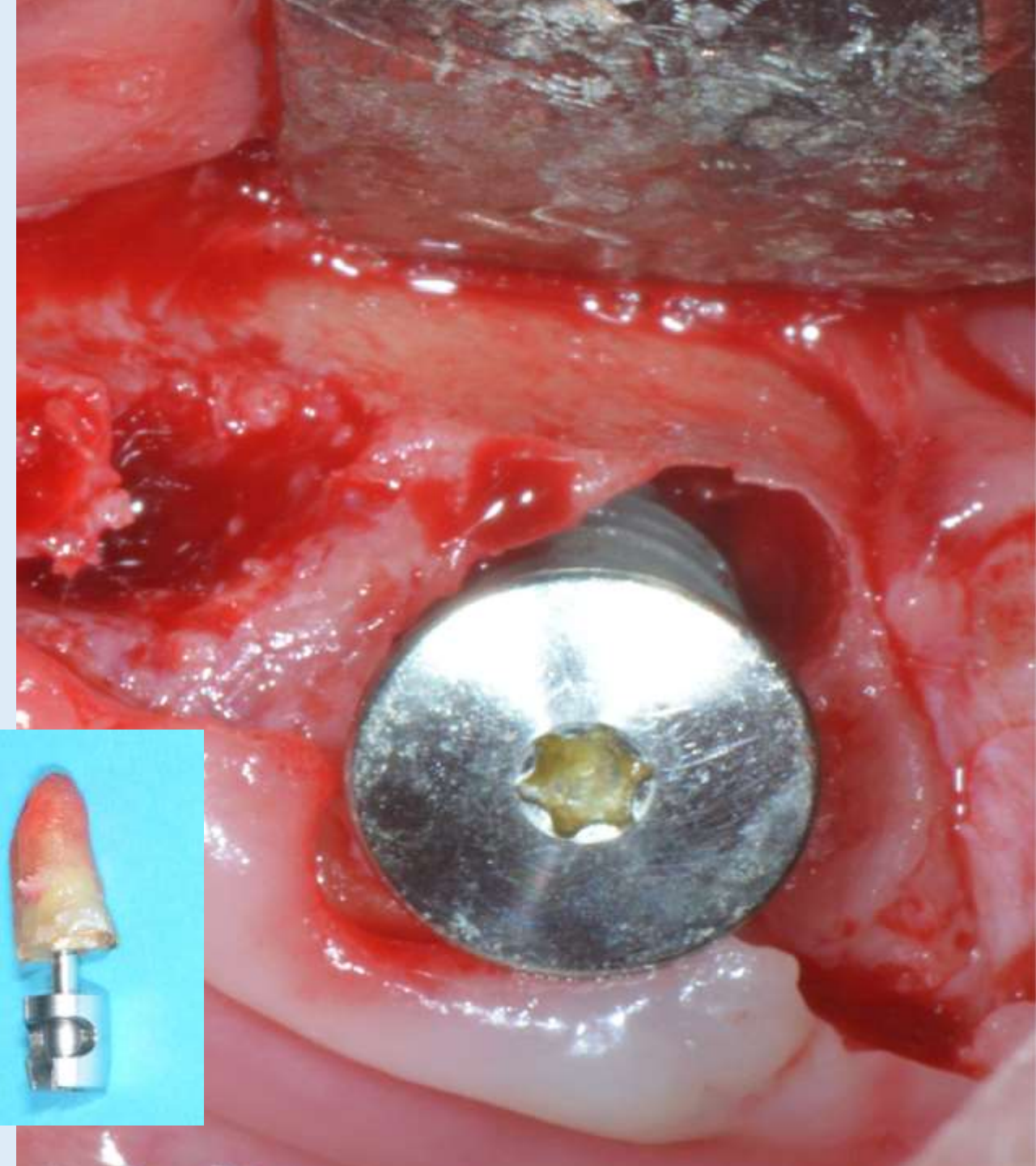
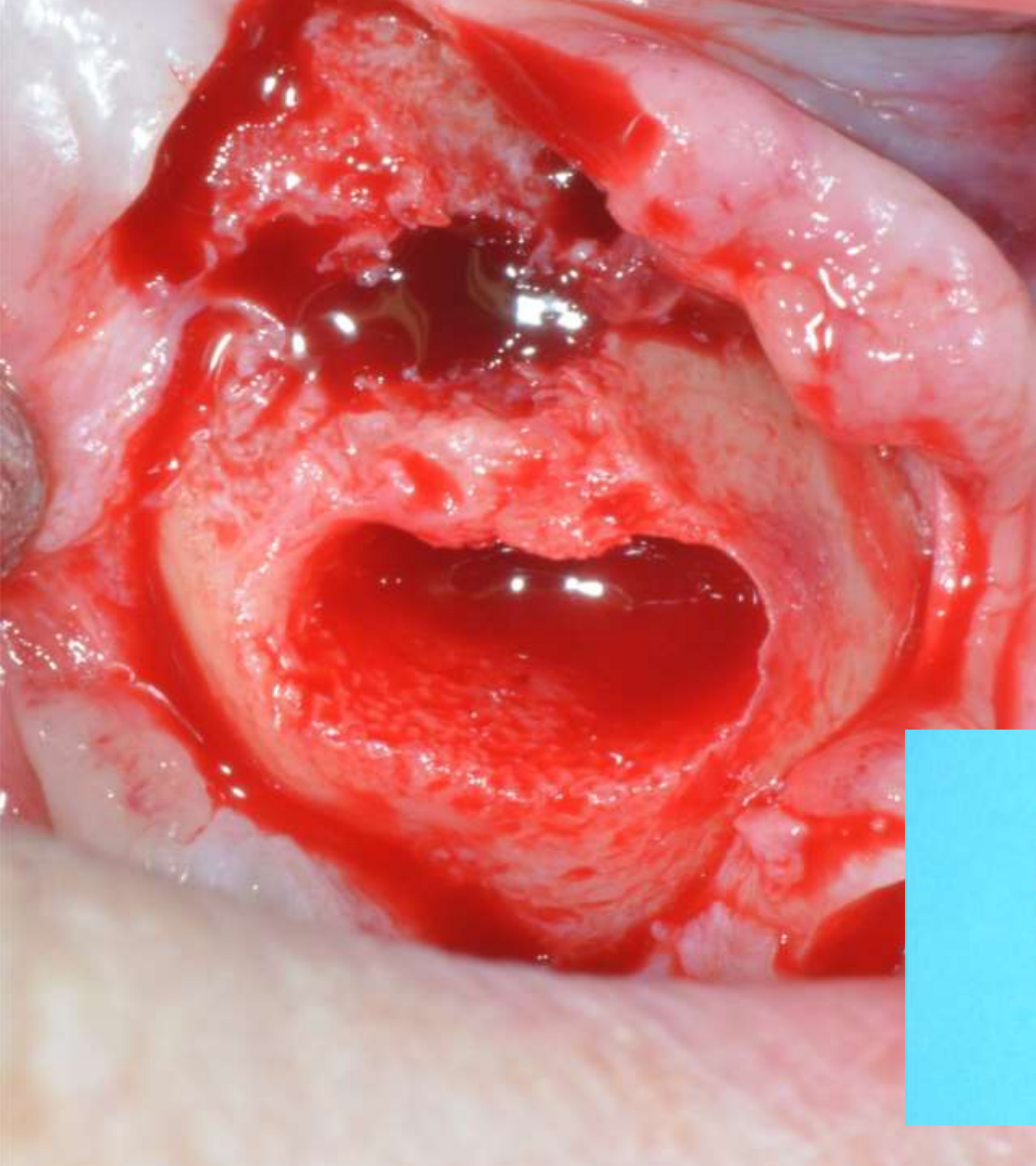




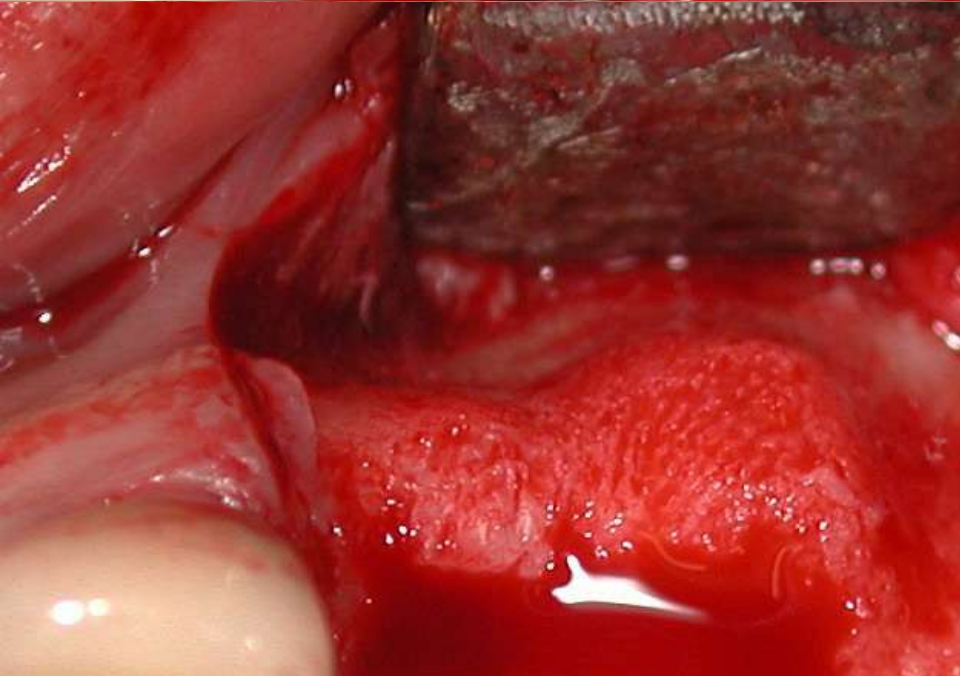
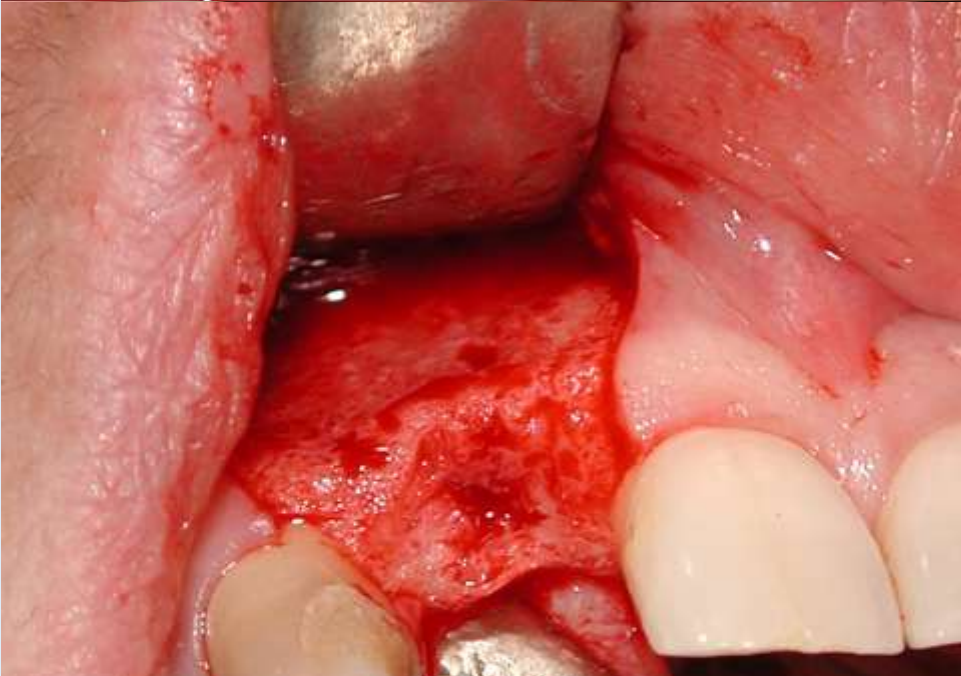
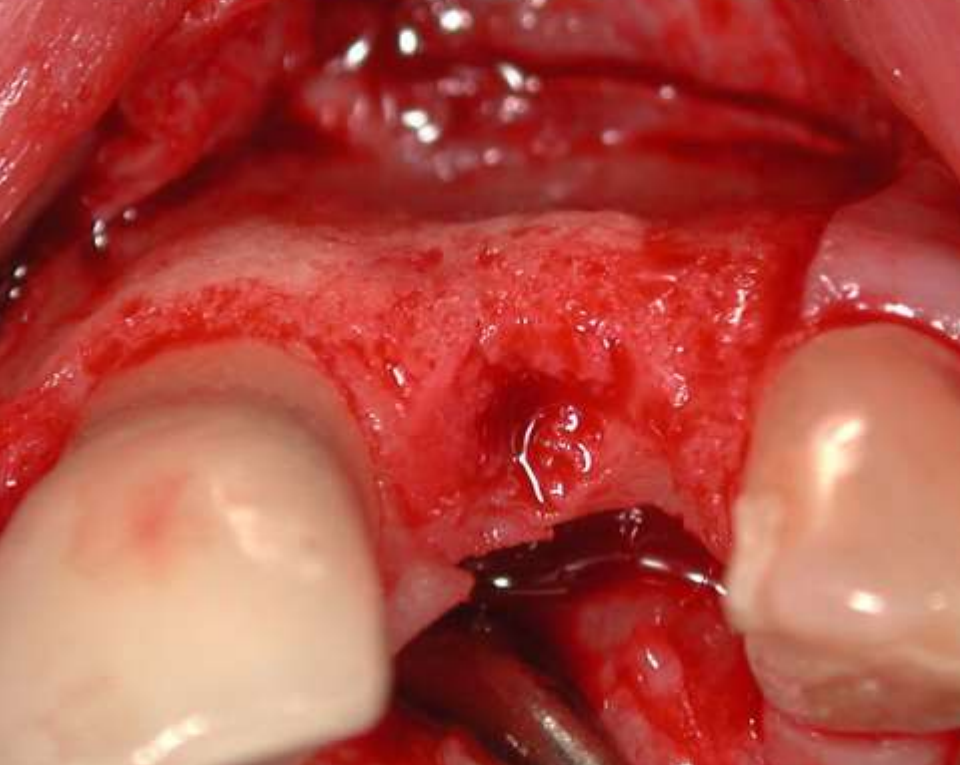
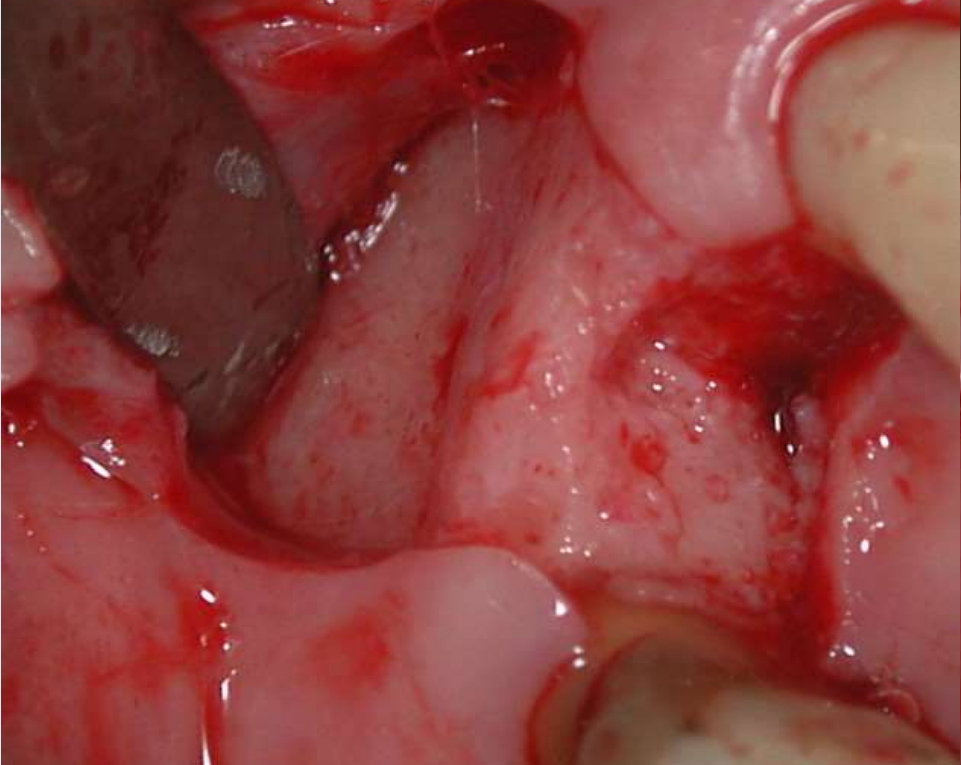








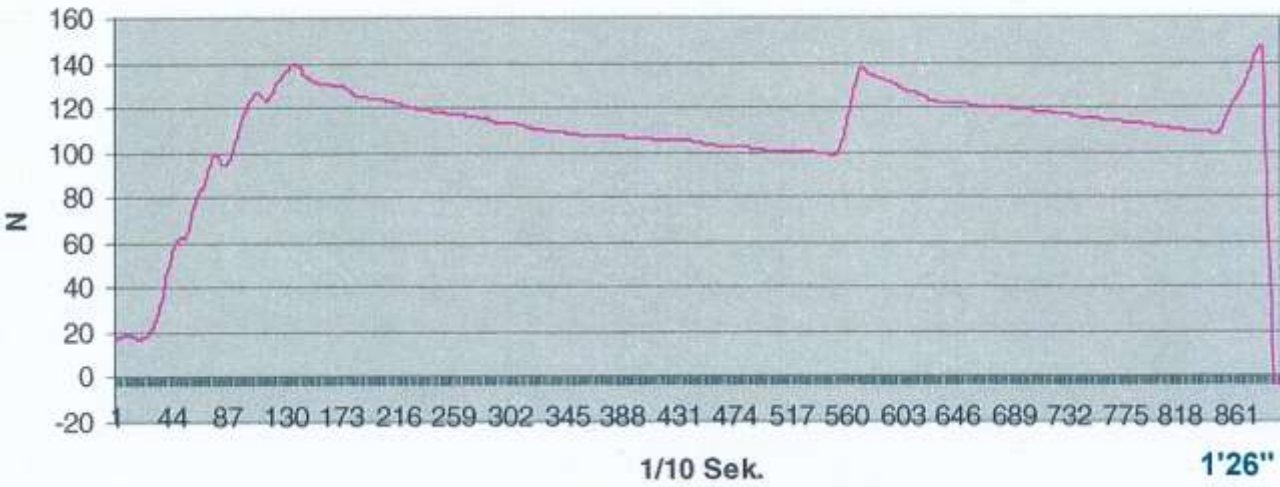




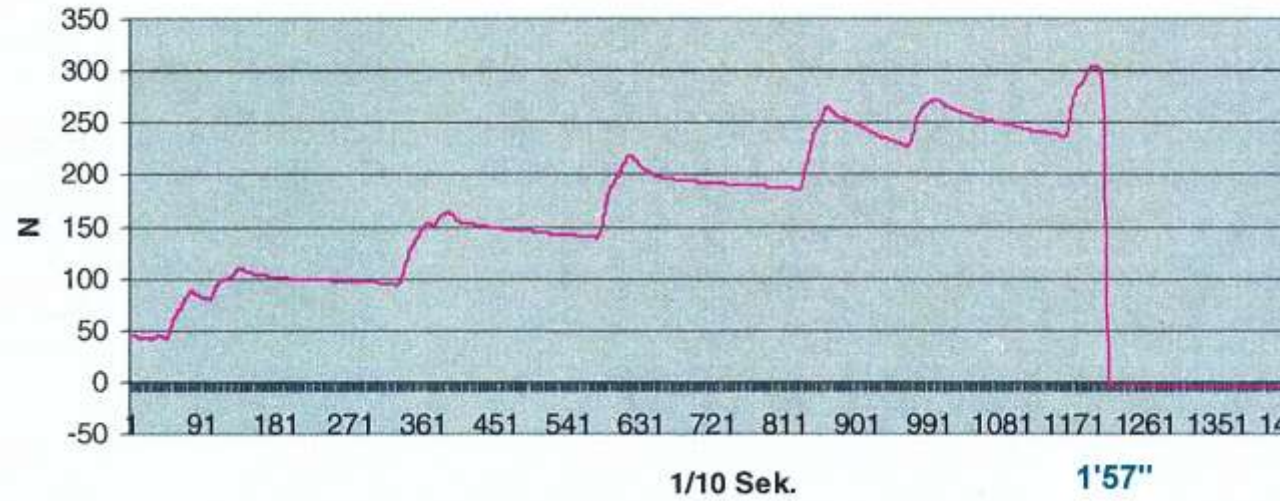
Subcrestale Kronen-/Wurzelfraktur



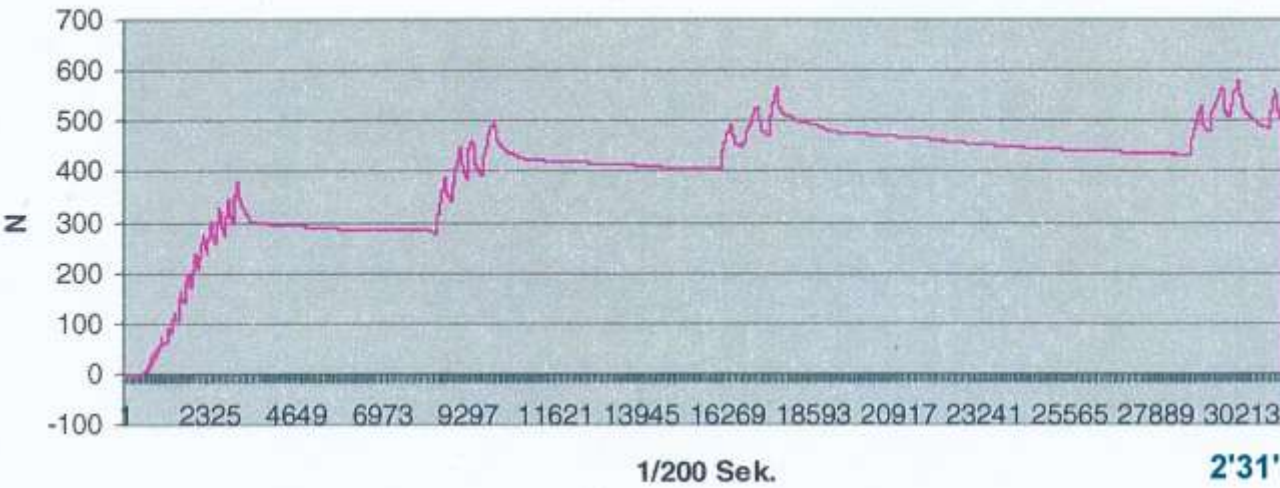
Zugkräfte Zahn 35



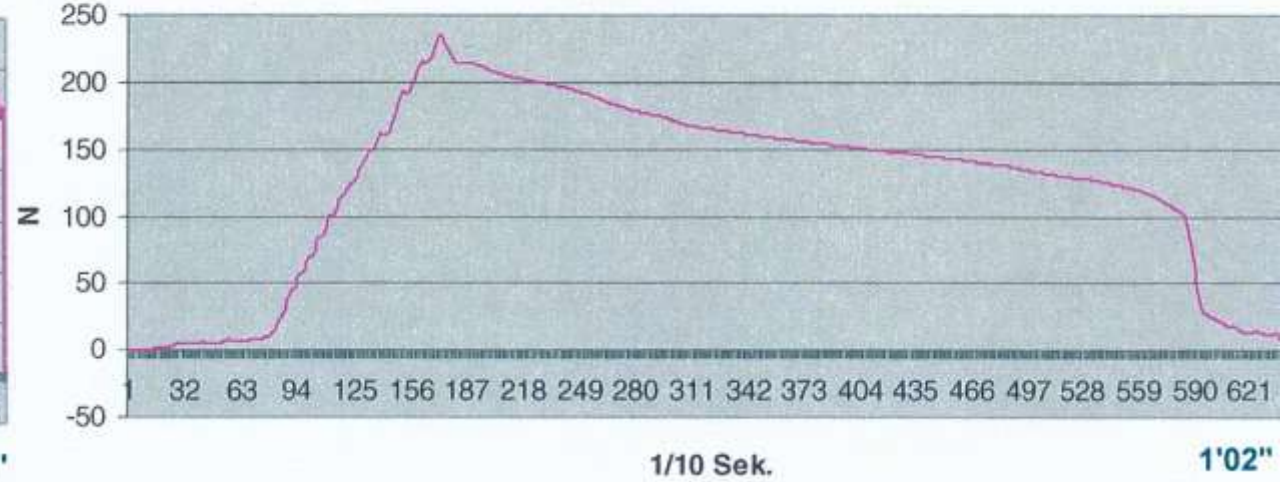
Zugkräfte Zahn 35



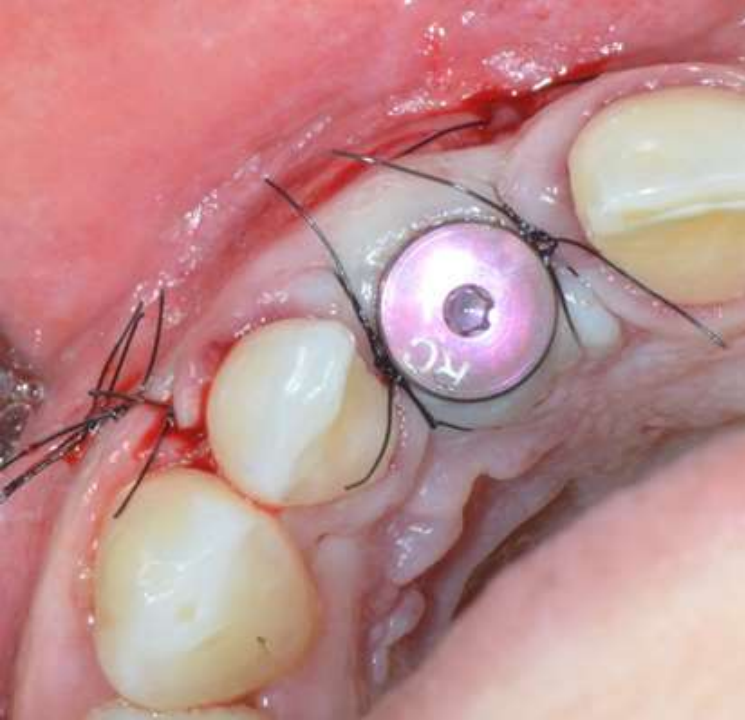
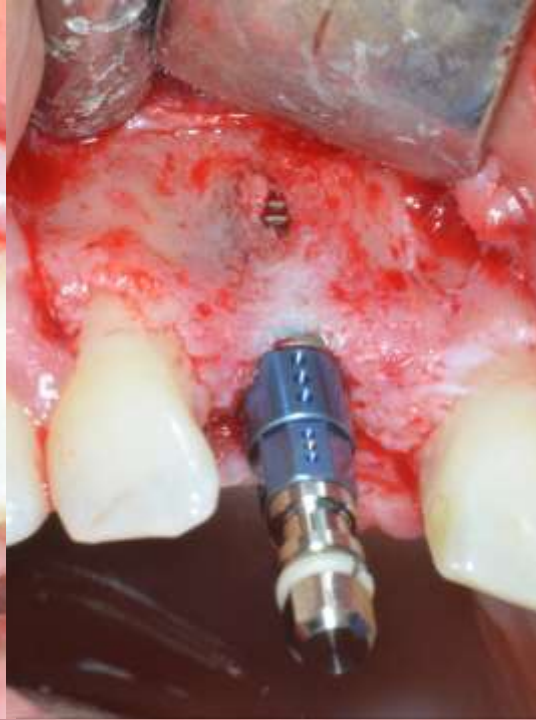
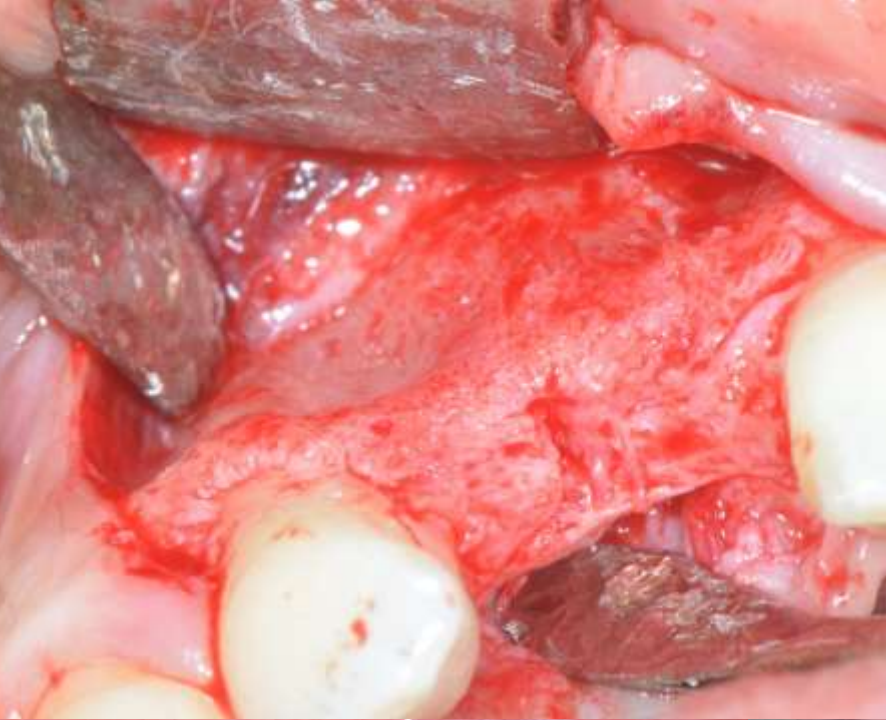
Zugkräfte Zahn 24



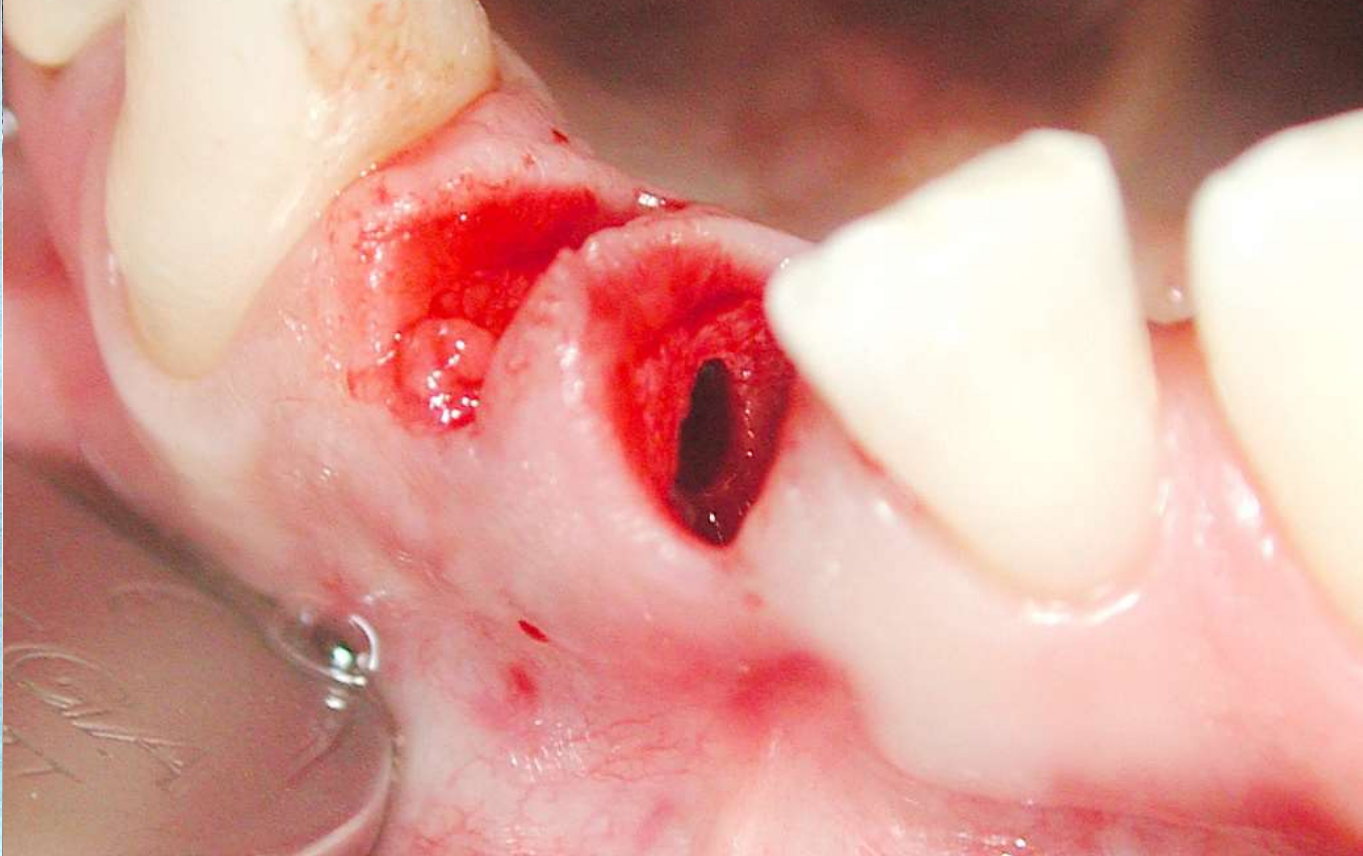
Zugkräfte Zahn 44

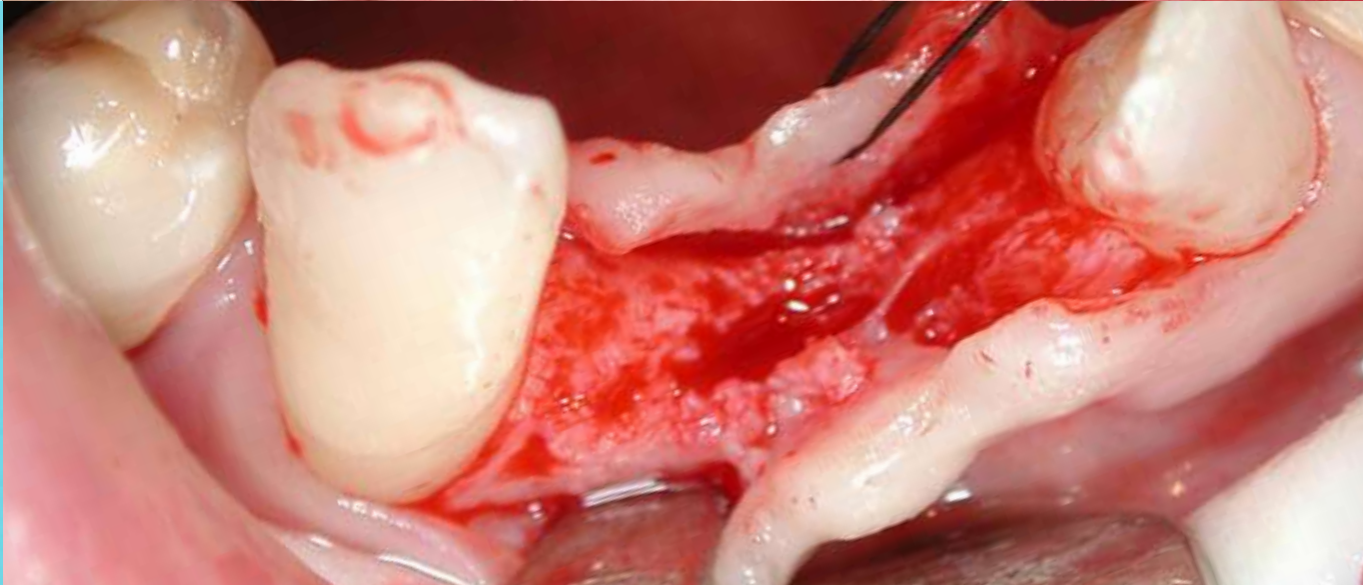
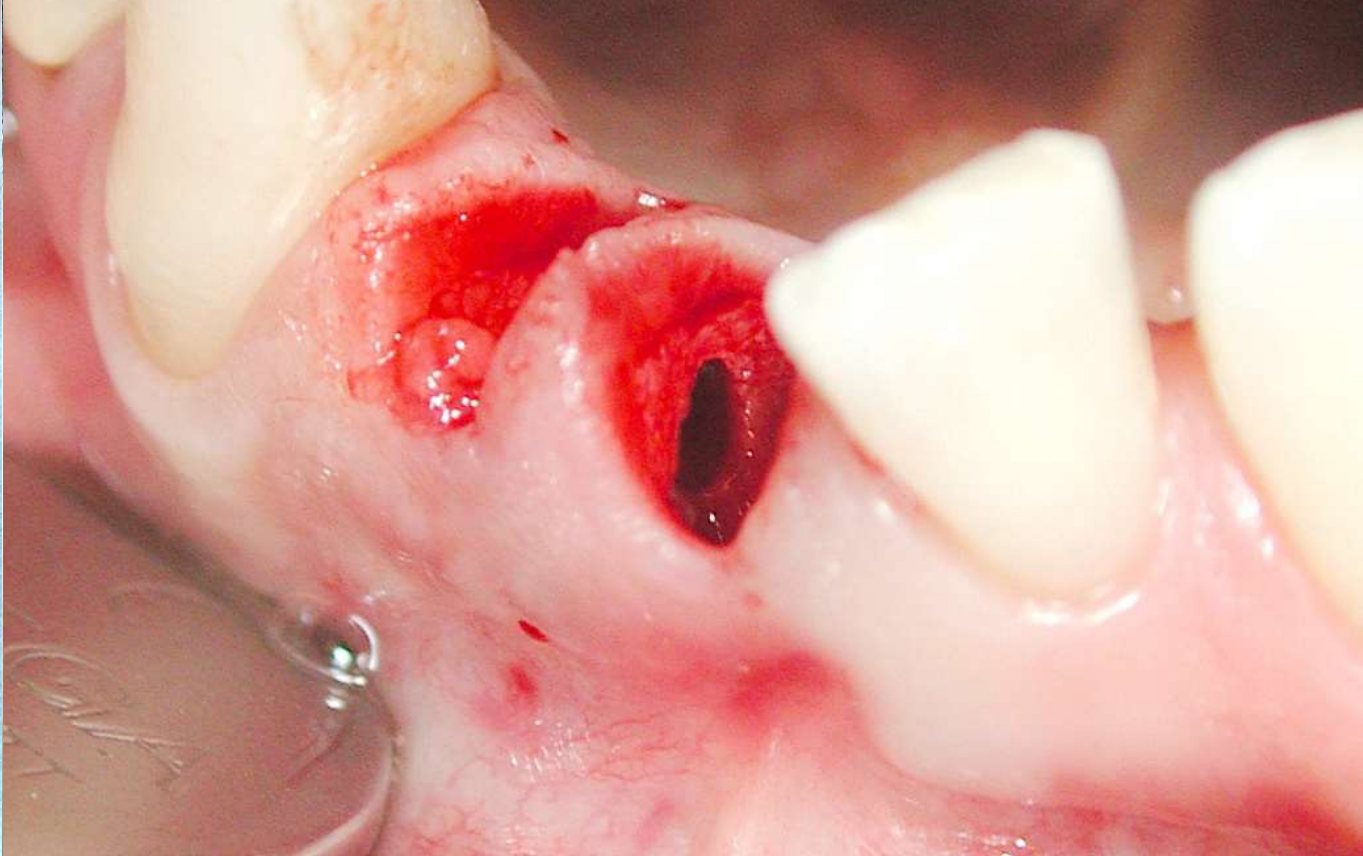


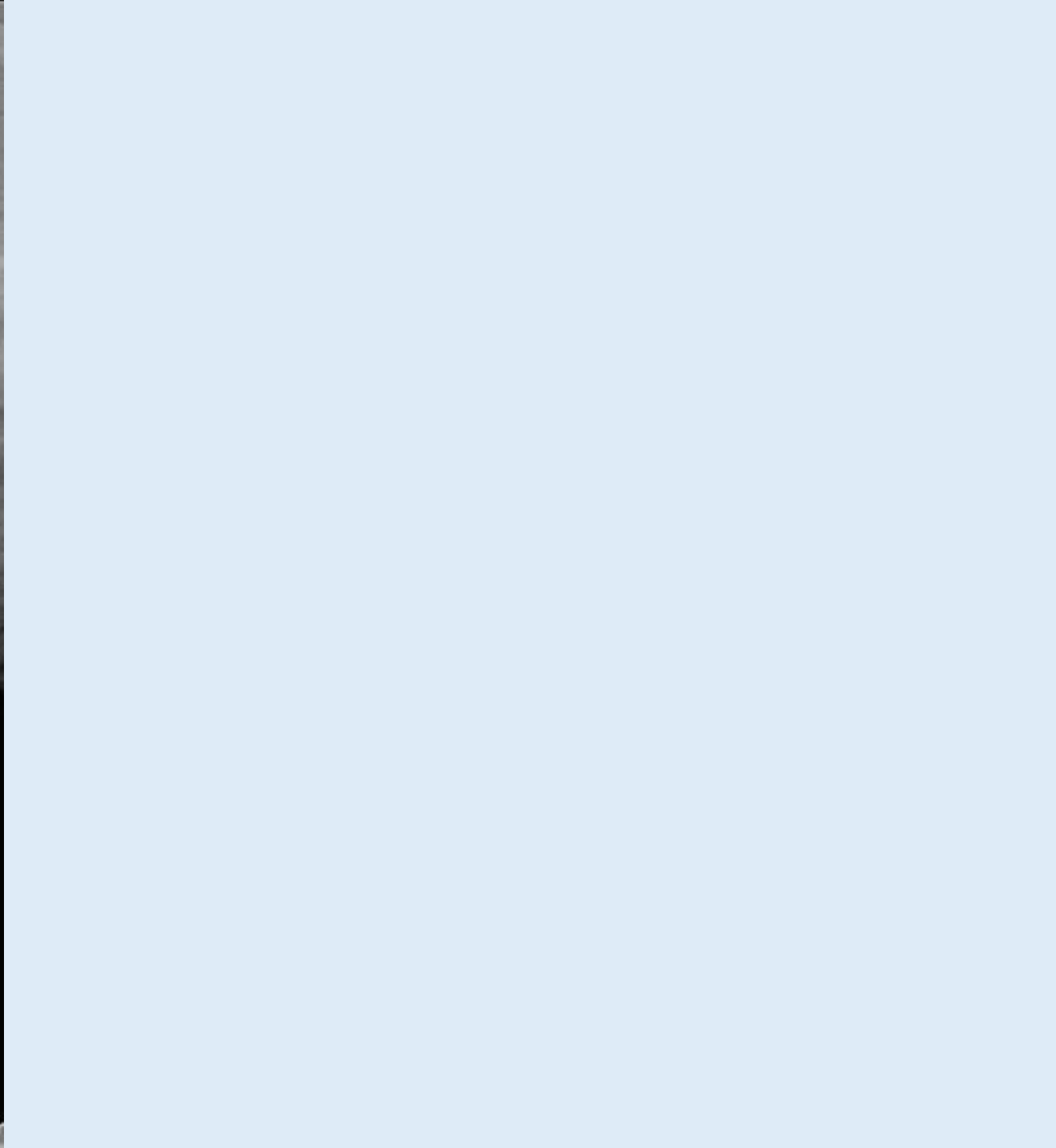
aus: Schmid I. Kräftermessung bei Zahnextraktionen mit dem Benex-Extraktor.
Med.Diss. Zürich, Klinik für Mund-, Kiefer- und Gesichtschirurgie, 2010

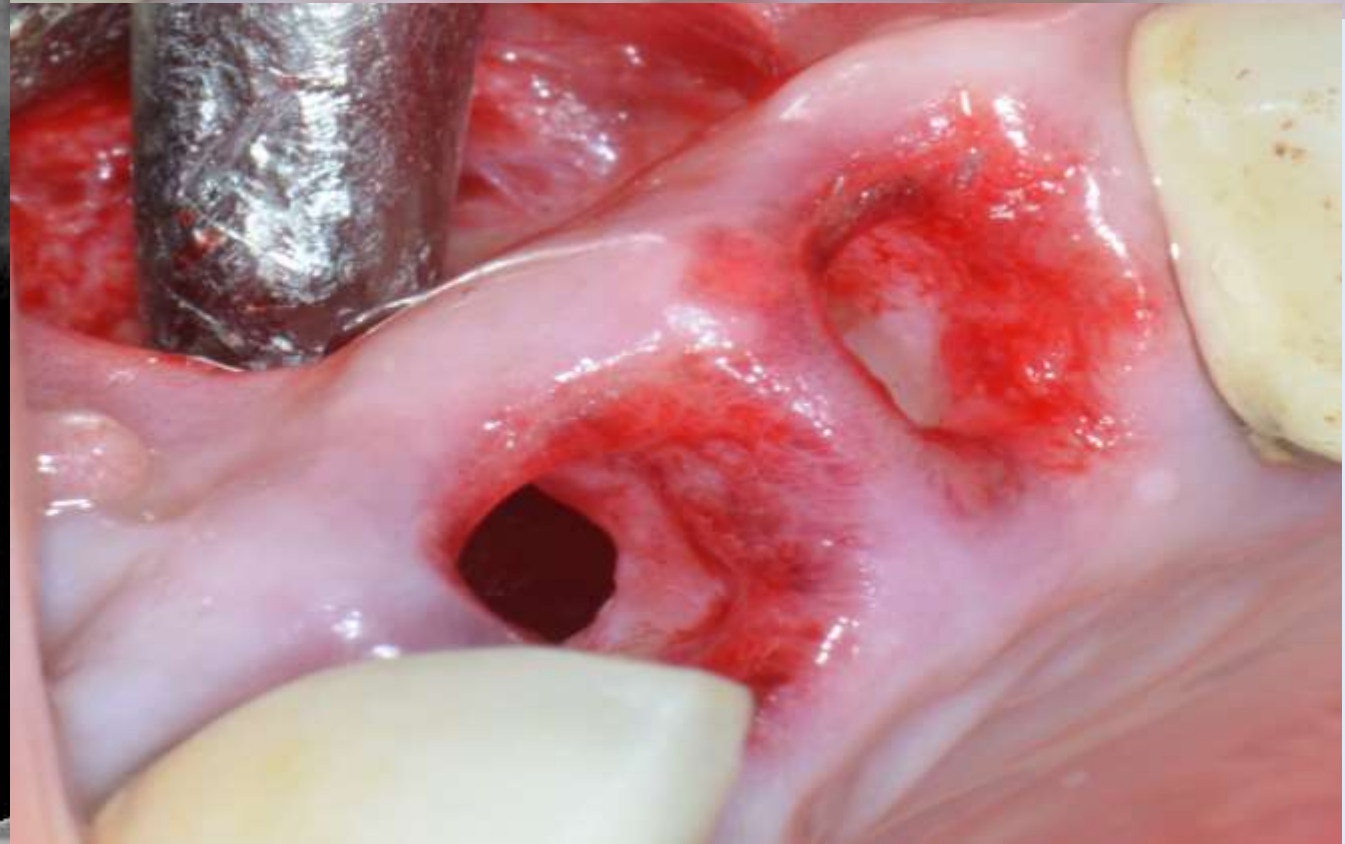


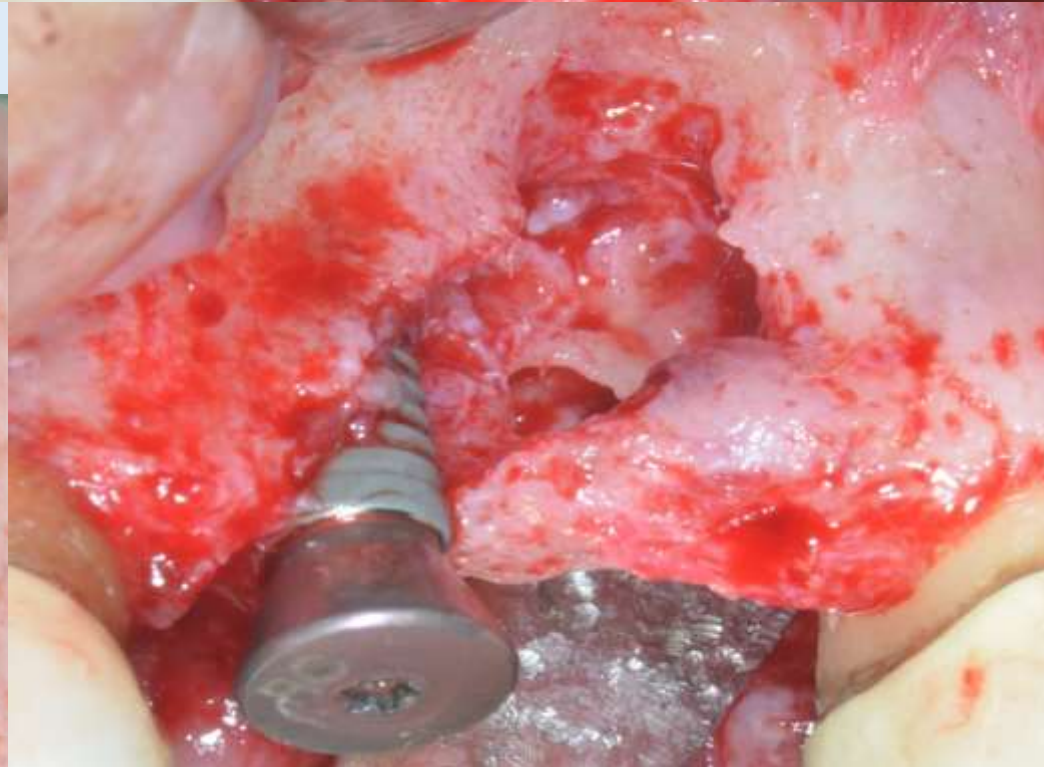
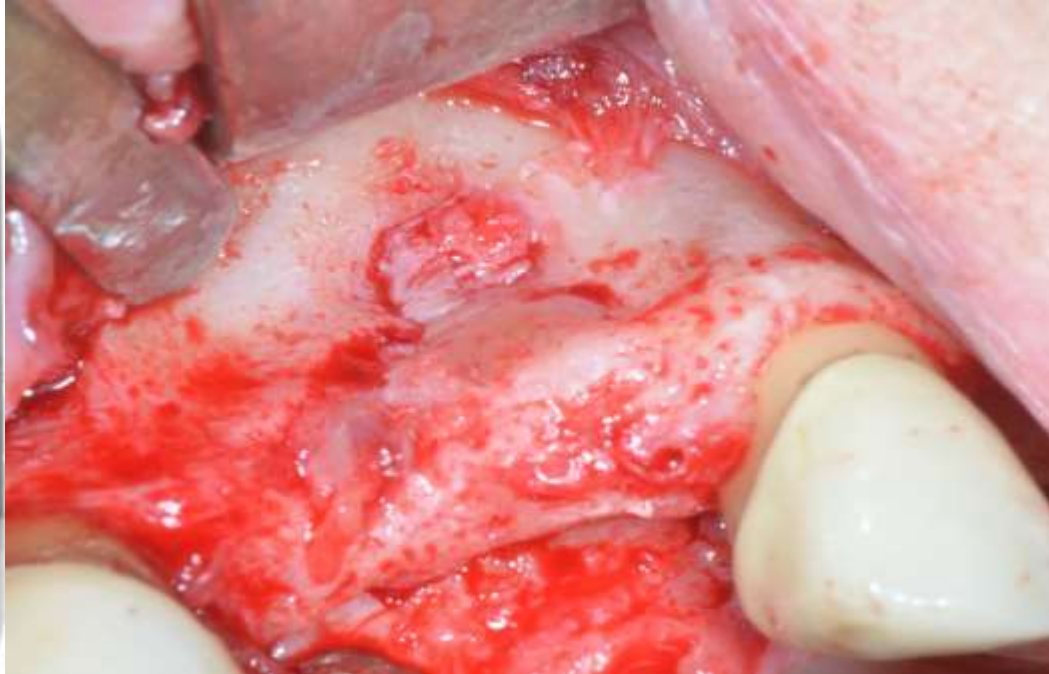


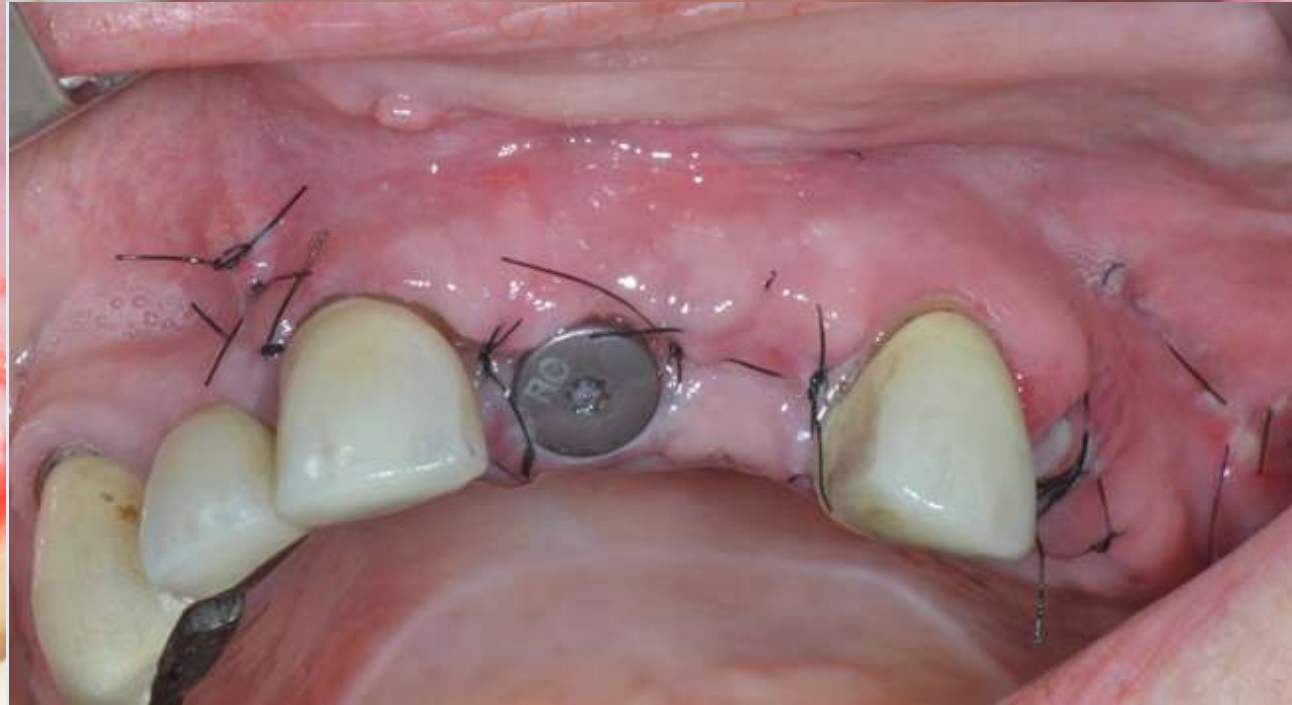
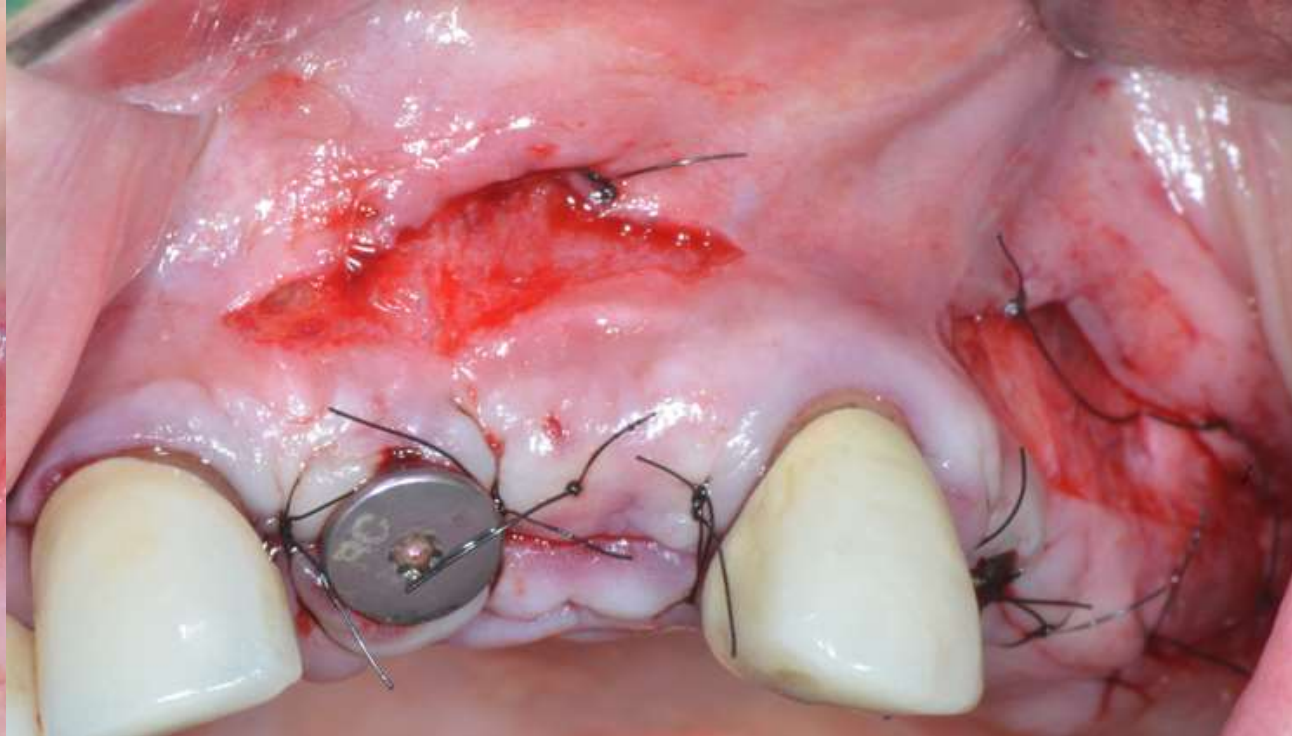


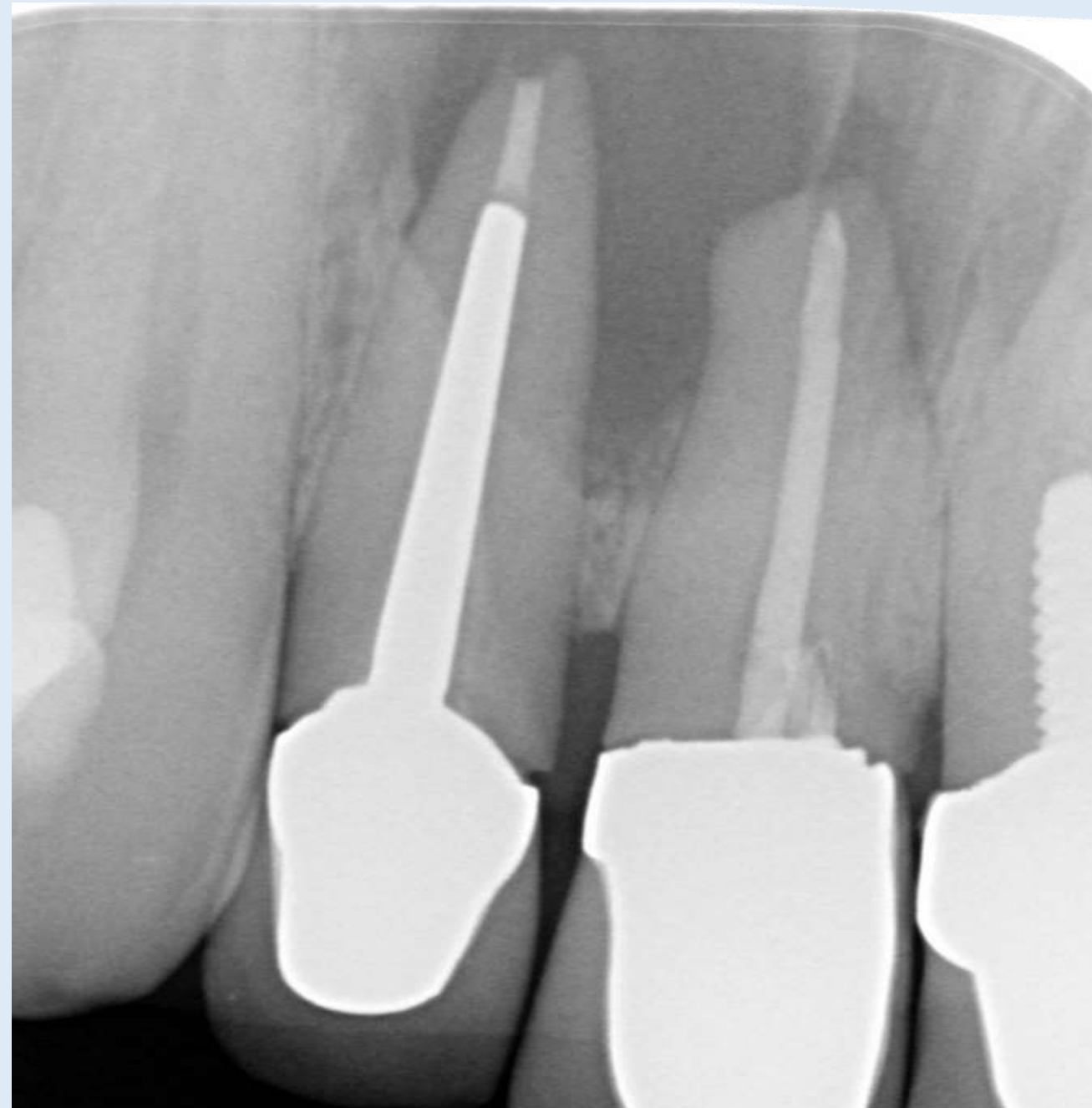


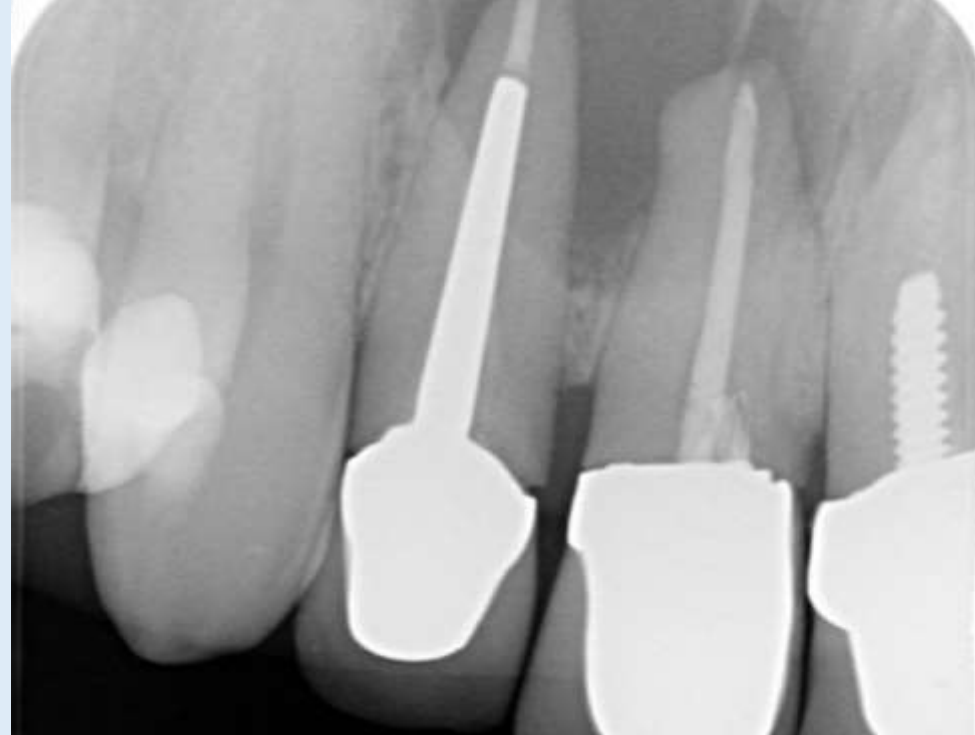


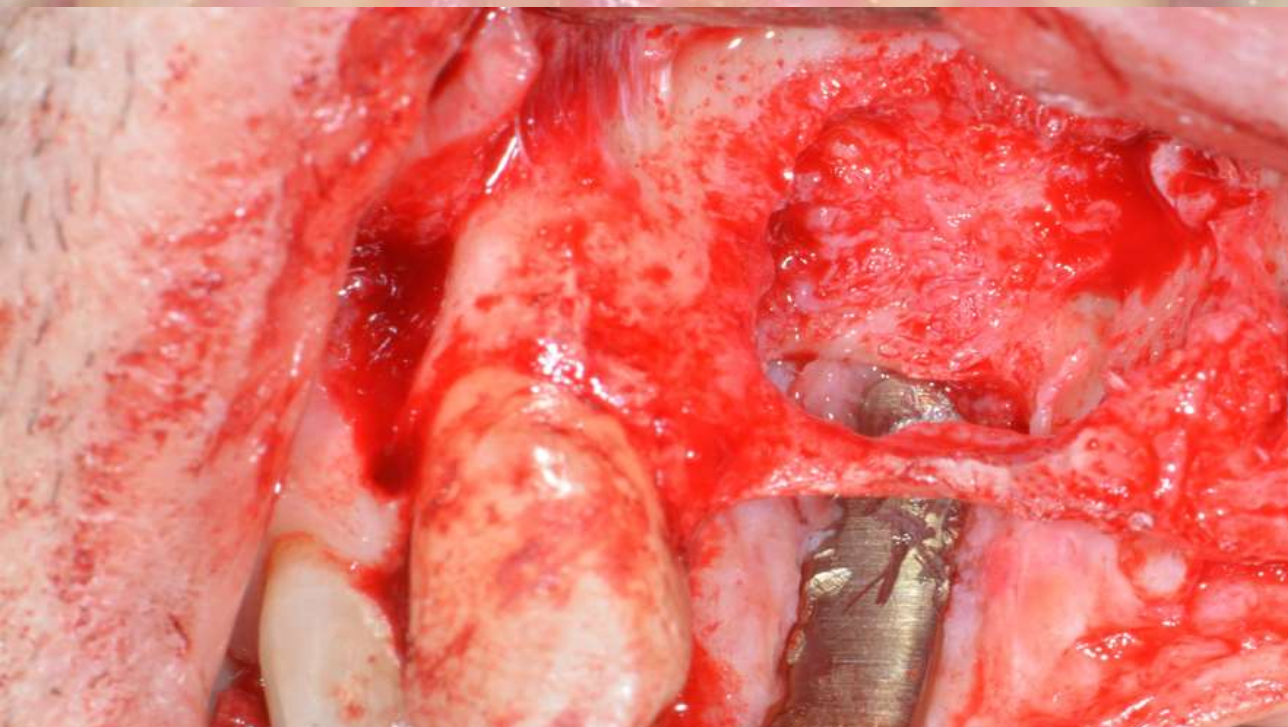
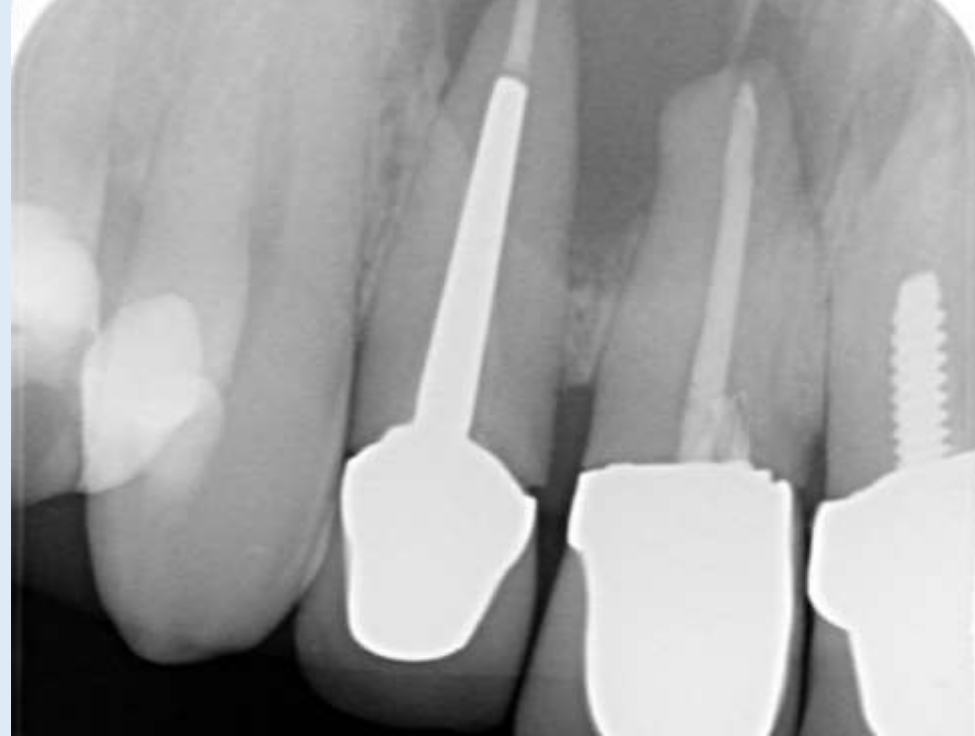


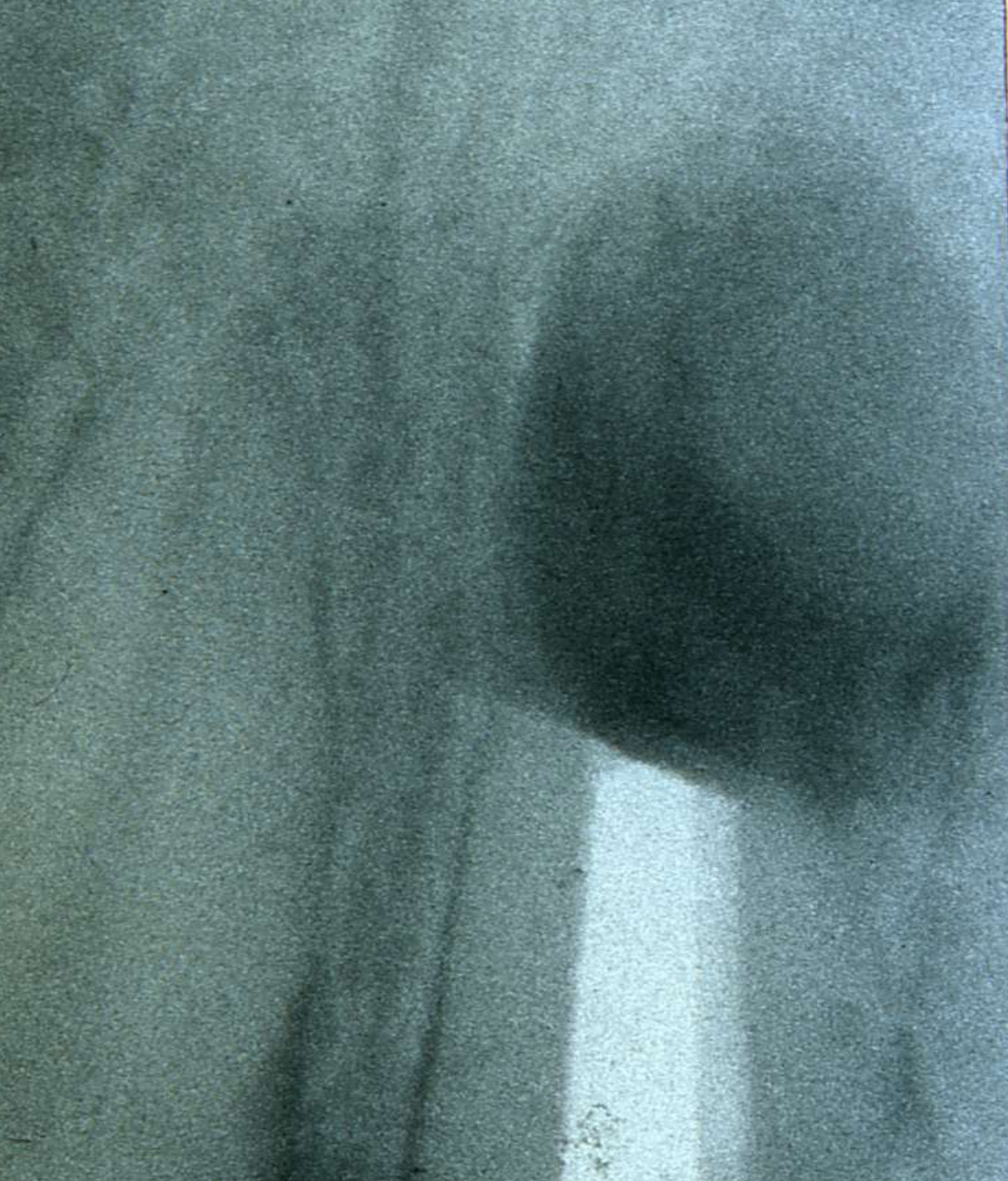




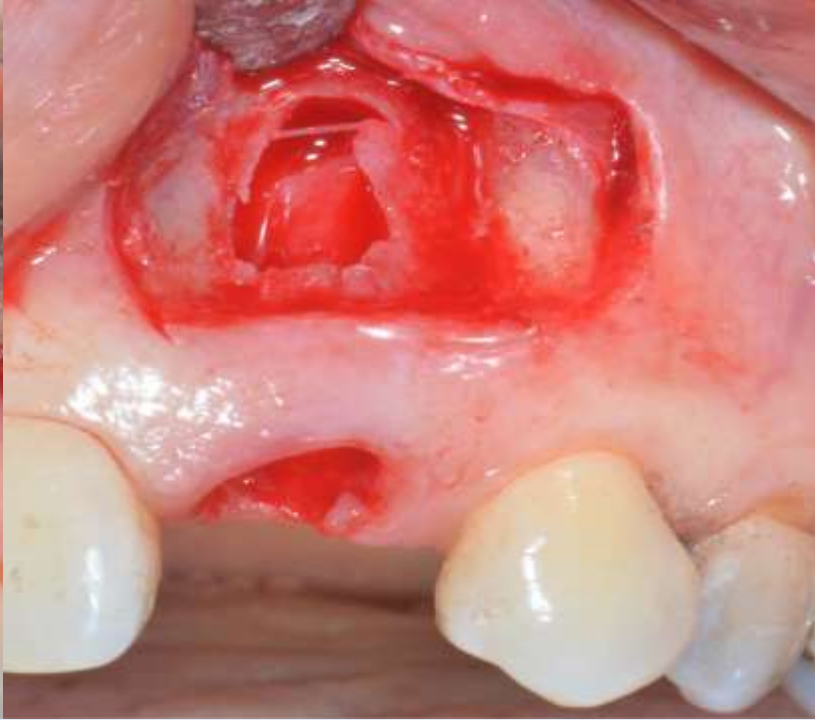


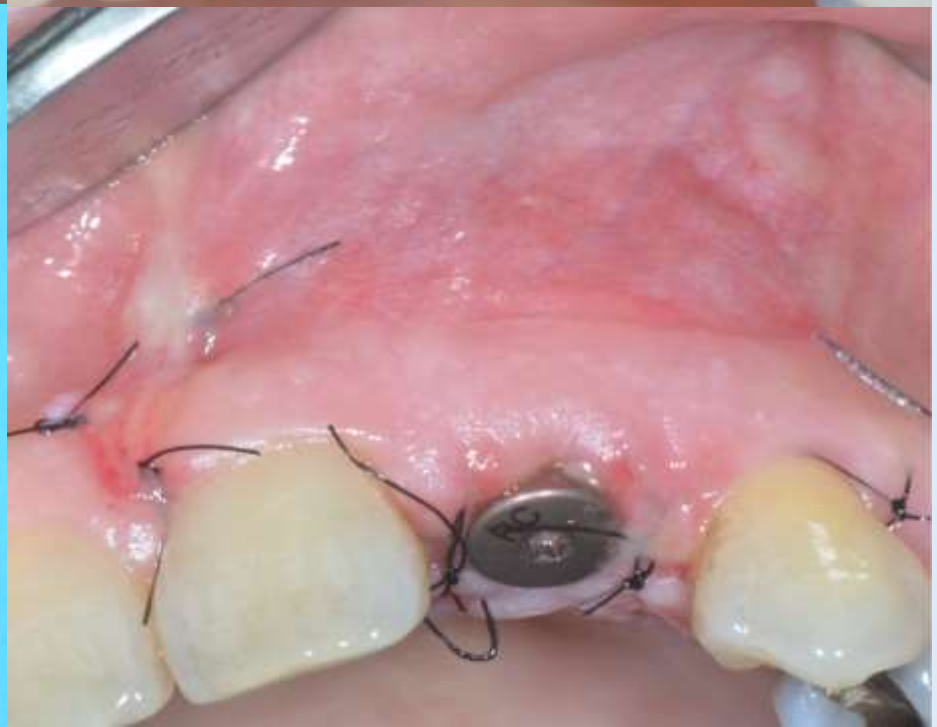
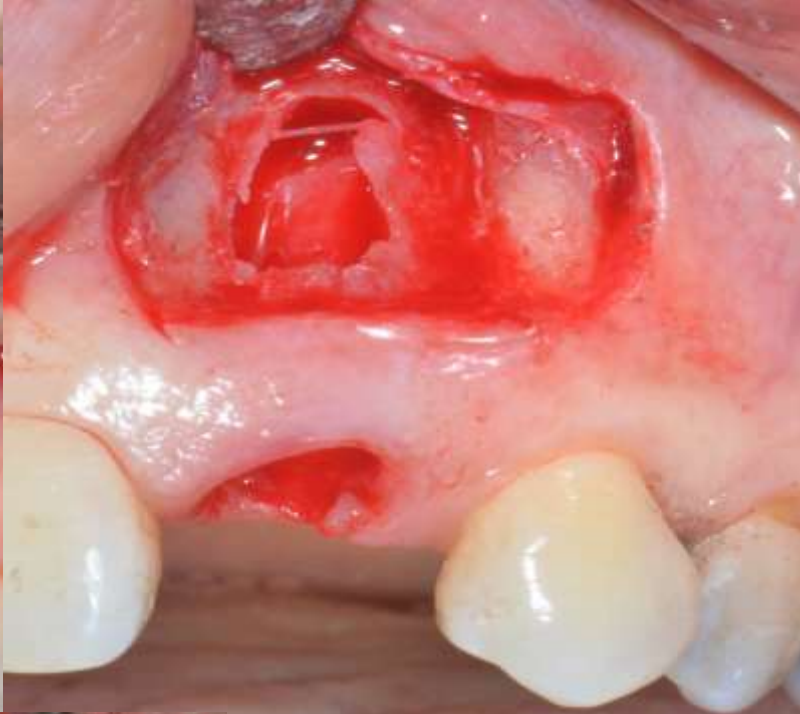


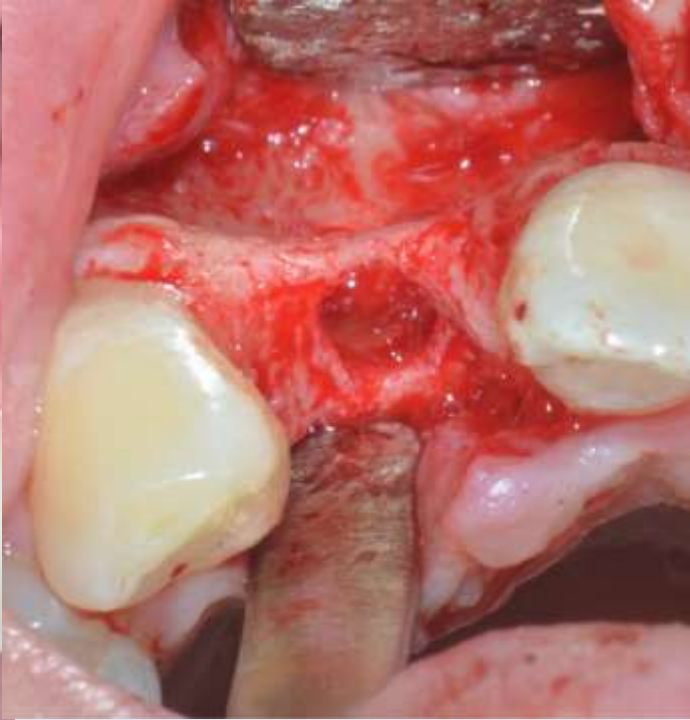


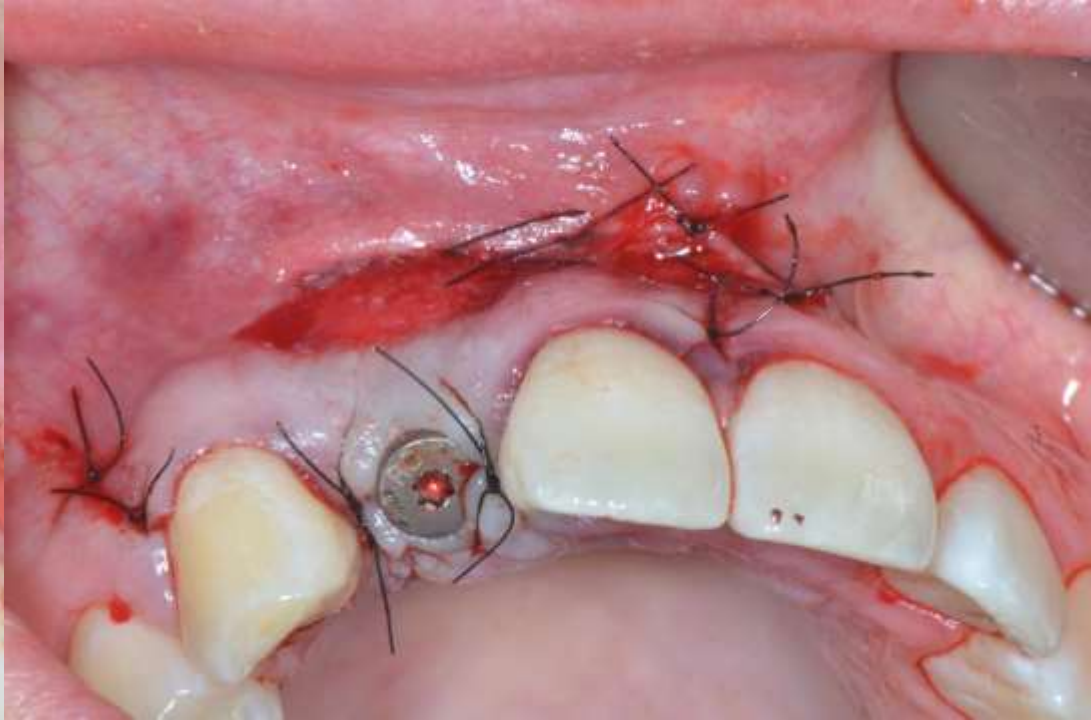
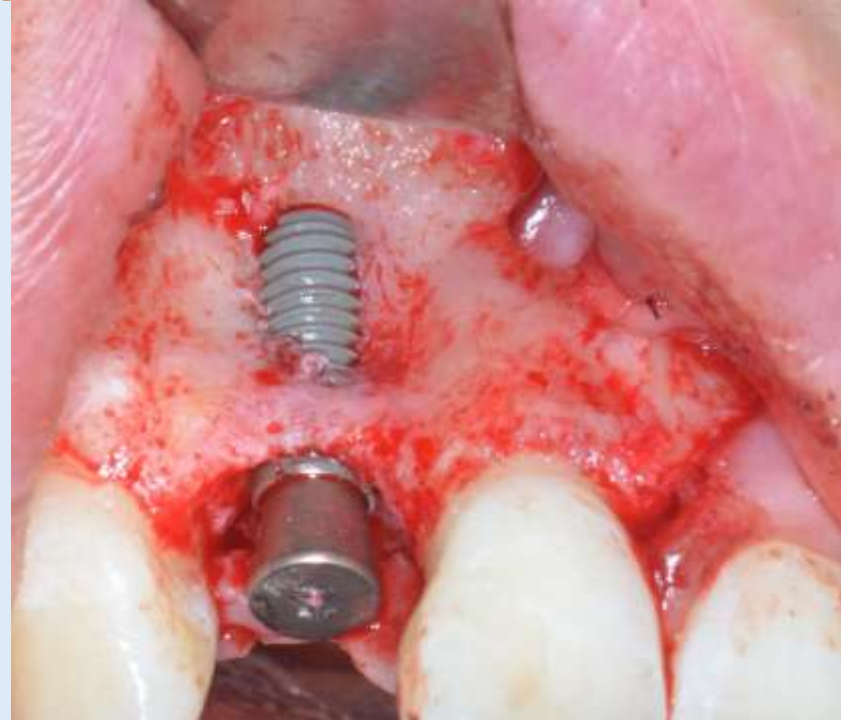
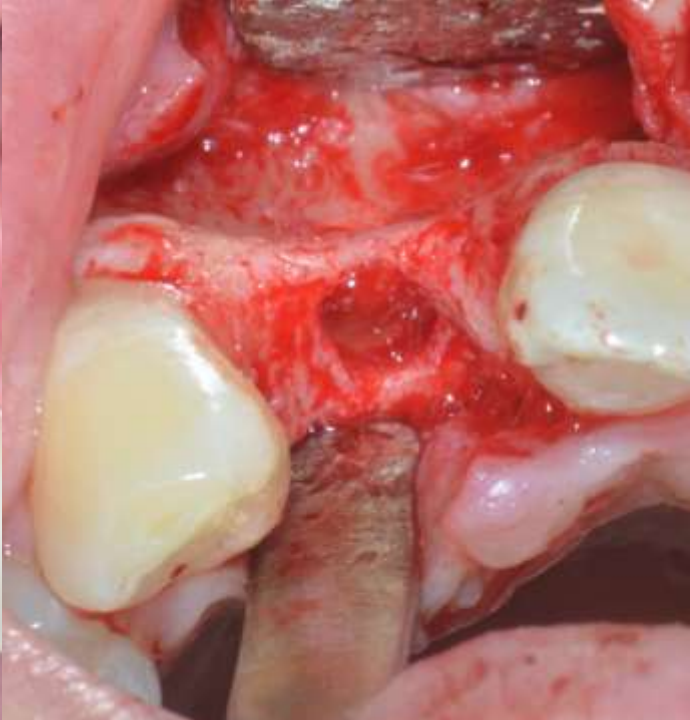














Überweisungsgrund: Setzen eines Implantates Regio 24
Am 1.9.2011 wurde die dentale Zahn 24 wegen einer
ausgedehnten Sekundärkaries operativ entfernt. Leider
entstand vestibulär ein ausgeprägter Knochendefekt, da
die buccale Wurzel den Alveolarkamm teilweise perforierte
und die Extraktion sich schwierig gestaltete!

- PatientIn bitte aufbieten
- PatientIn hat bereits Termin am:
- PatientIn meldet sich
- Röntgen beiliegend *wird gemacht*
- IV-oder Unfallpflichtig ; Nr.
- PatientIn wurde uns früher schon einmal überwiesen

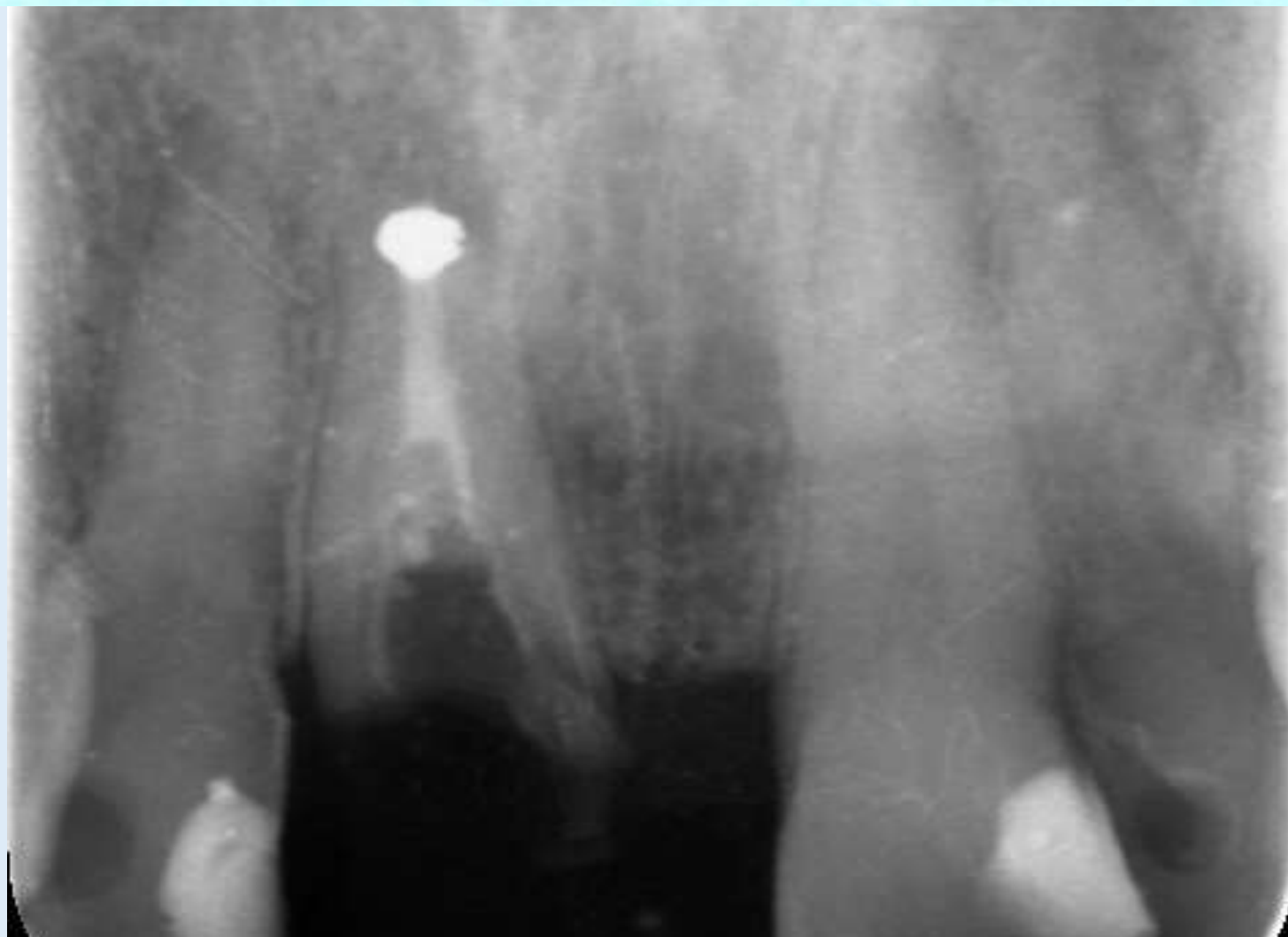


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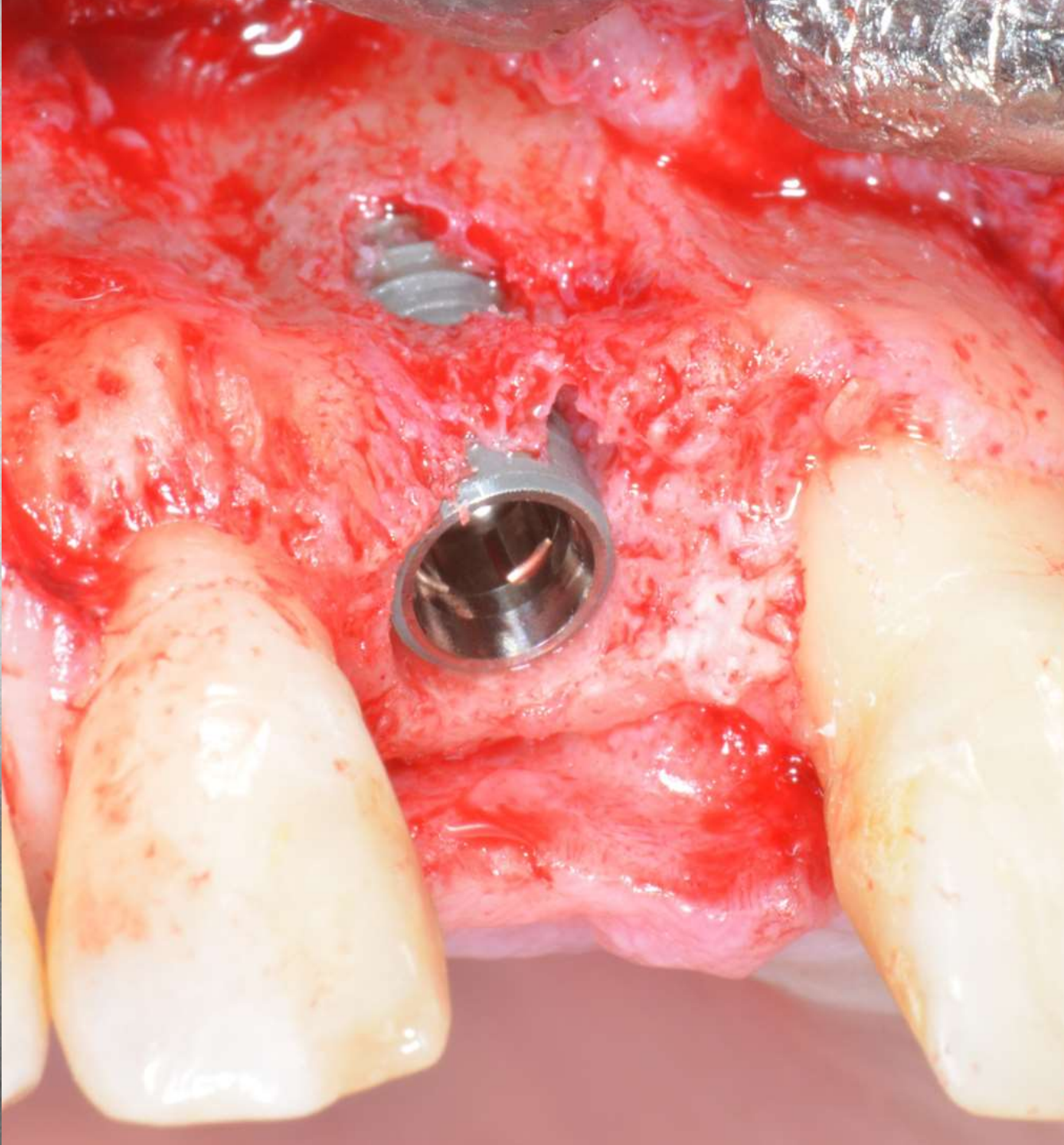
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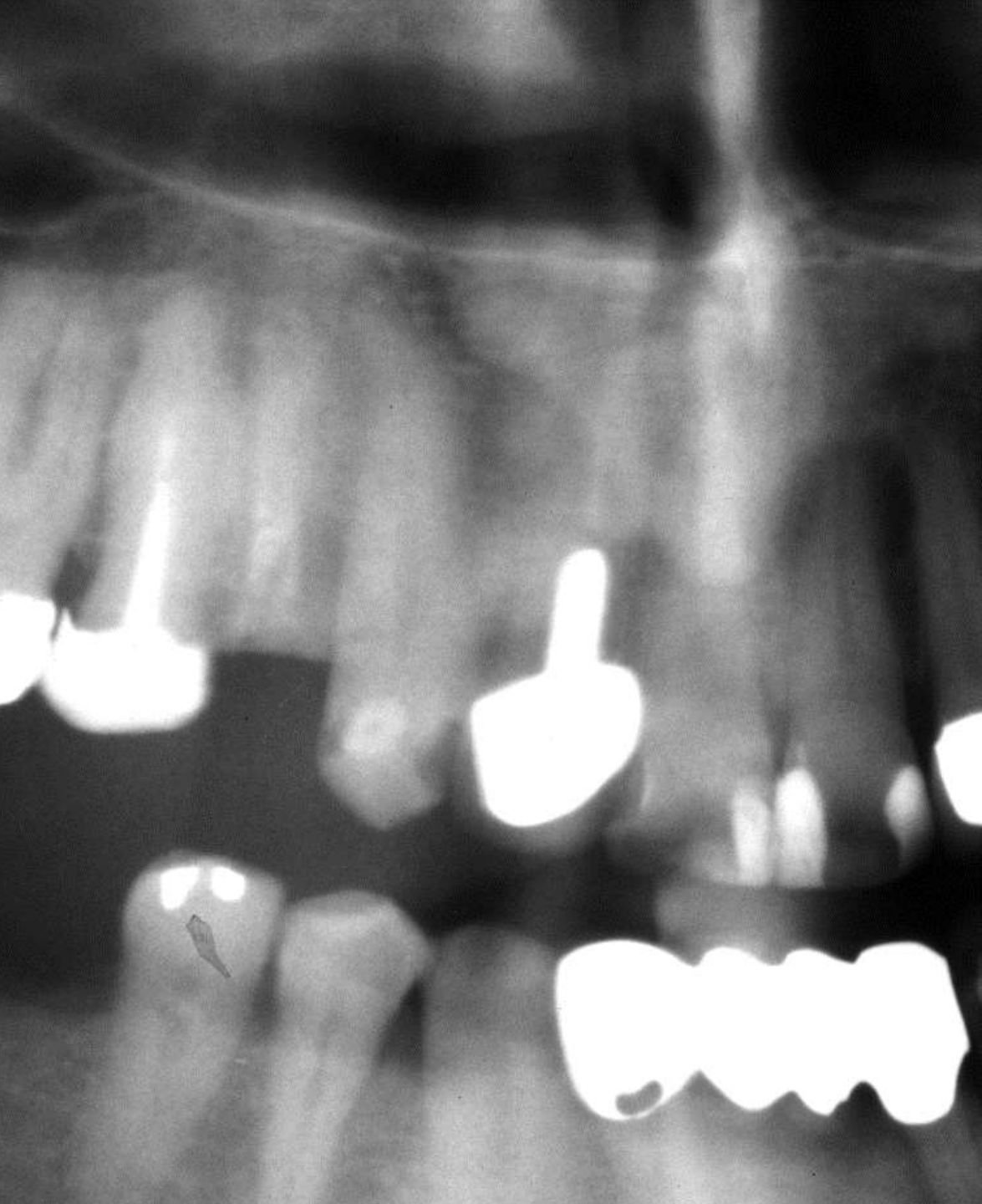


Darf ich dir Herrn Stocker für ein Implantat regio 11 überweisen.
Die Extraktion erwies sich als recht schwierig.
Trotz Vorsicht ist die buccale Wand frakturiert.

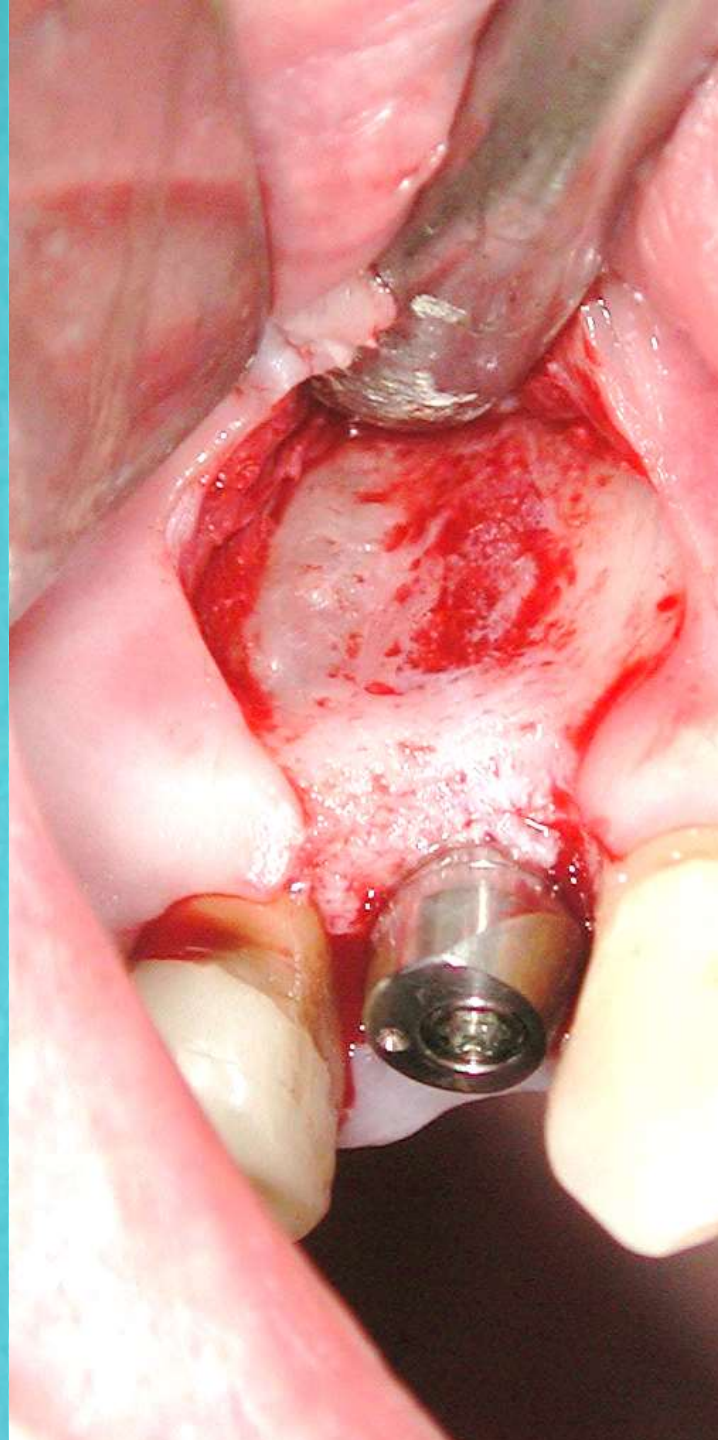




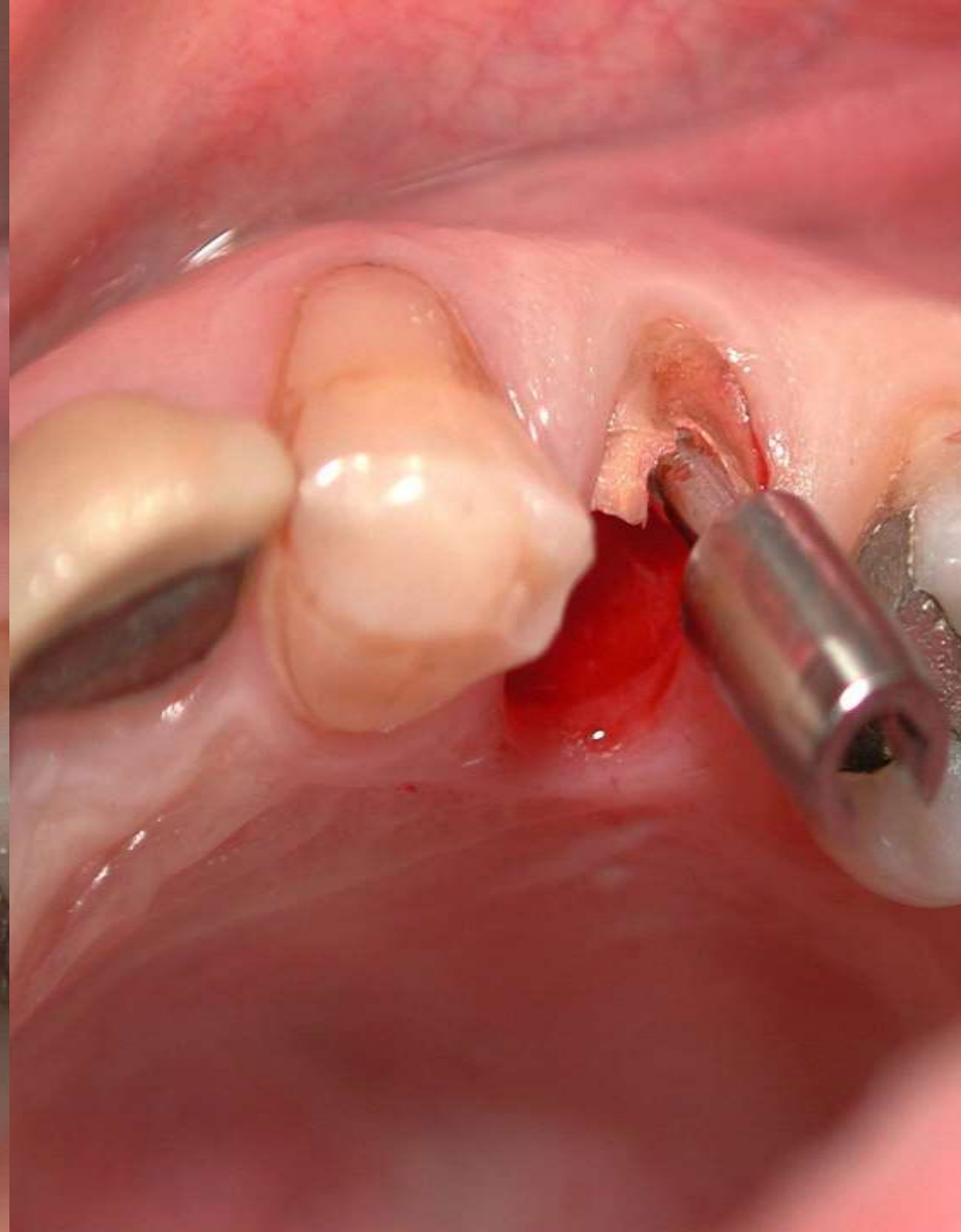








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Gesendet: Dienstag, 22. November 2011 15:48

An: Syfrig & Bloch

Betreff: Patient 'Gut, Marlis' (1 Bilder)

Anlagen: Bild_1.jpg

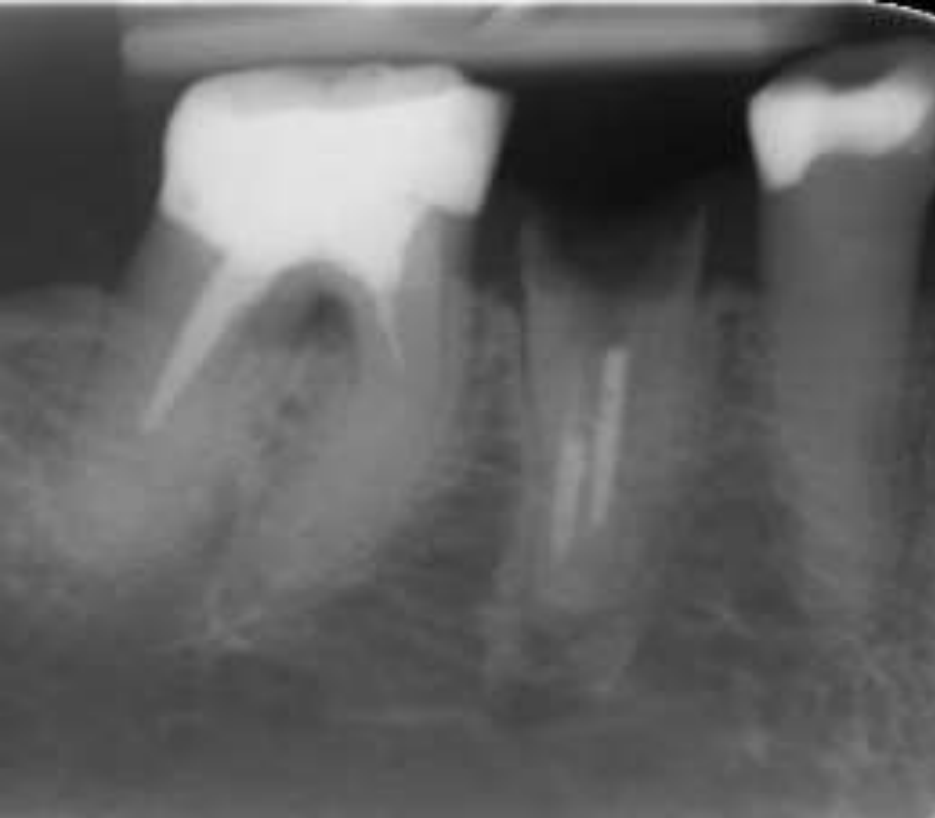
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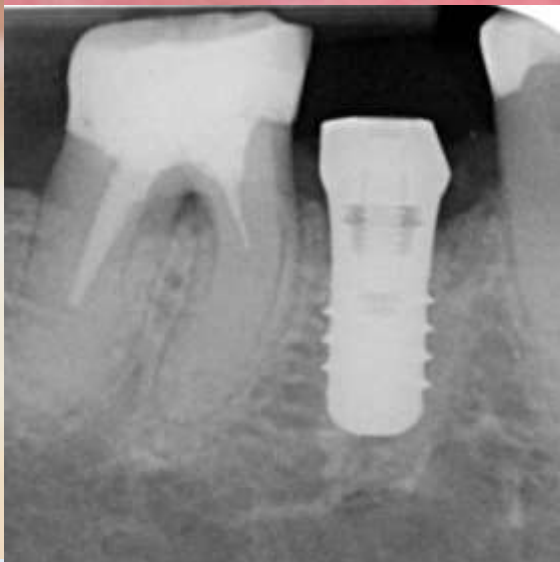
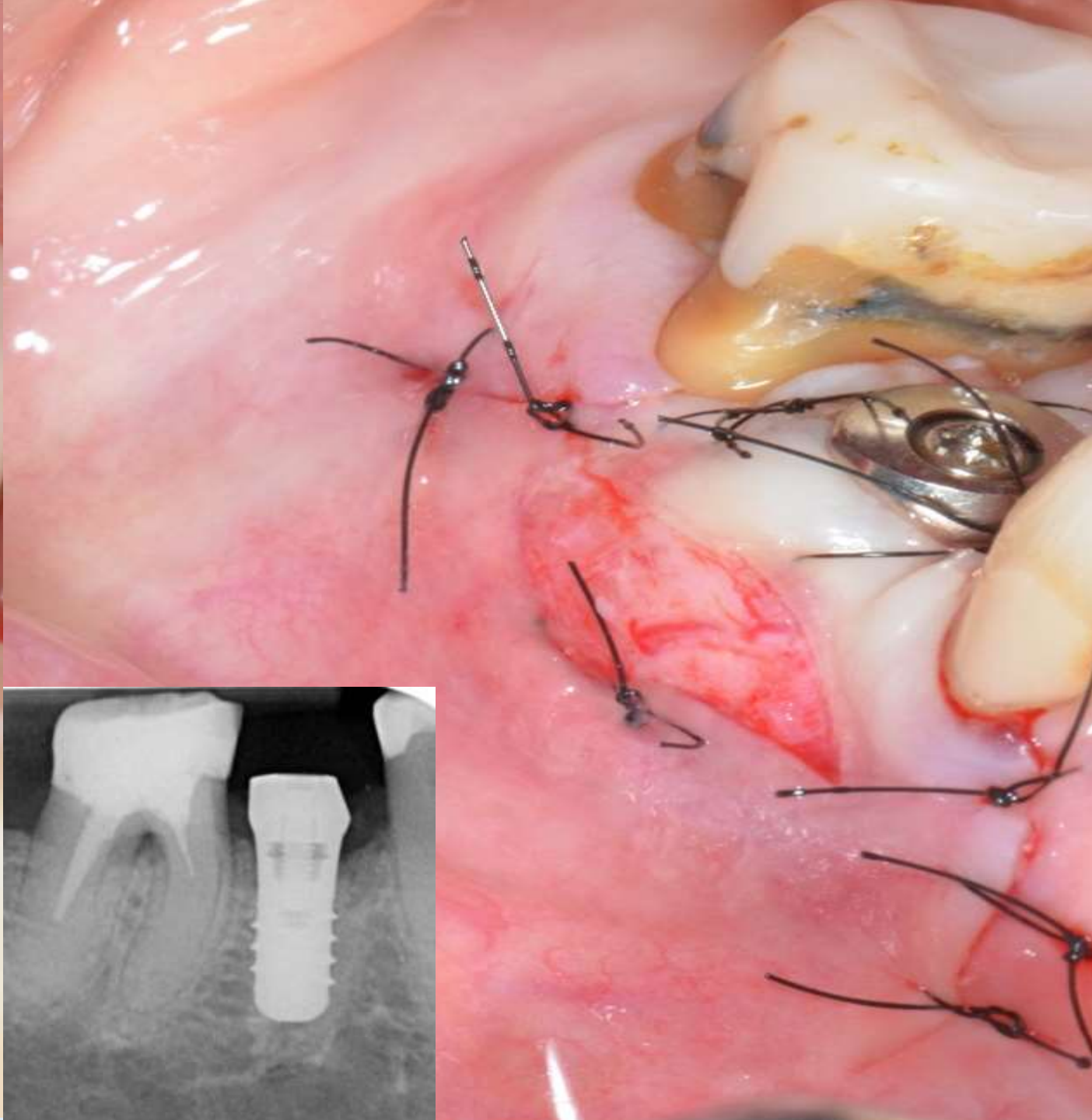
Lieber Benno

heute habe ich bei Frau Gut den WuRest 45 entfernt, ich musste relativ viel osteotomieren. Am 1. 12. mache ich noch Nahtex und dann könntest du sie gelegentlich einmal aufbieten für das Impl. 45
Vielen Dank für die Übernahme und lieber Gruss

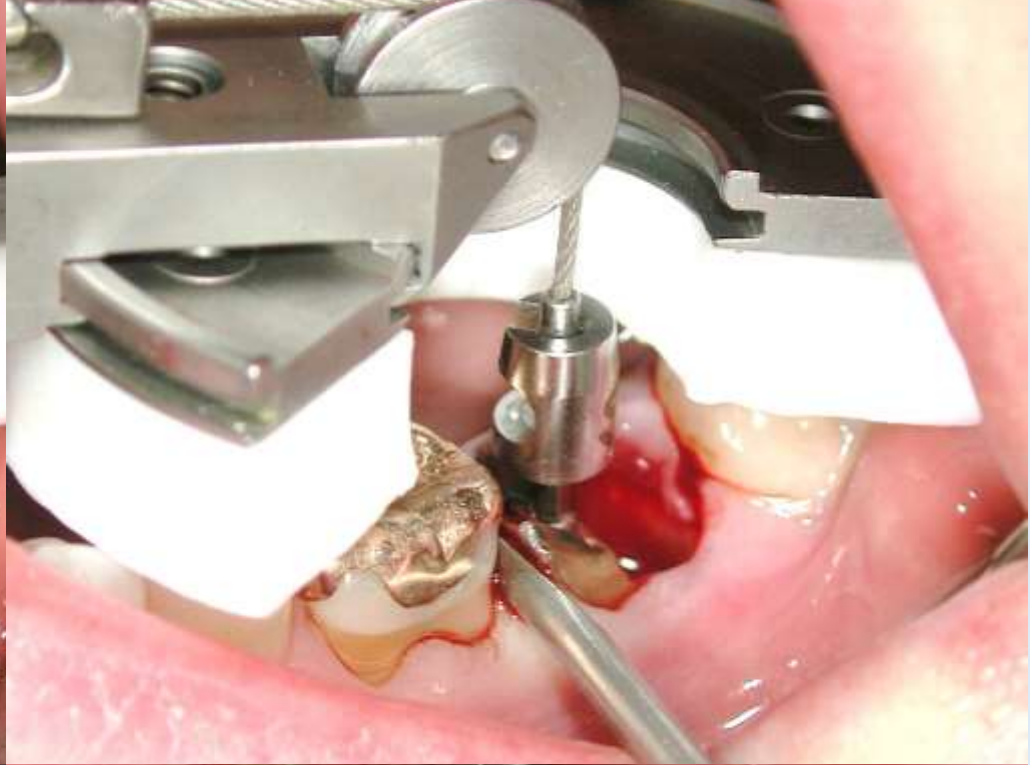
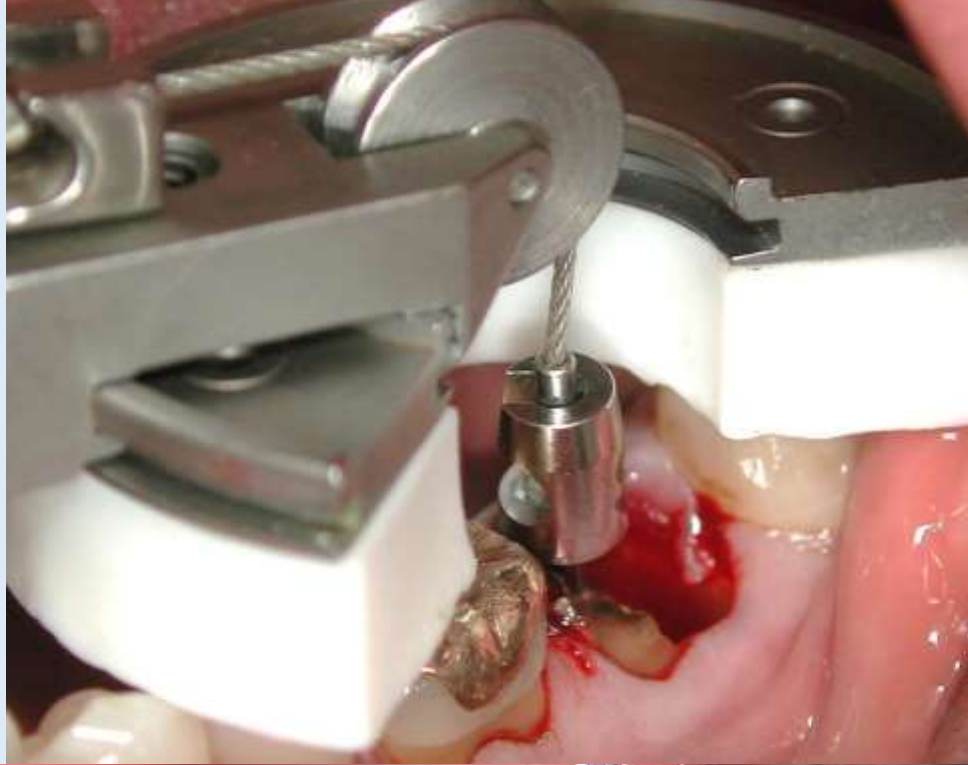
«...had to osteotomy a lot...»





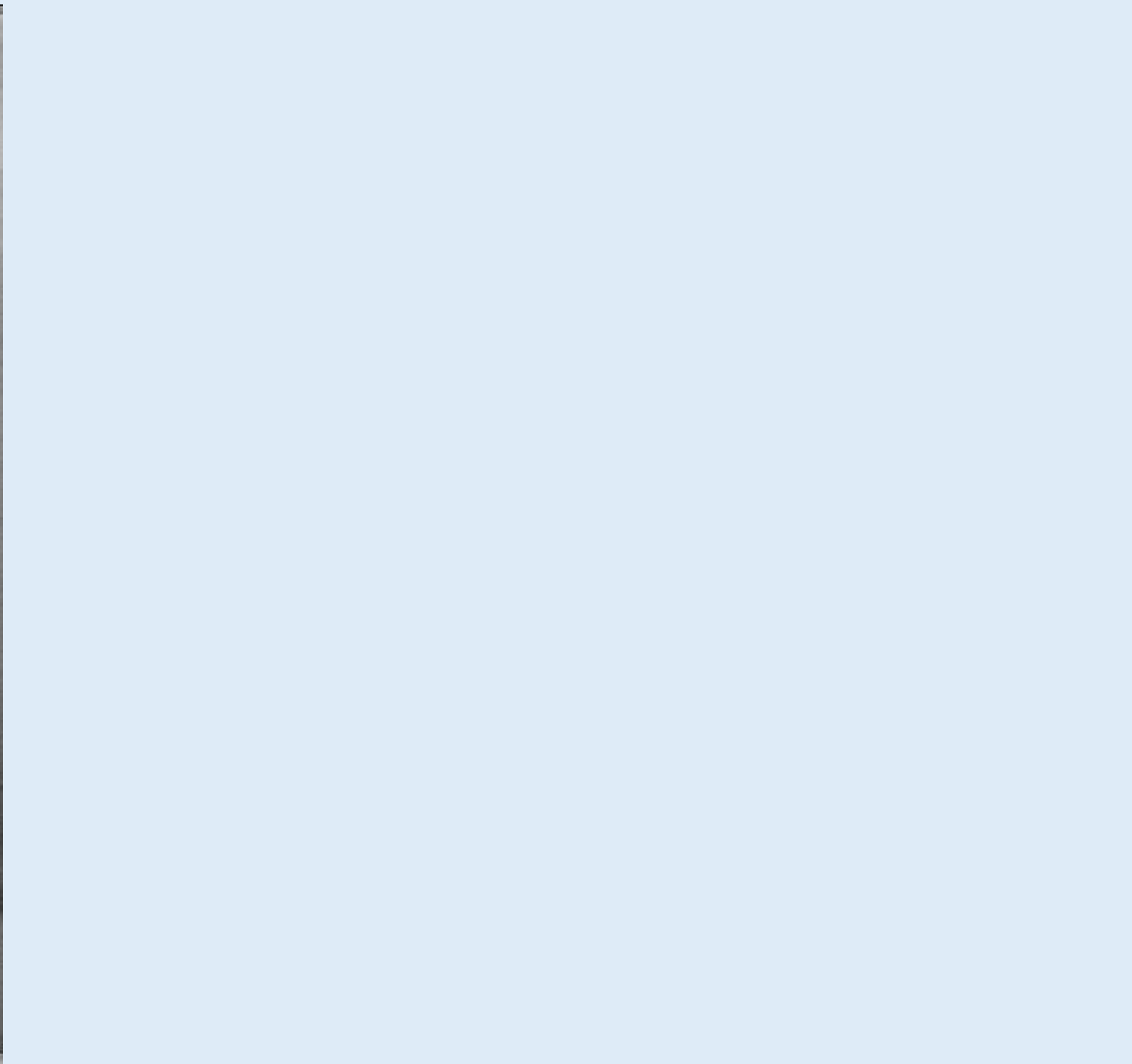
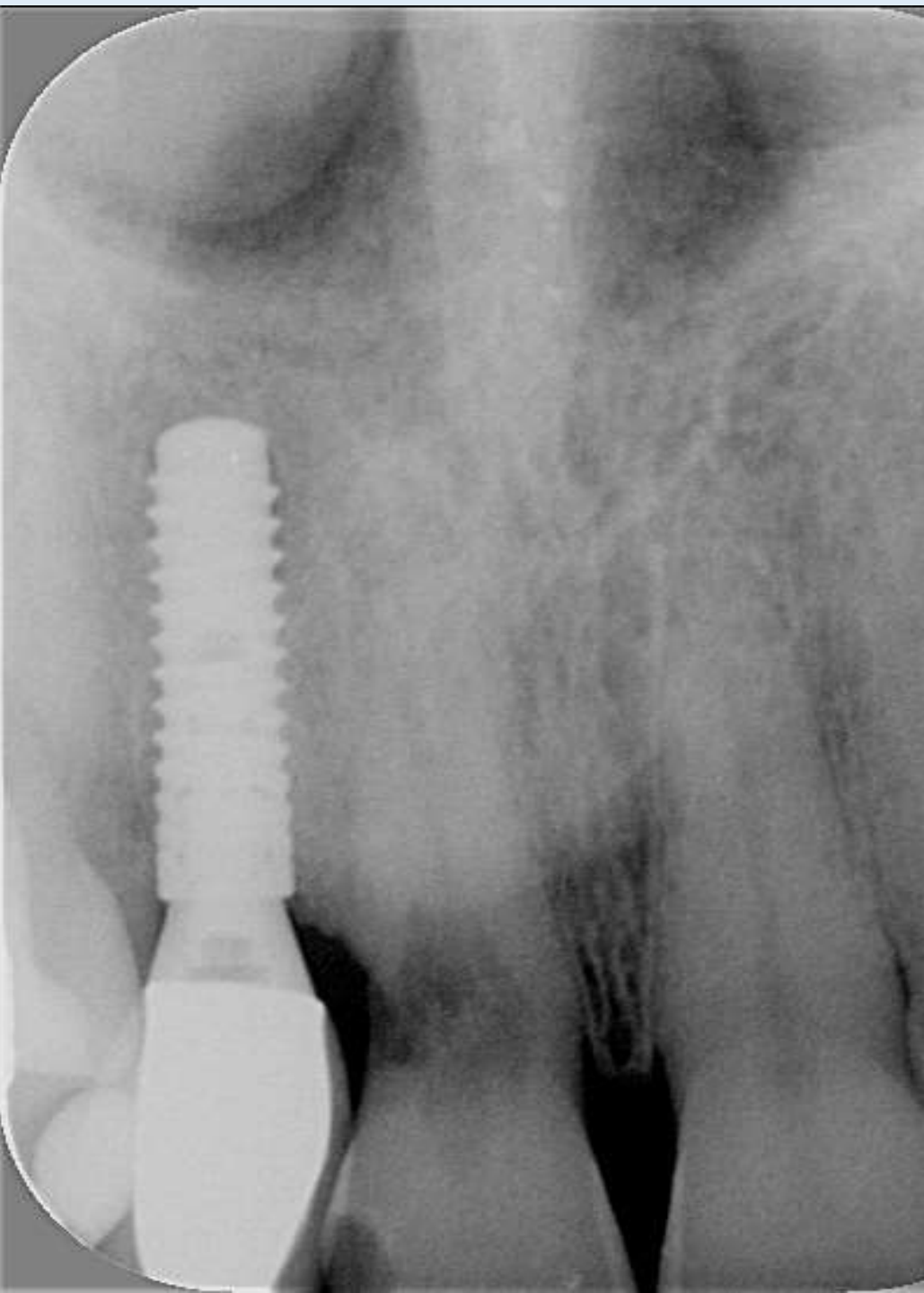


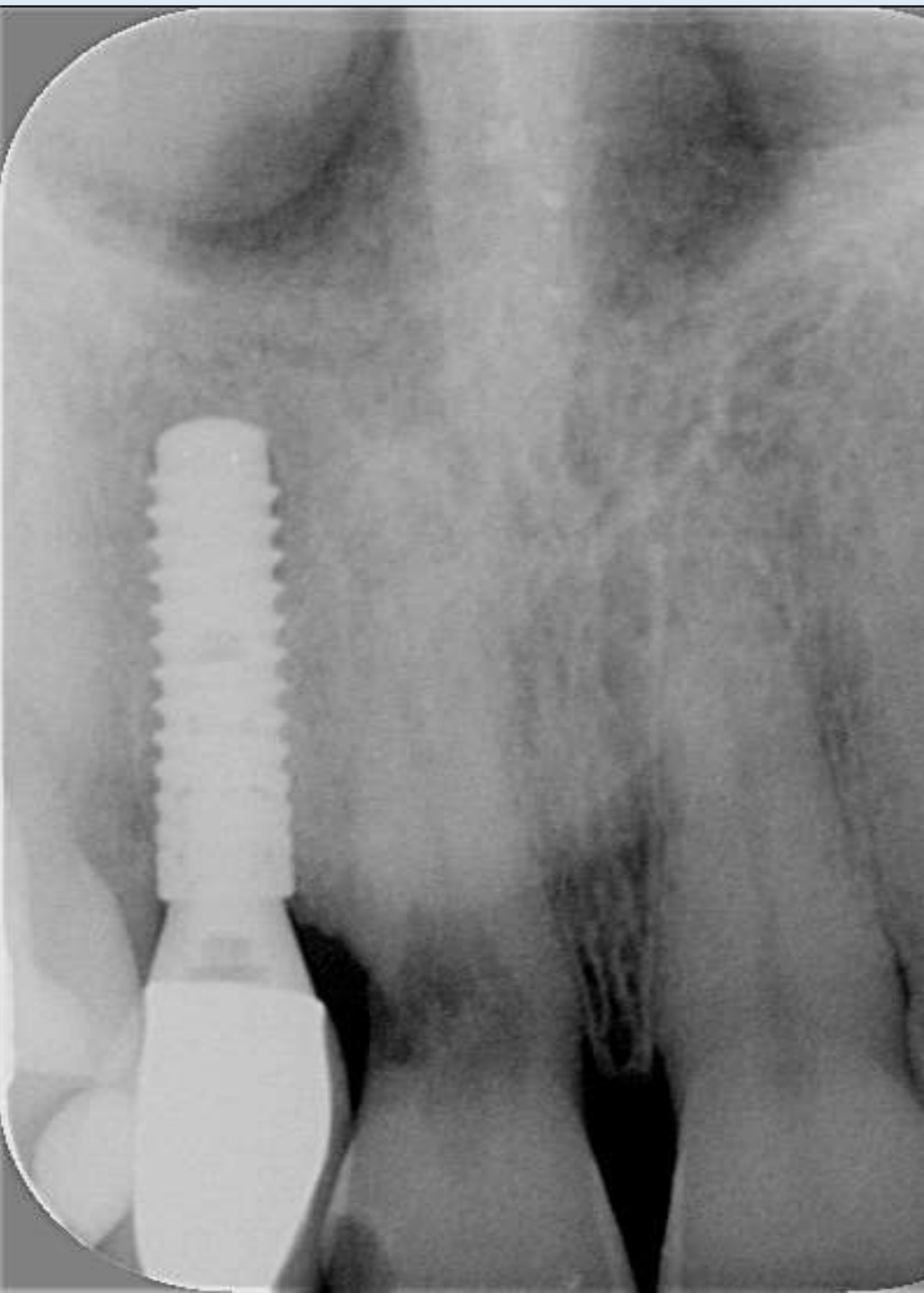






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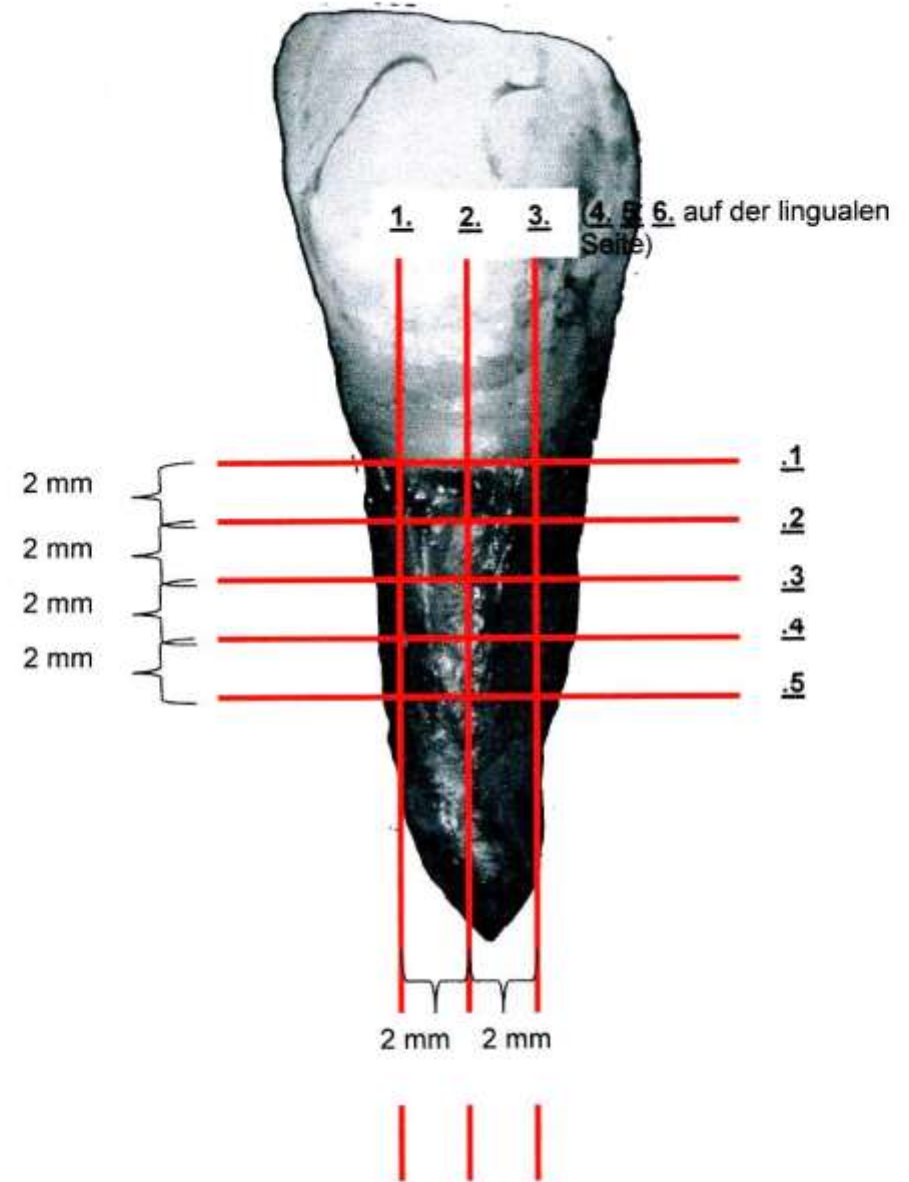




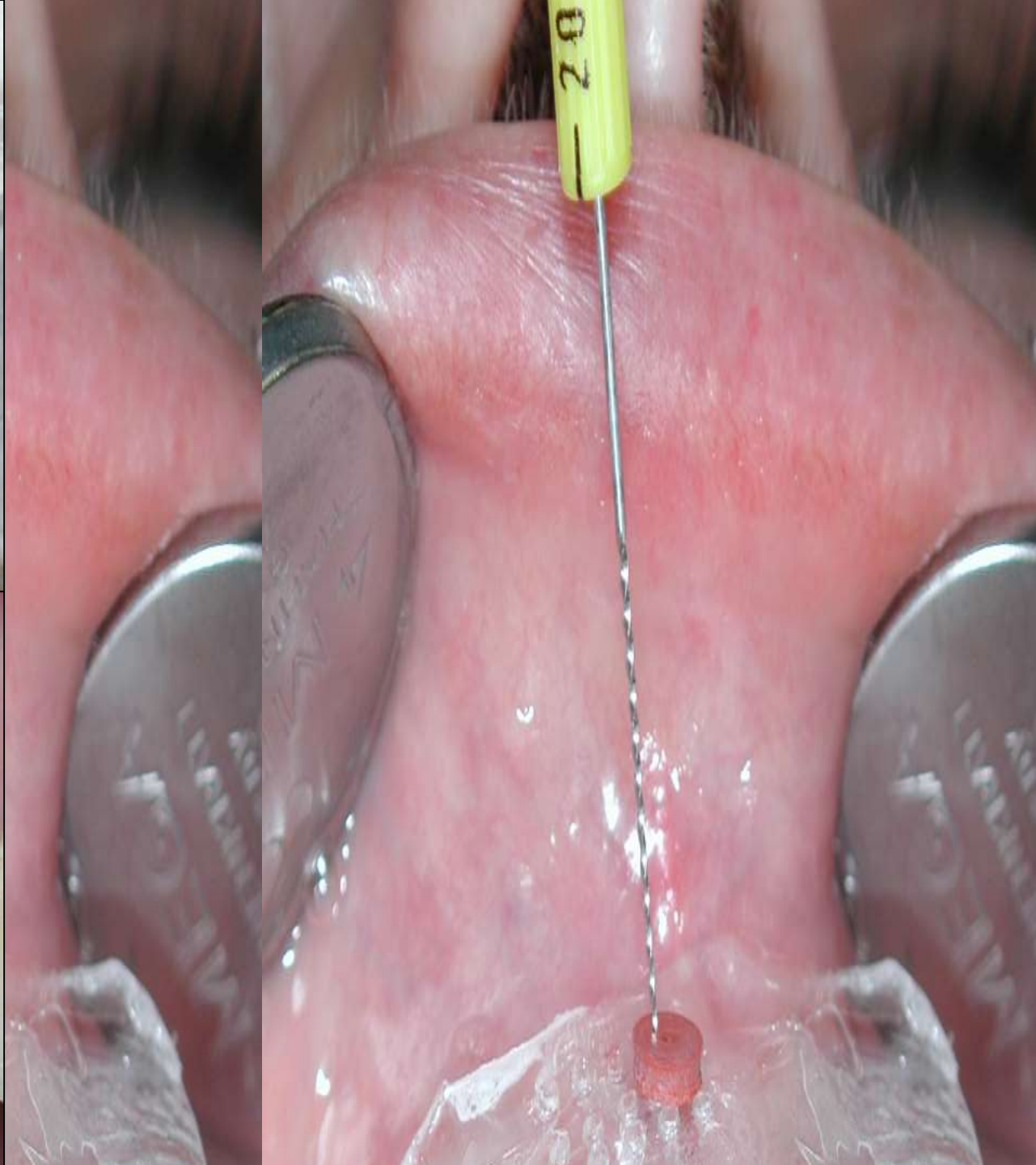
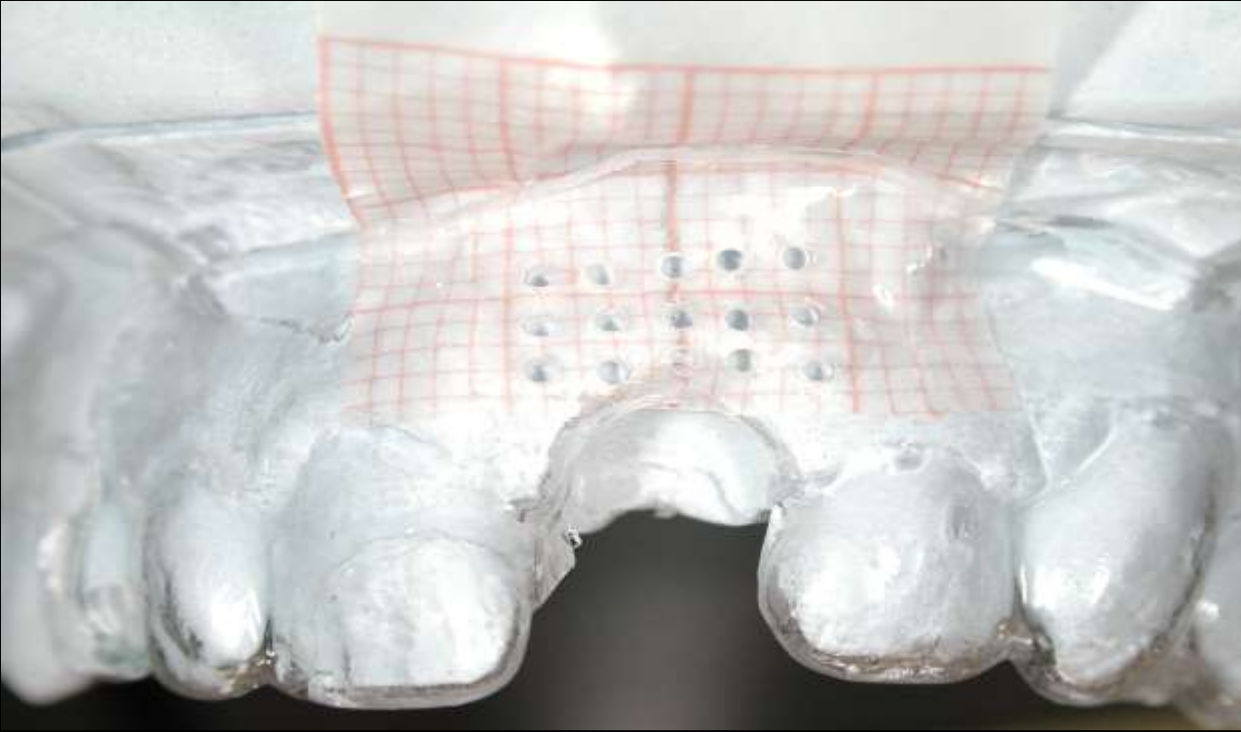


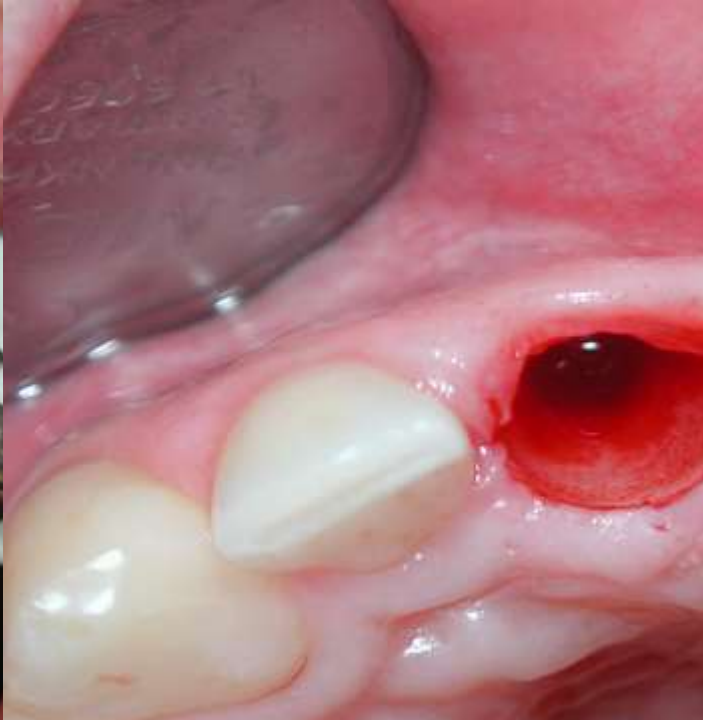
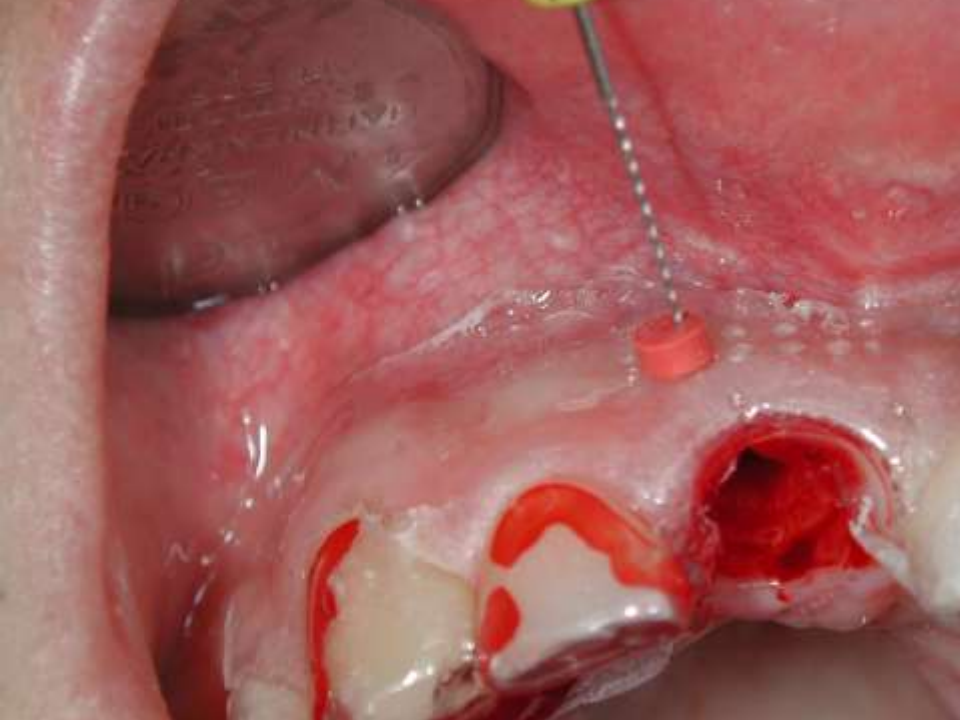


- Research Protocol
- November 2005
- **Alveolar Ridge Preservation of Post-Extraction Sockets with**
- **Biomaterials**
- *Investigators:*
- Dr. Iglhaut
- Dr. Schlee



4.6.Fotodokumentation





Minimally Invasive Extraction Techniques

Eduardo Lorenzana



ITI
Congress
Australasia
Melbourne
September 2-3
2016



Minimally Invasive Extraction Techniques

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Private Practice, San Antonio, TX

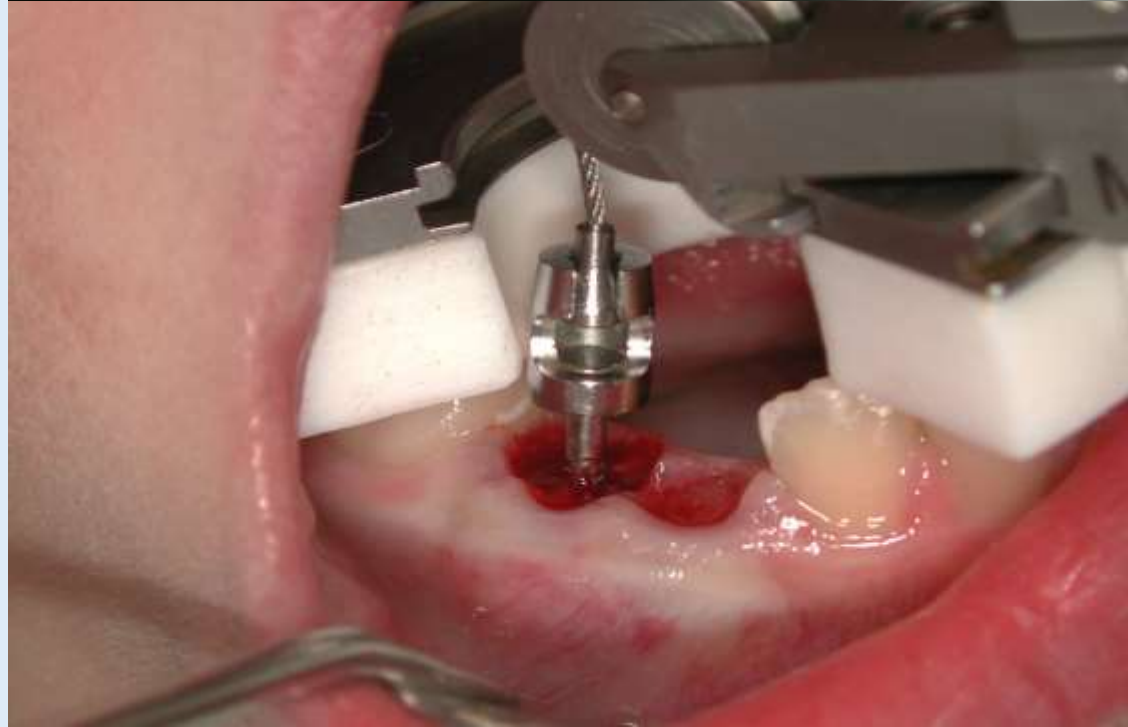
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Faculty, Preceptorship in Oral Implantology, UTHSCSA Dental School





ITI Online Academy

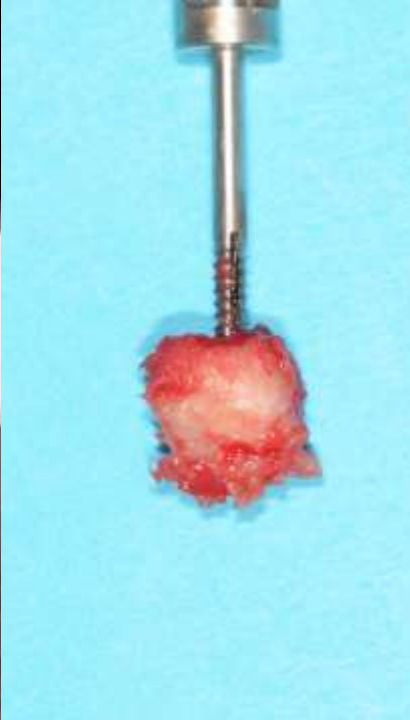


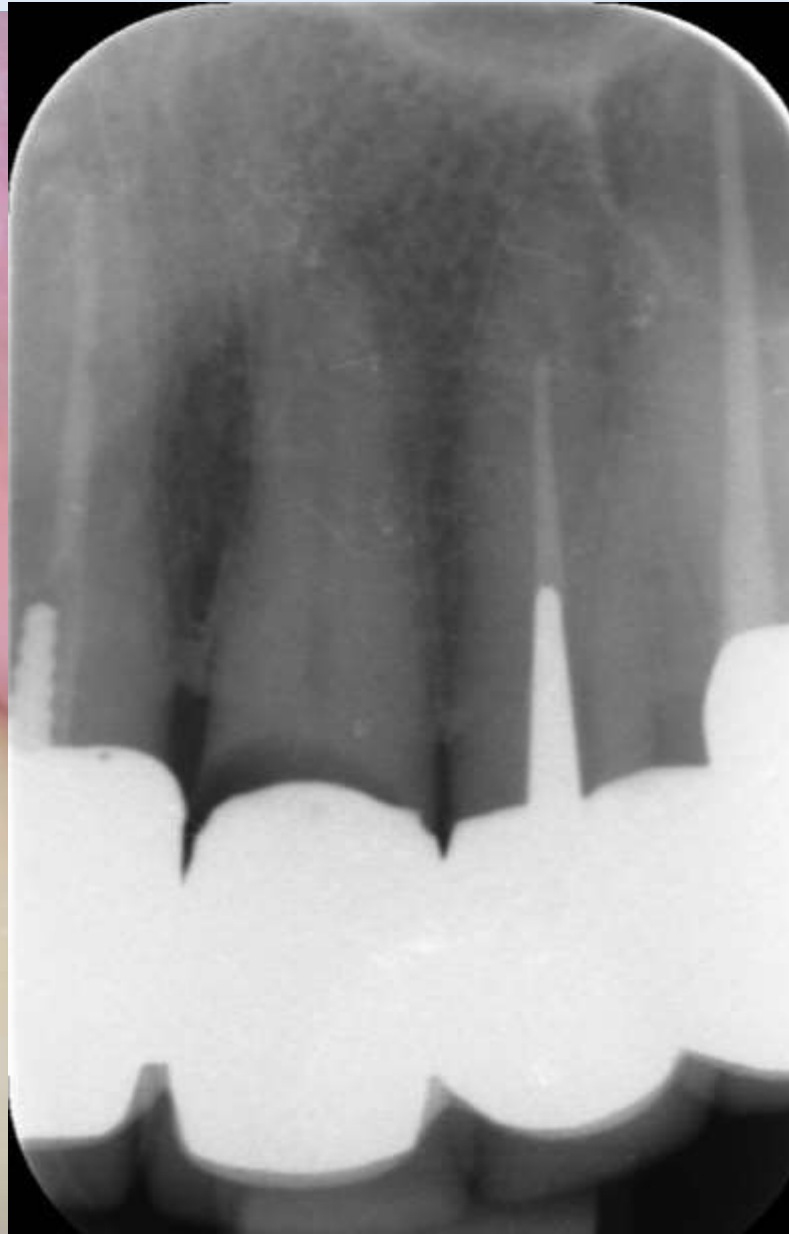


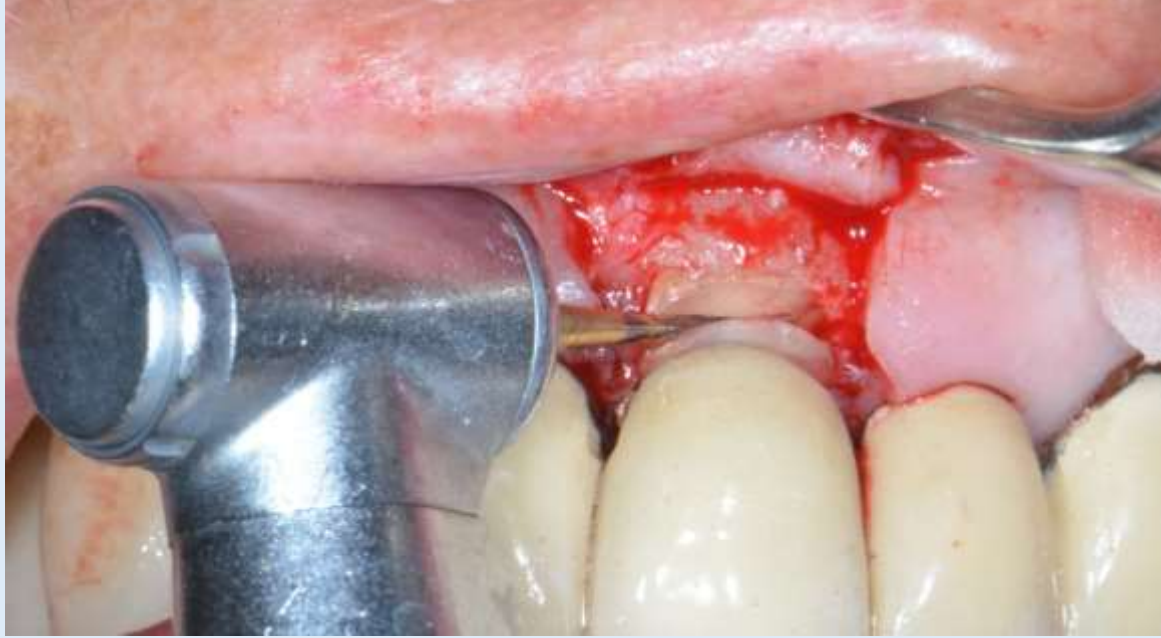


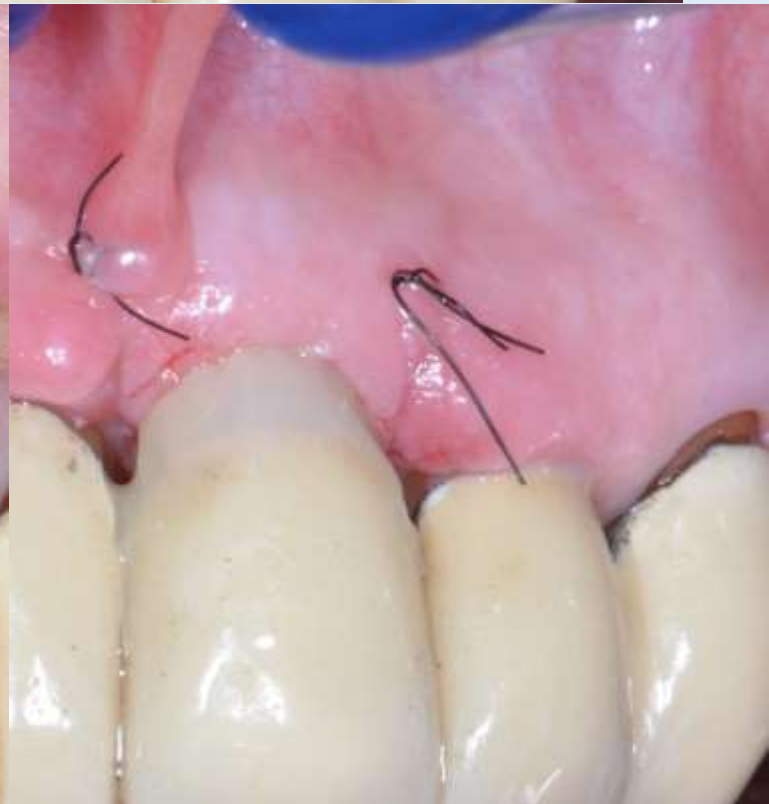
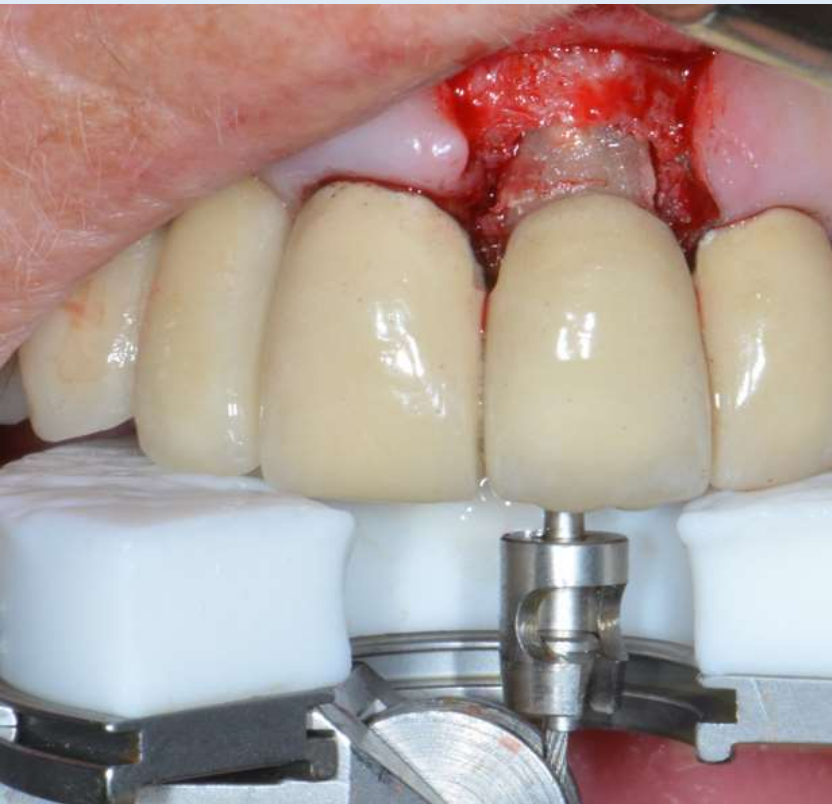
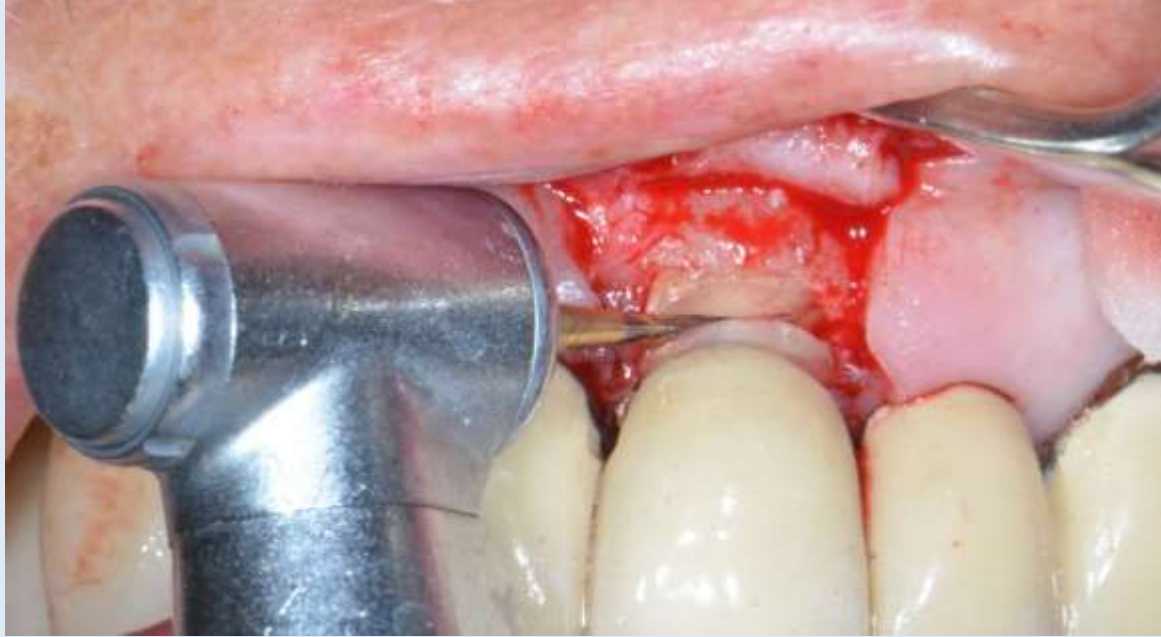














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Stomatologie, Zahnmedizinische
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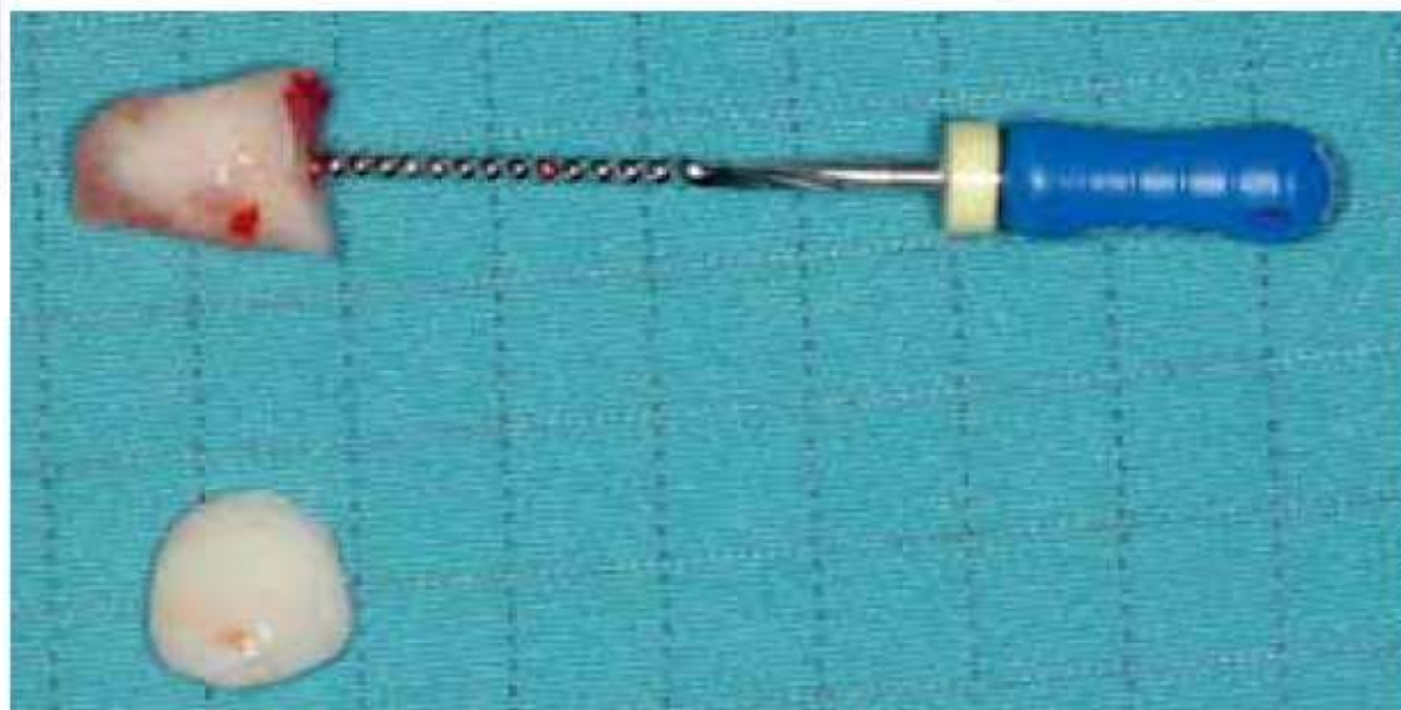
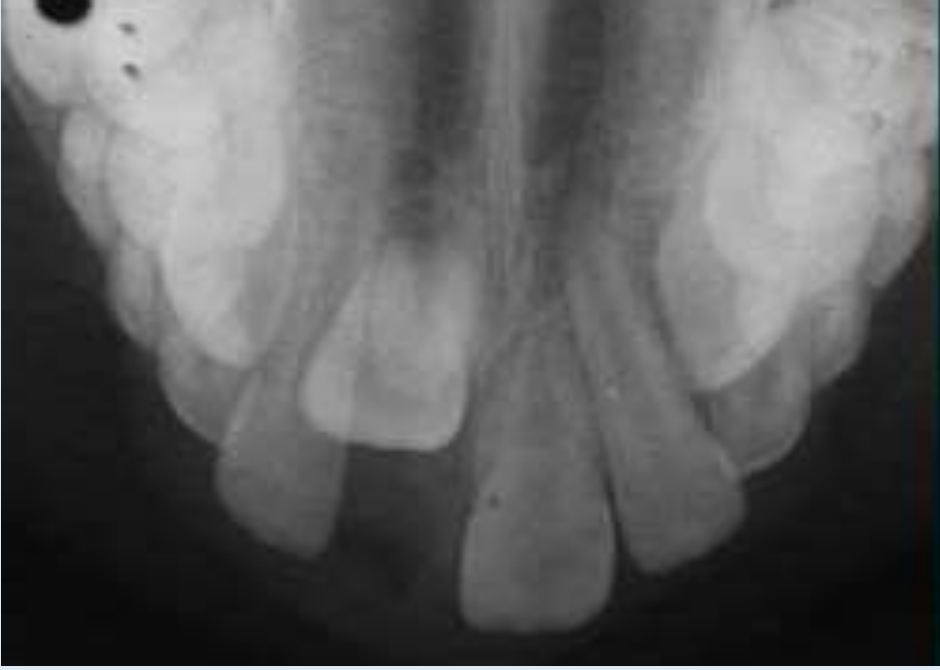


Abb. 6 Der Mesiodens wurde in der Operation dekapitiert und die Wurzel mit einem Reamer entfernt.







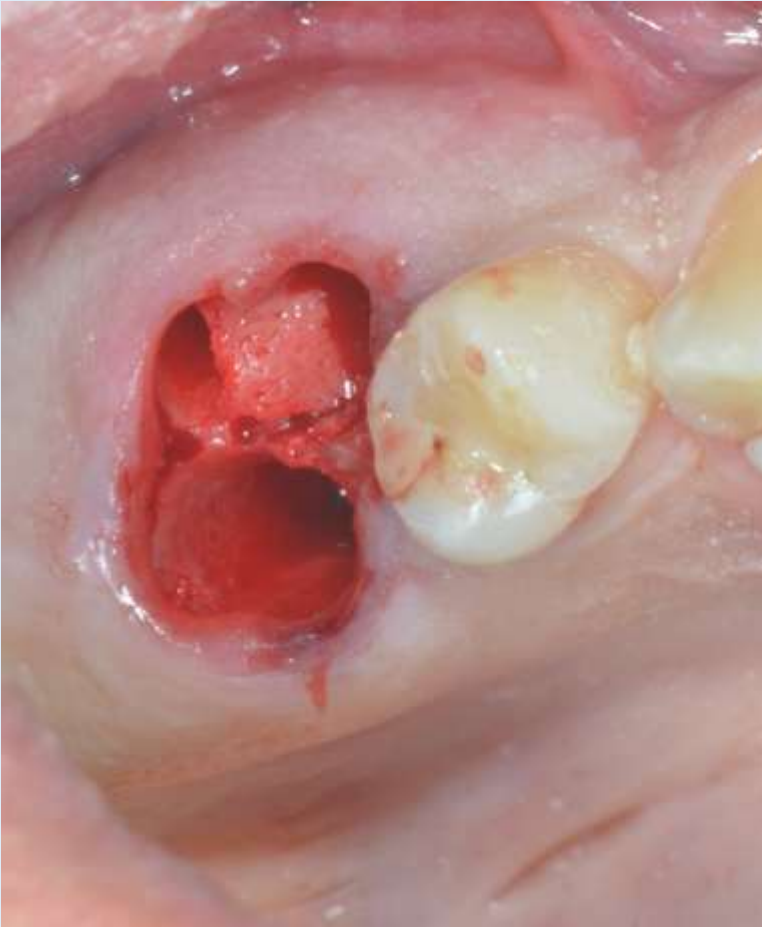






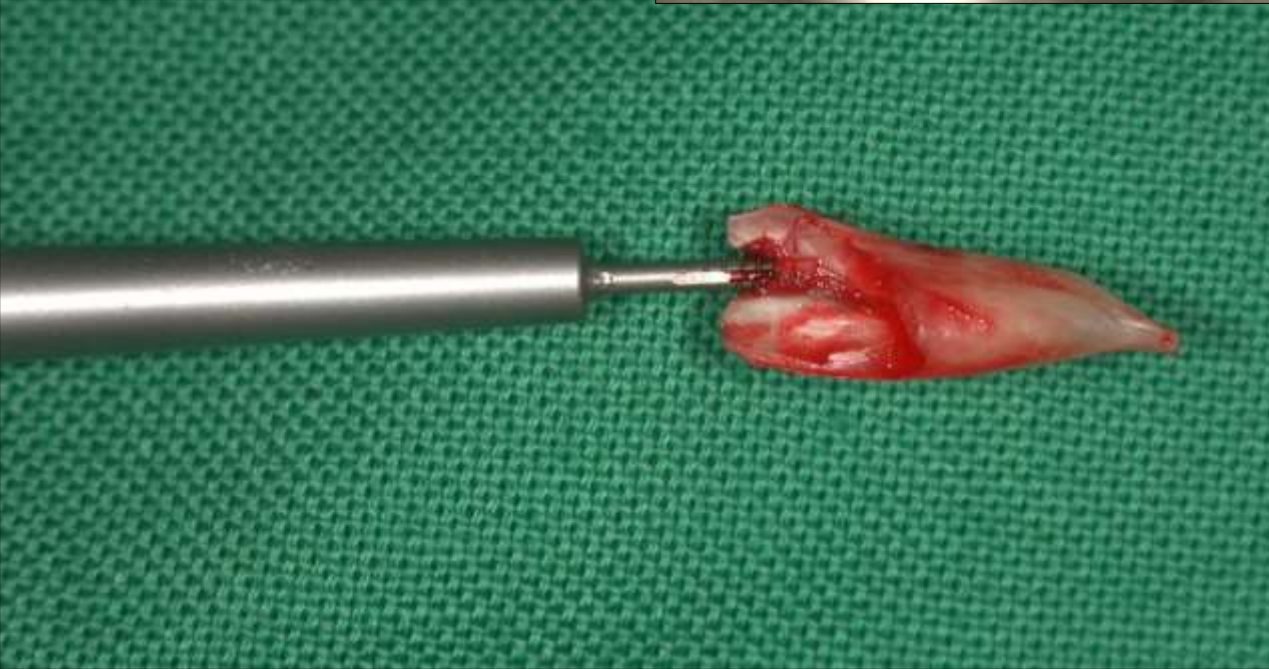








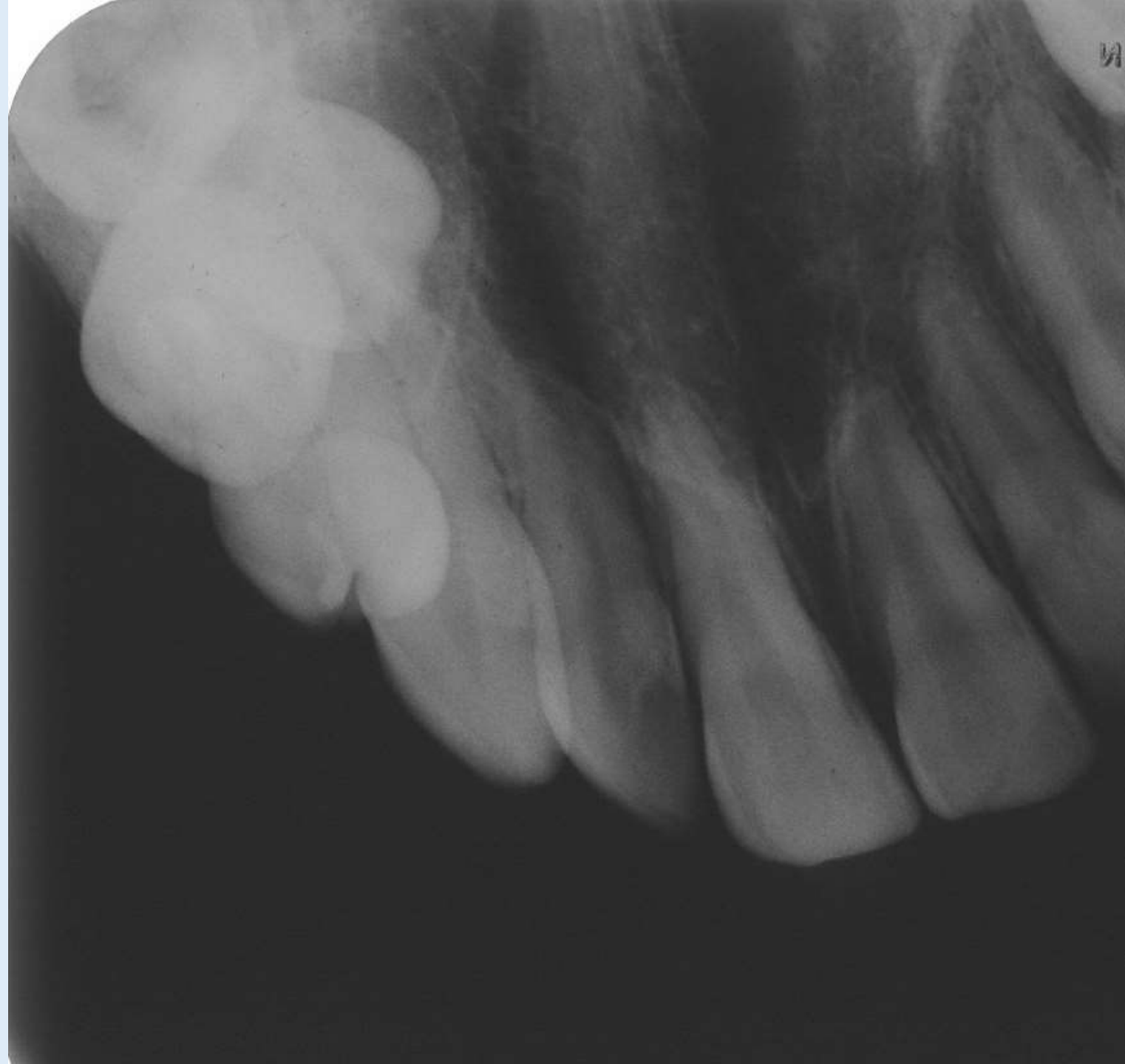


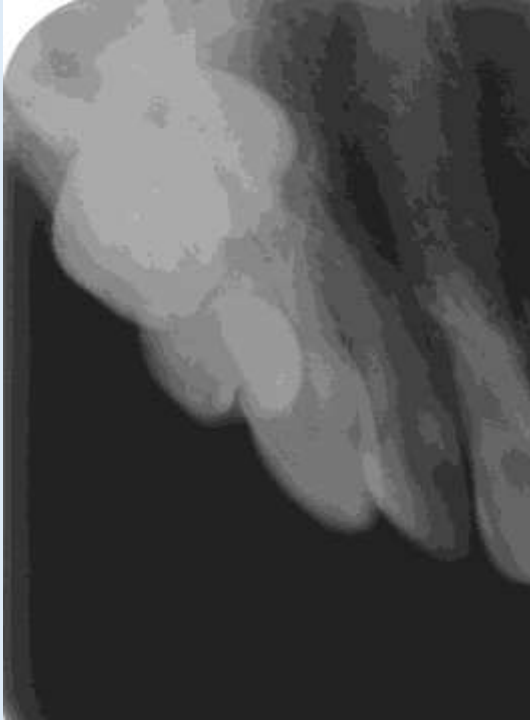


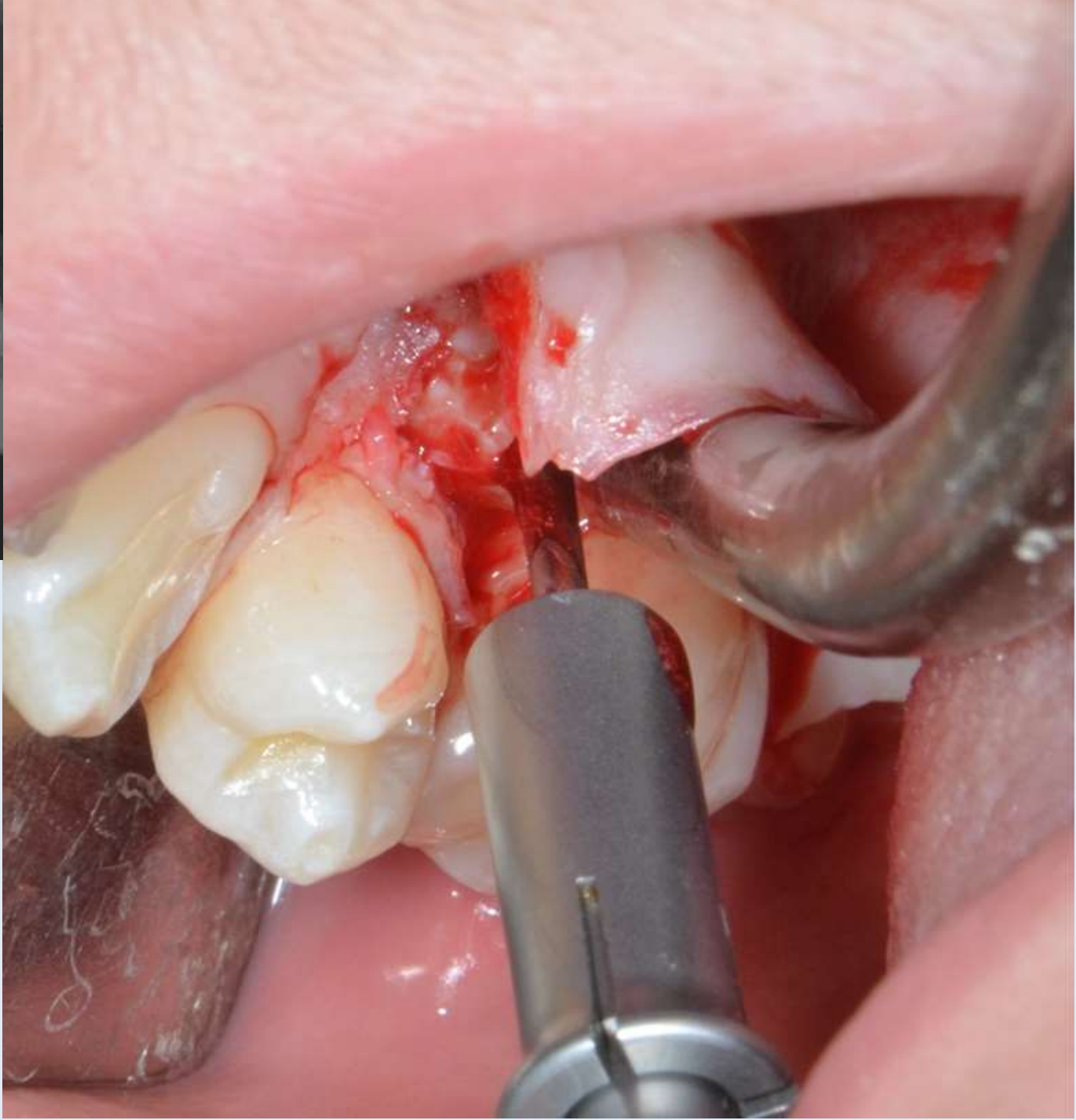
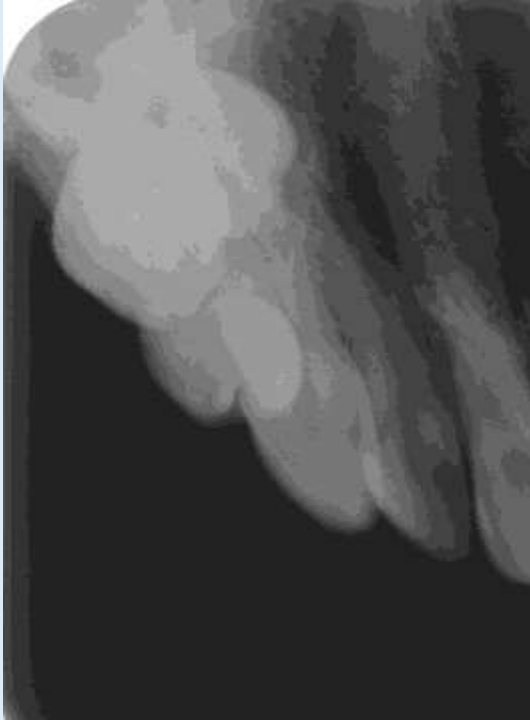


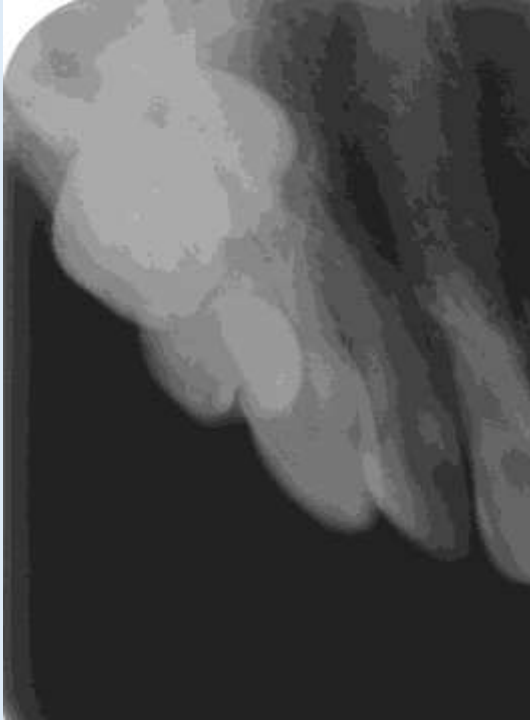
163 Stickremover roots removed by Benno Syfrig

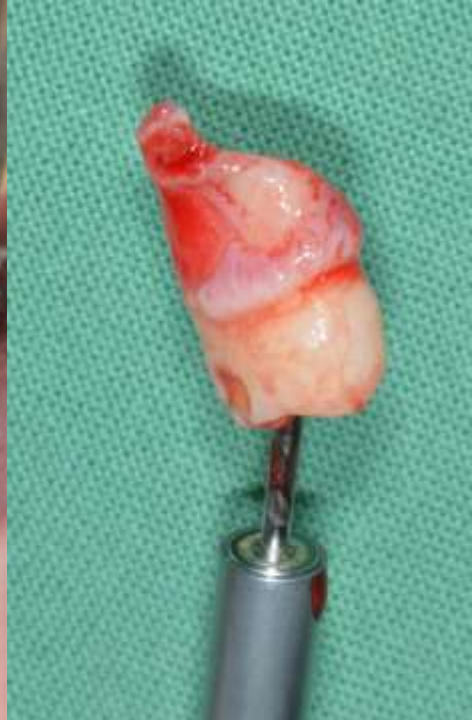
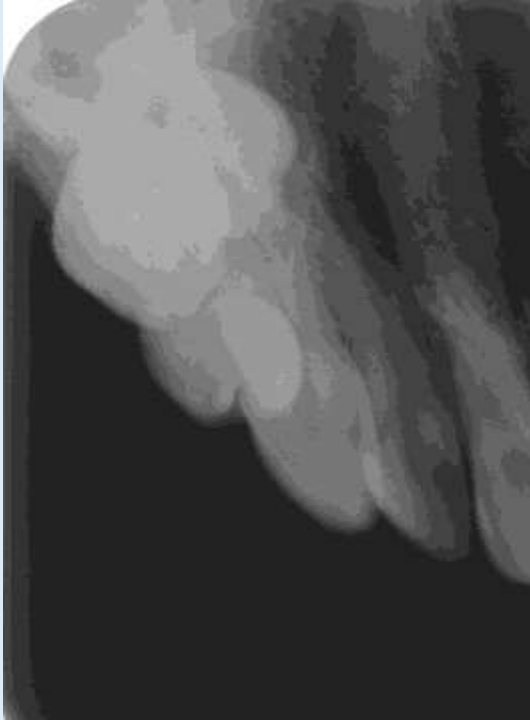
März 2009 bis März 2011

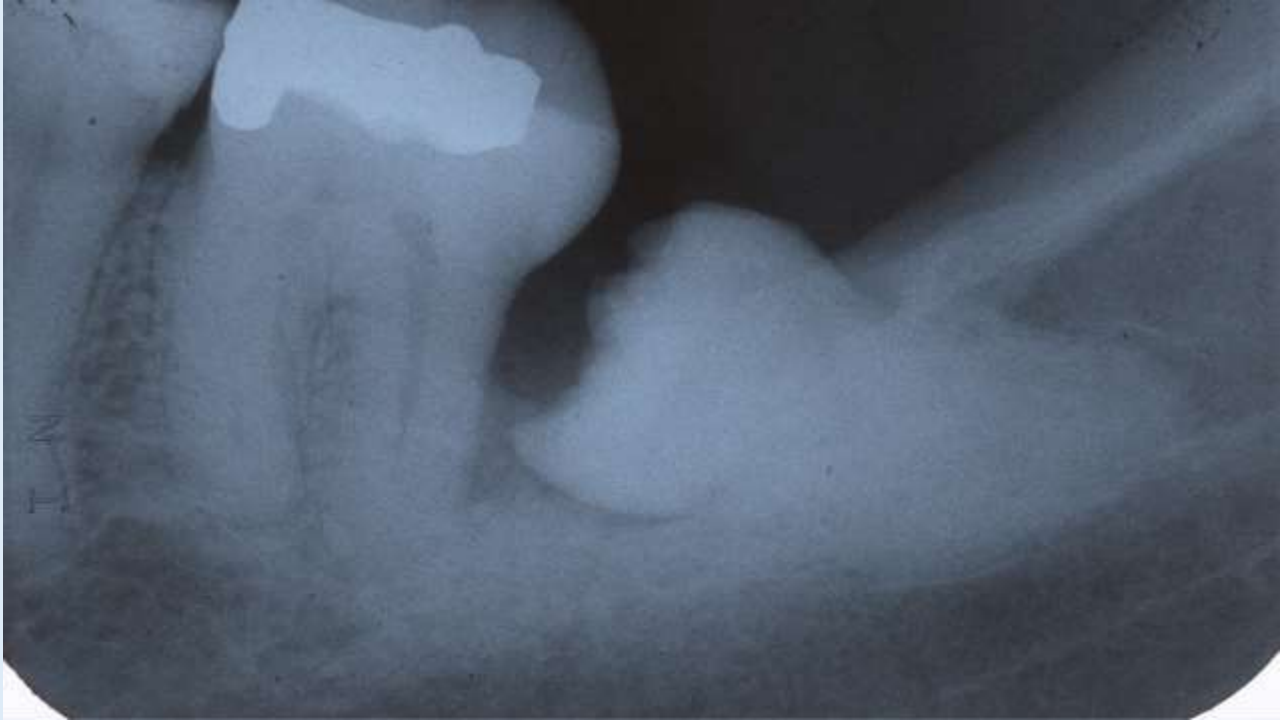


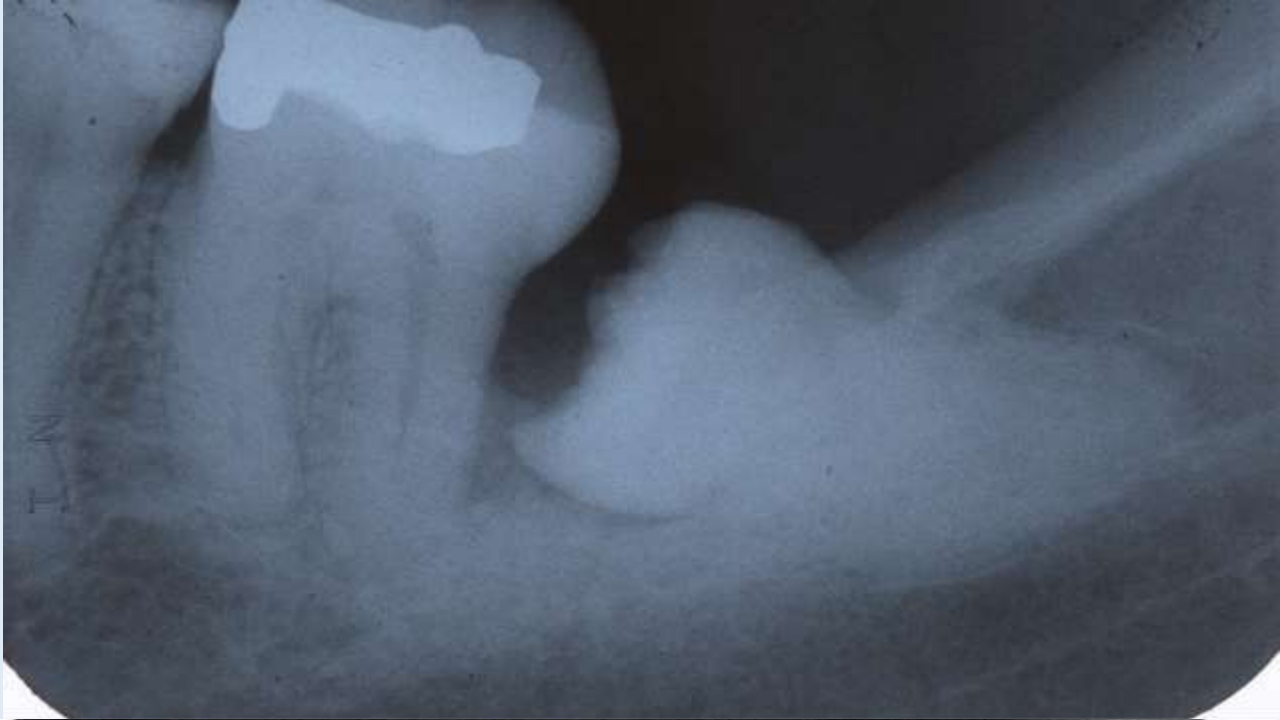


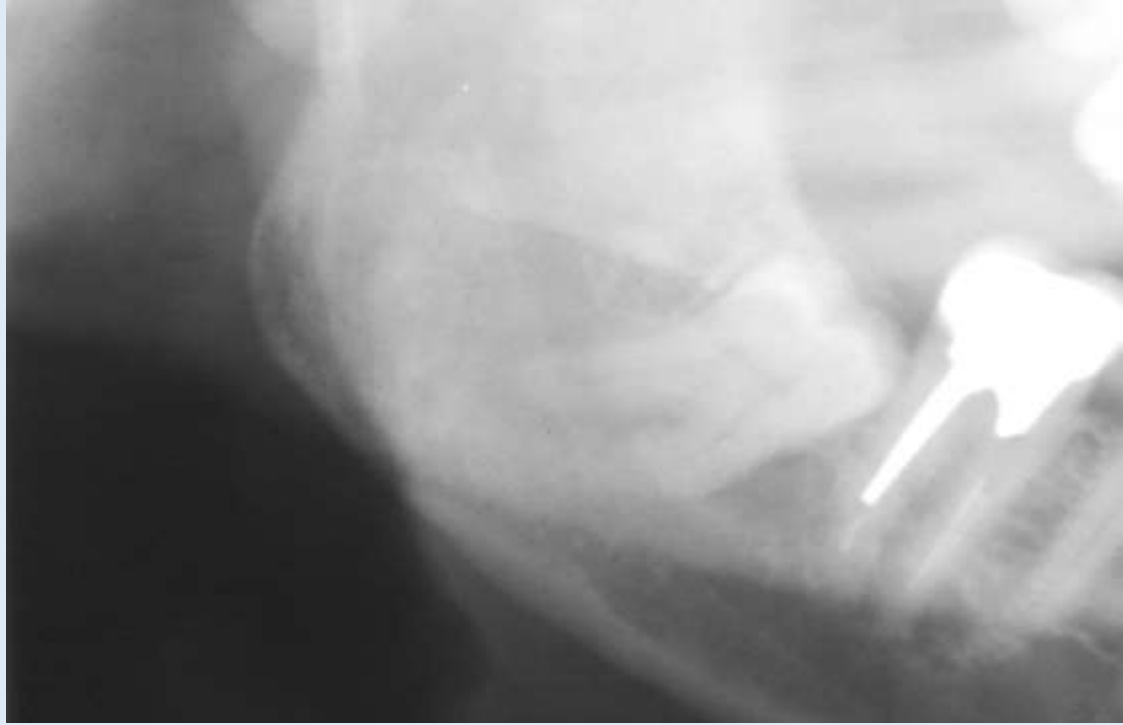


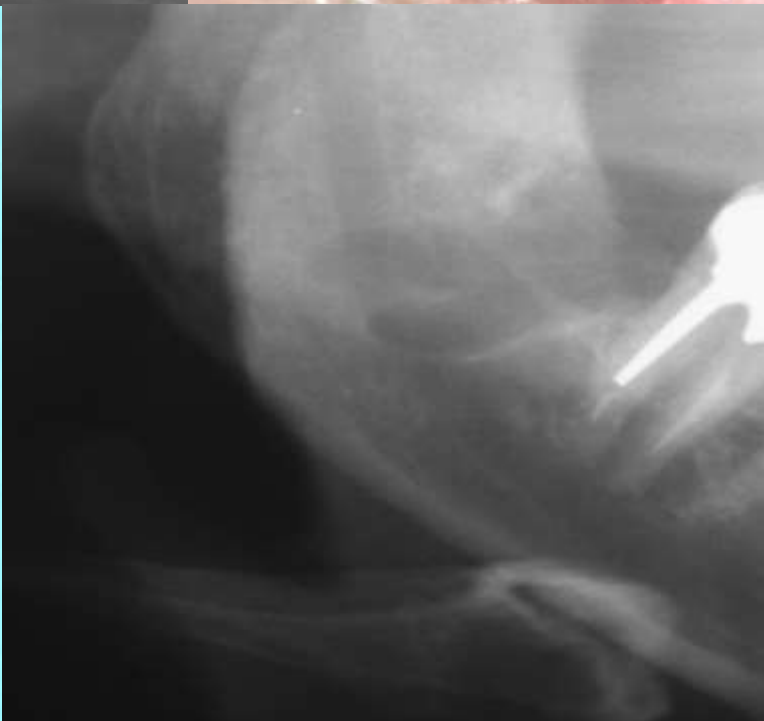


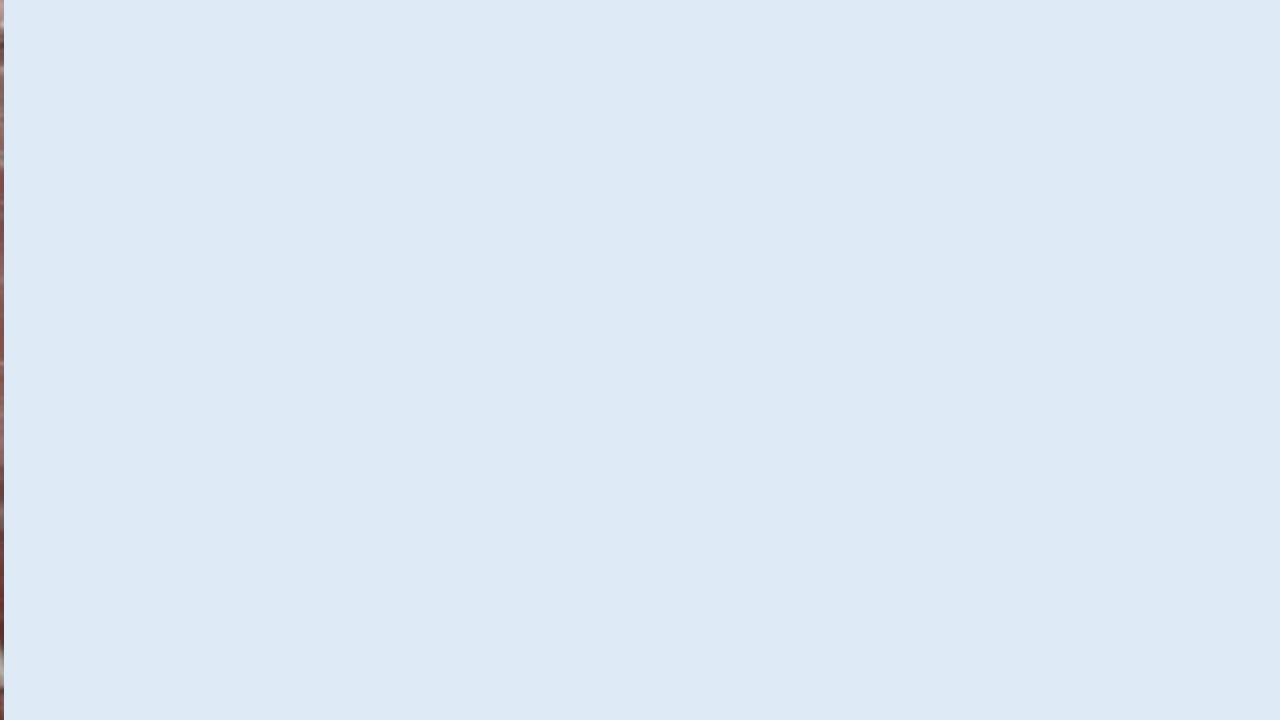


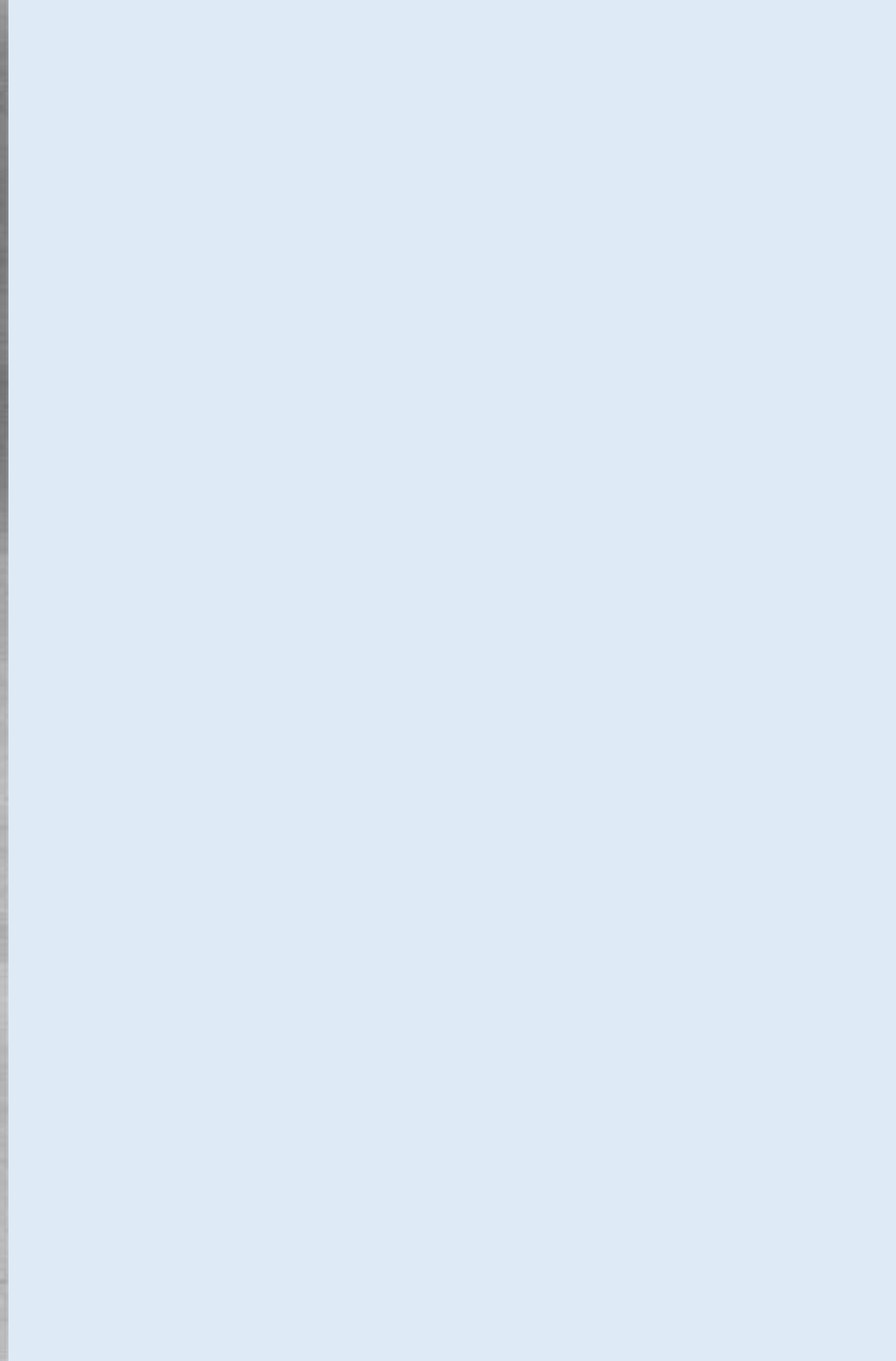
















28.01.2008



25.04.2008



Ueberweisungsgrund:

November 2009

Lieber Benno,

Frau Sie , wenn Du sie für die Extraktion des
Wurzelrestes 35 aufbieten könntest. Anschliessend ist eine
Implantatversorgung vorgesehen.
Zahn 34 wird auch konservierend behandelt. Frau war schon
Ende 2004 bei Dir für das Setzen des Implantates 15.

Liebe Grüsse



PatientIn bitte aufbieten

November 2009



Ueberweisungsgrund:

November 2009

Lieber Benno,

Frau Sie , wenn Du sie für die Extraktion des
Wurzelrestes 35 aufbieten könntest. Anschliessend ist eine
Implantatversorgung vorgesehen.
Zahn 34 wird auch konservierend behandelt. Frau war schon
Ende 2004 bei Dir für das Setzen des Implantates 15.

Liebe Grüsse

PatientIn bitte aufbieten



November 2009



May 2016





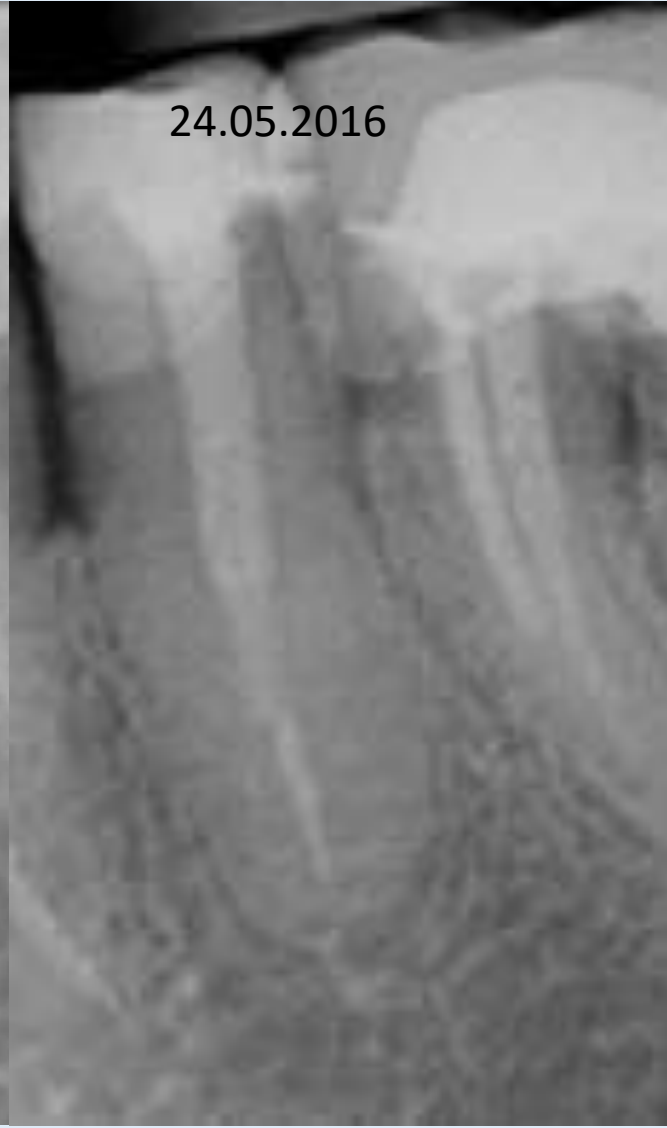
after Extrusion



3 ½ months later



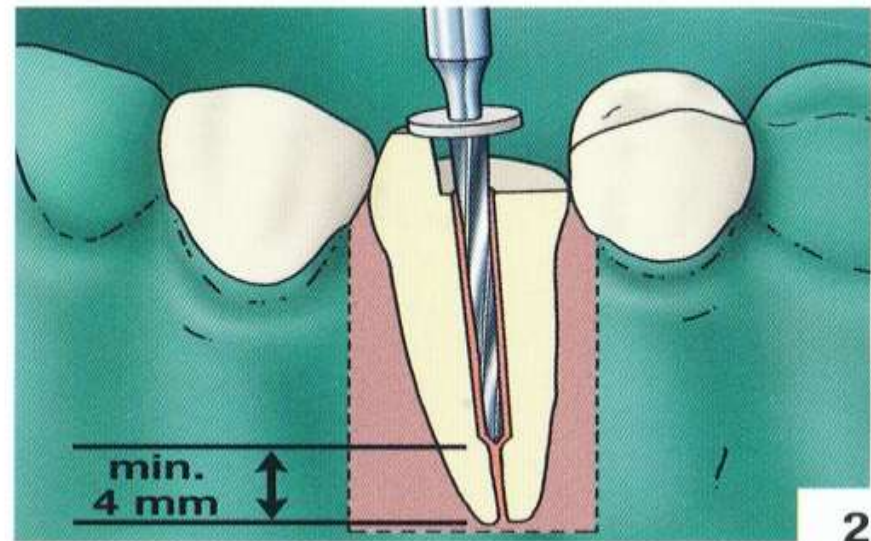
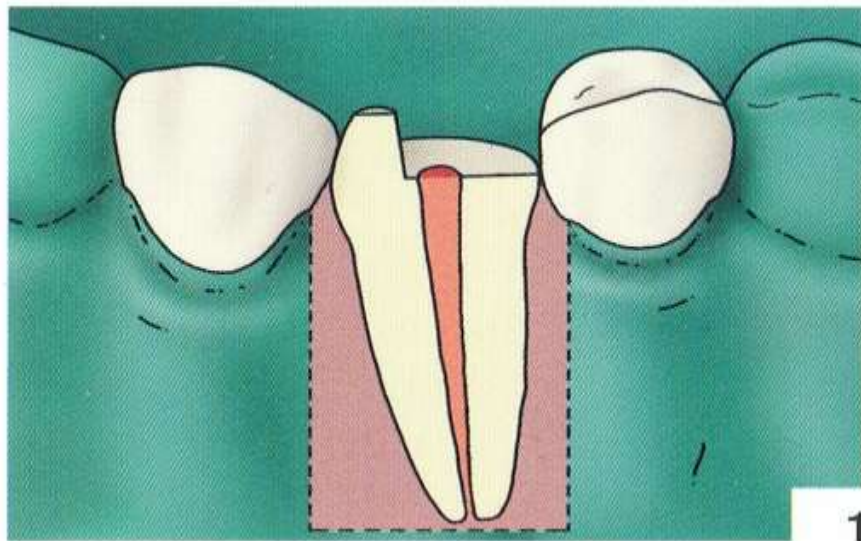
4 1/3 years later



6 ½ years later



Excavation and preparation of the root canal.

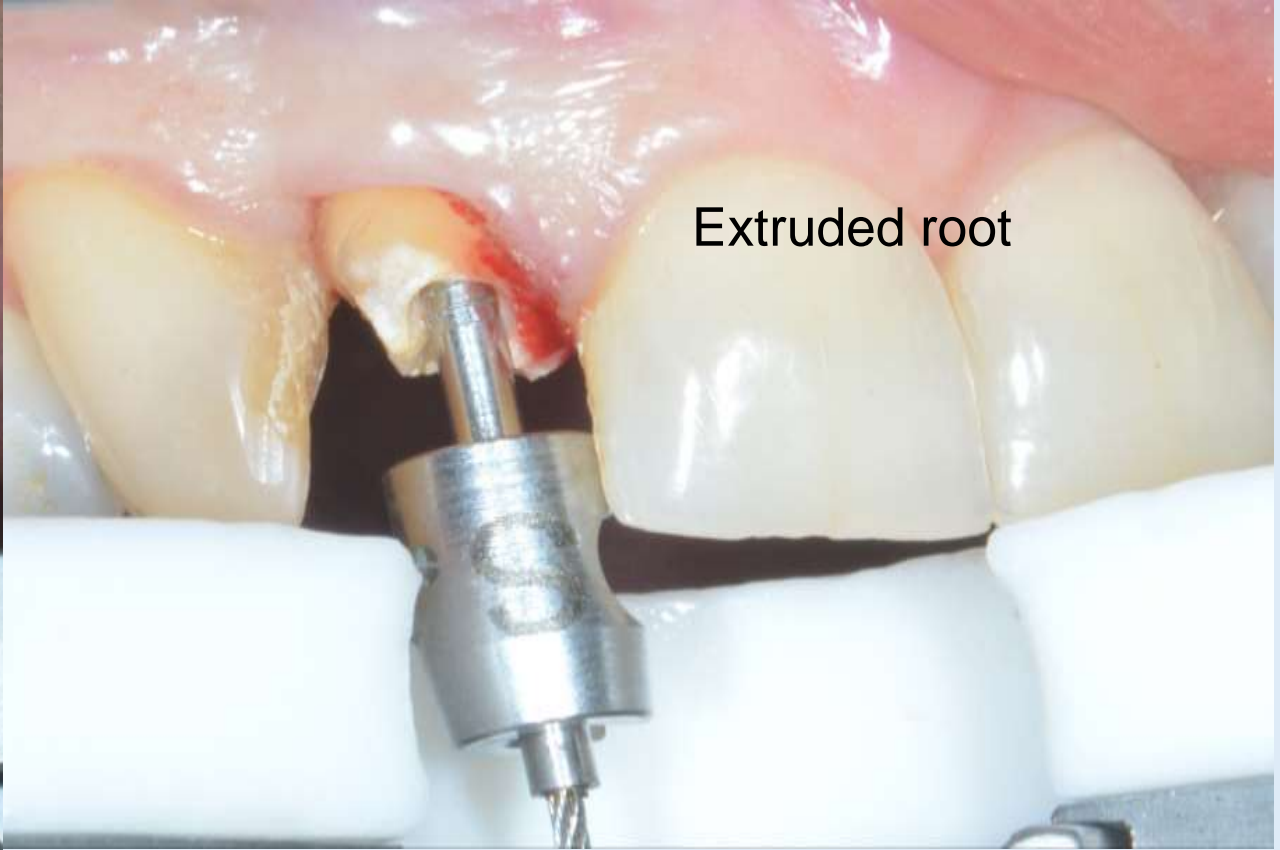




Root extrusion with Benex



Root extrusion with Benex



Extruded root



Fixation of the extruded root
Removal of the Benex screw



Root extrusion with Benex



Extruded root



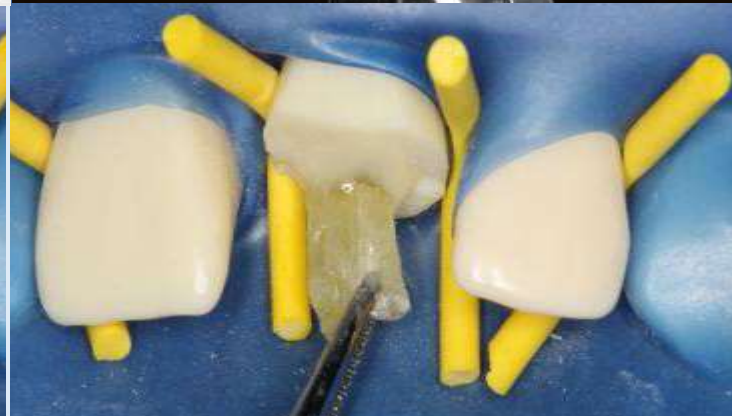
Fixation of the extruded root
Removal of the Benex screw



Place the post

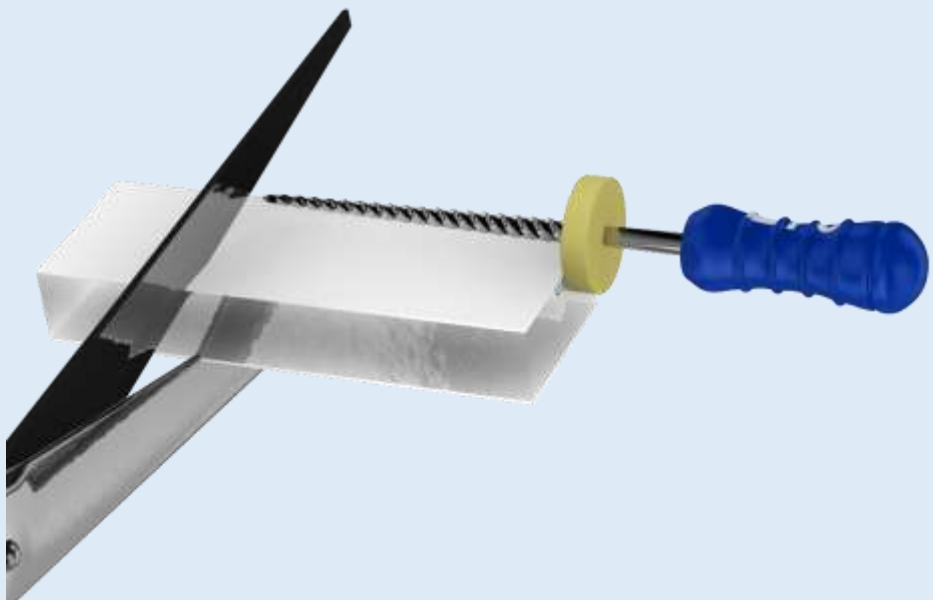


GC
everStick Post





everStick



GardiaCor





Continue building up the core



& tack-cure the post
with GC Gardia Core



Temporary composite crown, bonded to the
adjacent teeth



Continue building up the core



& tack-cure the post
with GC Gardia Core



Temporary composite crown, bonded to the
adjacent teeth



Removing the fixation after three weeks





after Extrusion



after Extrusion

3 weeks later



after Extrusion

3 weeks later

3 years later

Lieber Benno

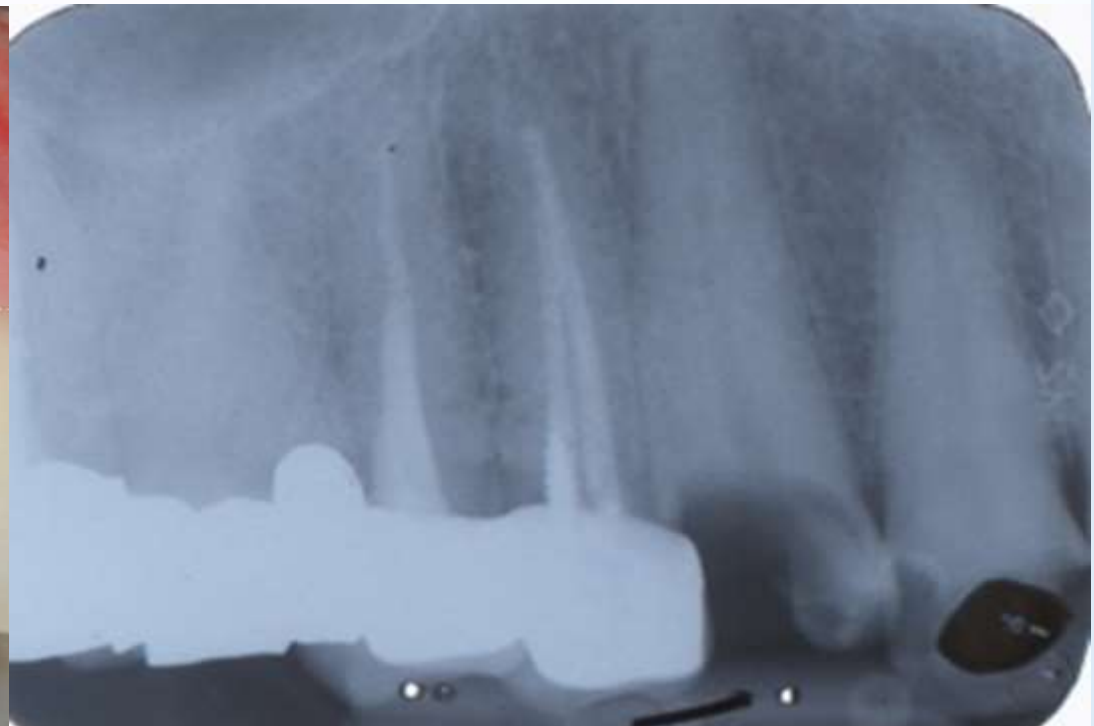
Gerne möchte ich Dir die oben genannte Patientin zu einer Beurteilung und gegebenenfalls Therapie überweisen.

Bitte besprechen: Implantat 13

Aktuelle Situation: Zahn 13 ist auf Gingivahöhe frakturiert.

Procedere: Wenn die Patientin mit der Implantantherapie einverstanden ist, bitte ich Dich, die Wurzel von Zahn 13 bei Dir herauszunehmen.

Ich habe mit der Patientin abgemacht, dass sie sich jederzeit für ein Drahtklammerprovisorium bei mir melden kann.



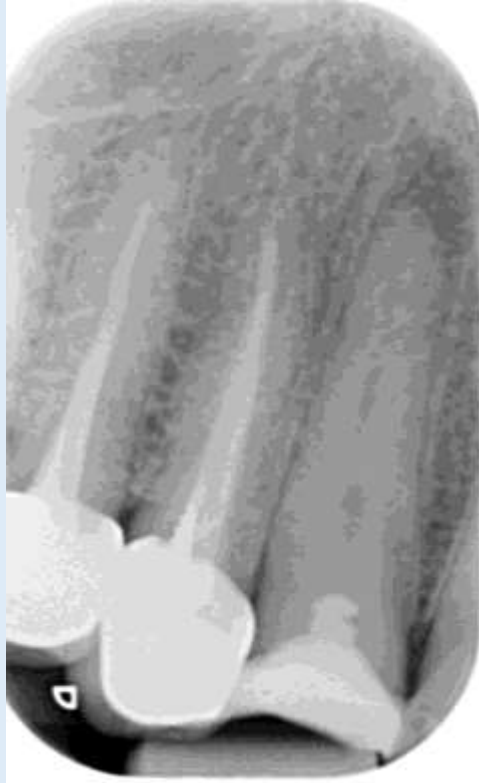
09.09.2010



15.02.2012



09.09.2010



16.11.2010



15.02.2012

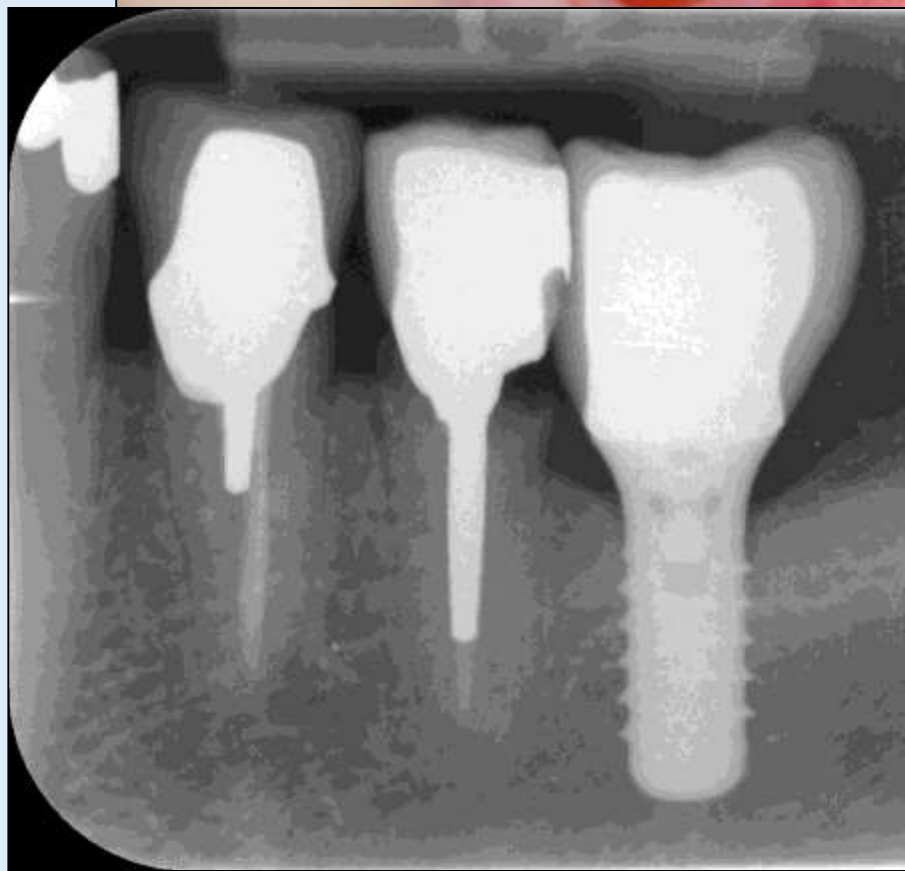


25.03.2014



25.03.2014



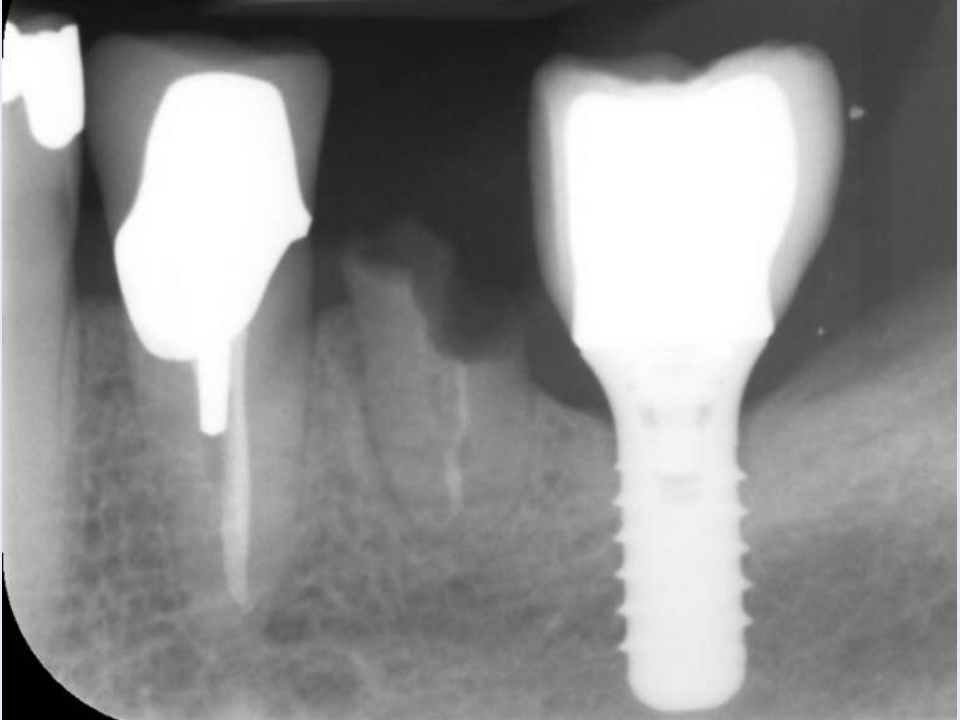






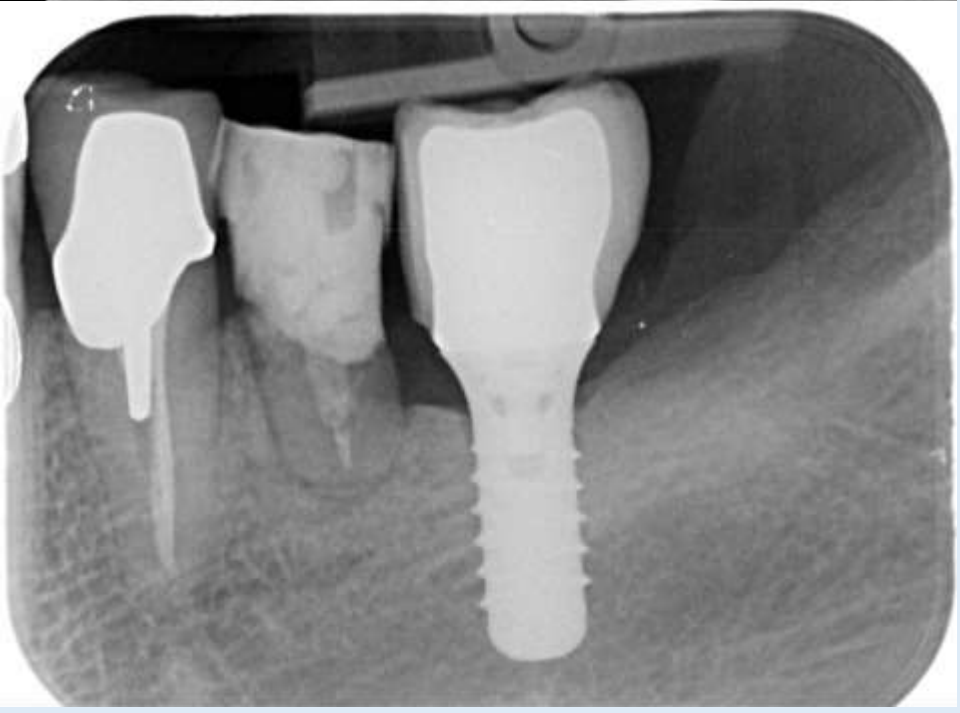
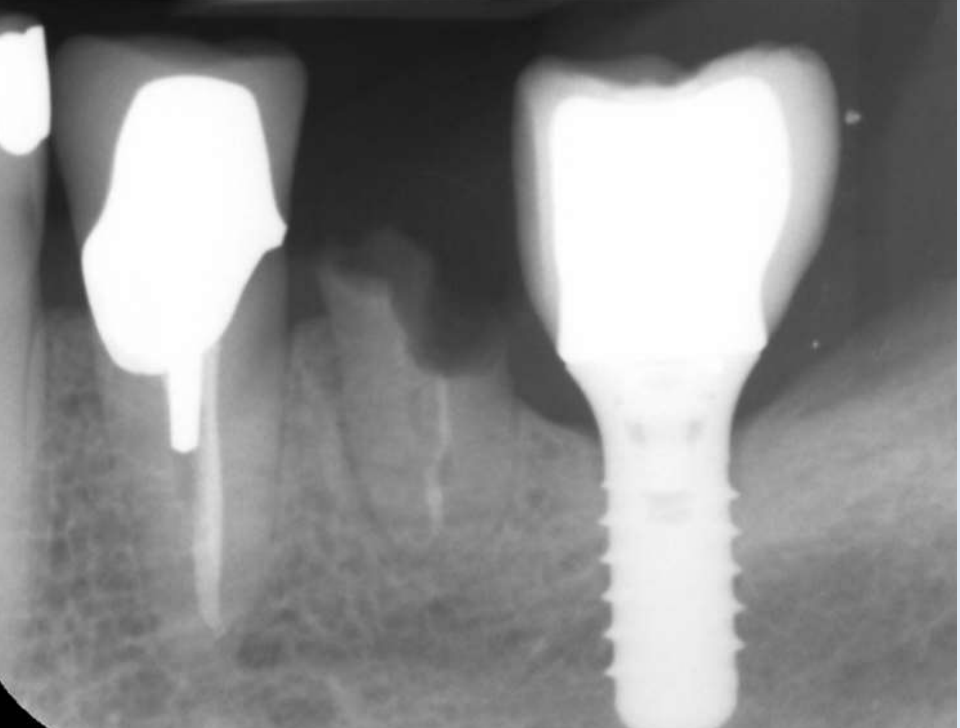


19. März, 2014
A. L., 82-jährig





19. März, 2014







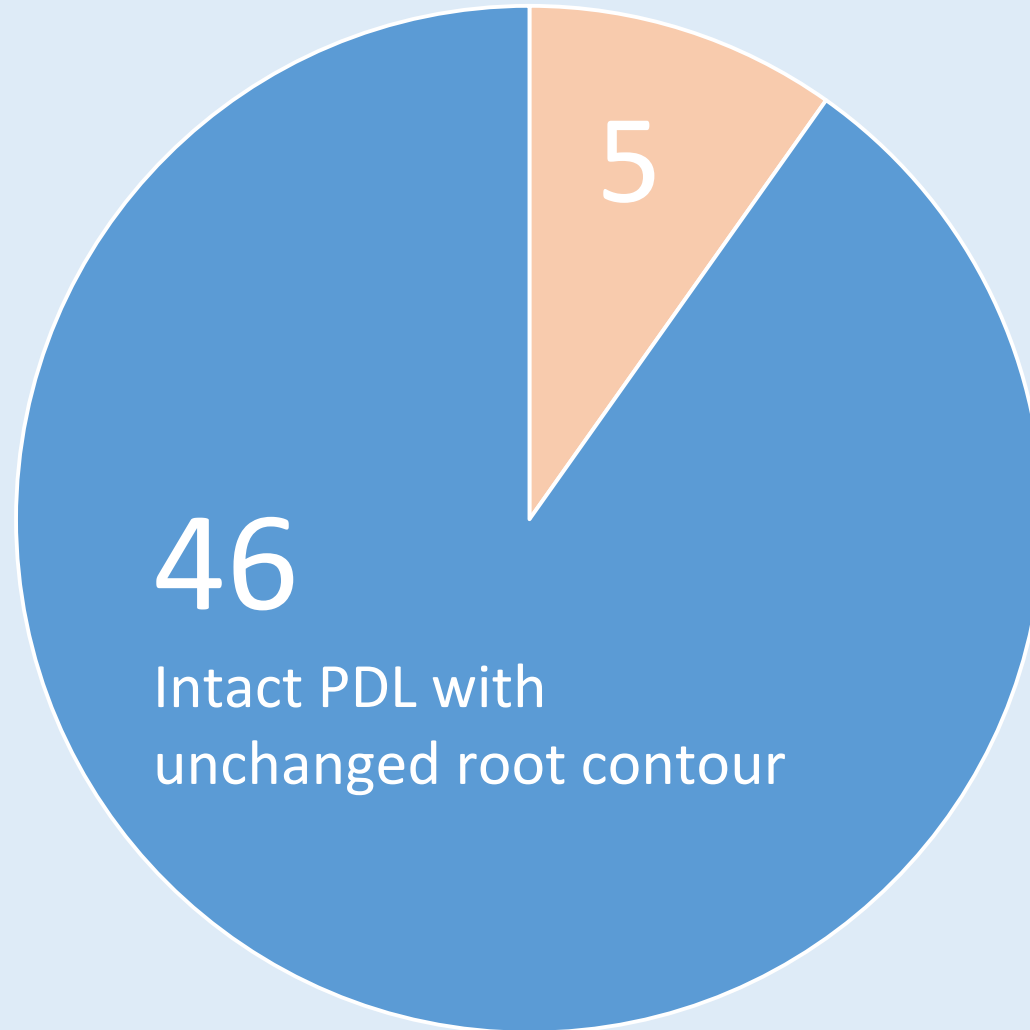
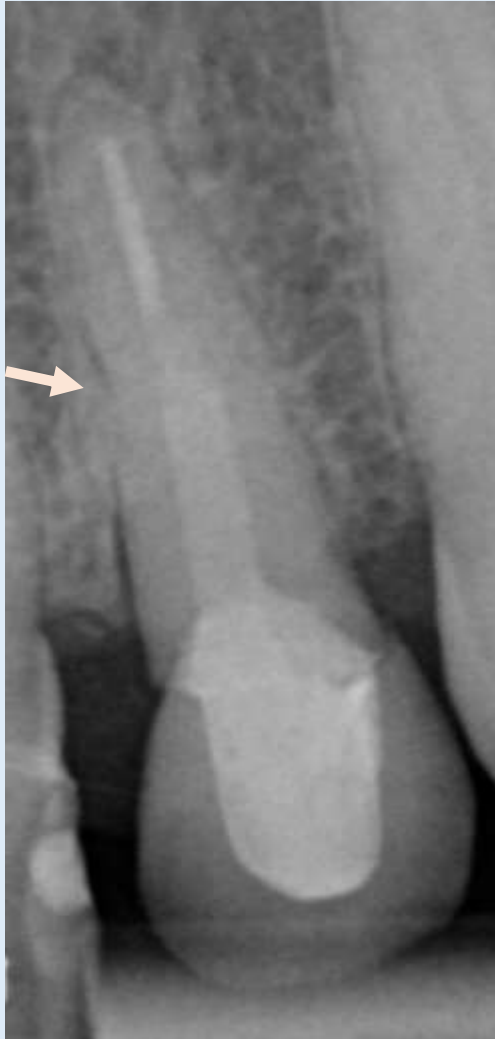
25.06.2012



09.07.2012



In the study post-controlled extruded teeth (n = 51)



Transient resorption
with intact PDL

Ø 3,1 Jahre postoperative
(min 0,8 – max 6 Jahre)

Ø 3 mm extrudt

Universitätsklinikum Würzburg



Zentrum für Zahn-, Mund- und Kiefergesundheit

Poliklinik für Zahnerhaltung und Parodontologie

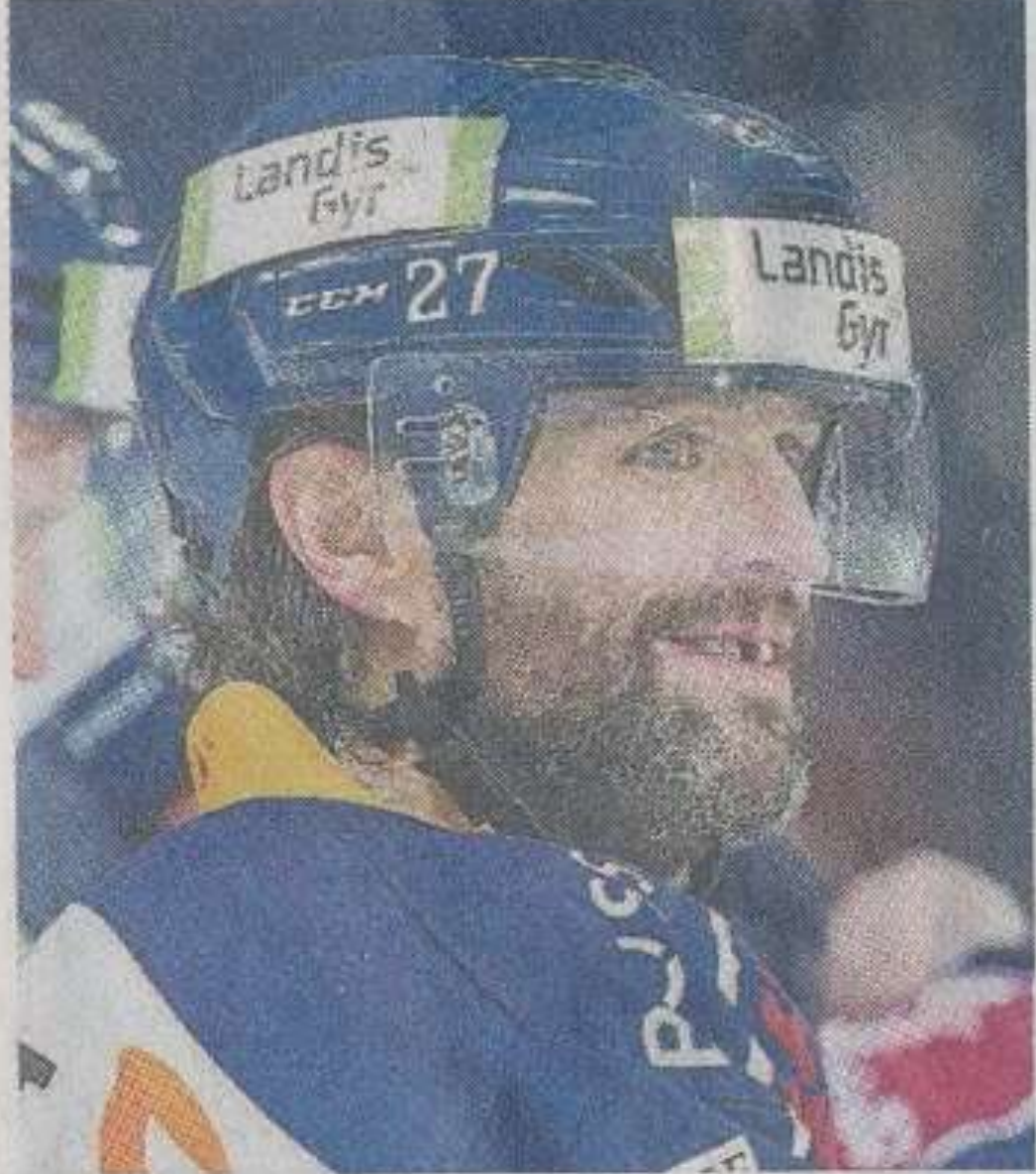
Conclusion

- Teeth heal after surgical extrusion periodontally.
- When root resorption occurs, it is "only" transient resorption
With intact parodontal gap.
- In this retrospective study as a result of surgical extrusion:
 - no evidence of ankylosis (replacement resorption)
 - only technical complications (no biological)

- **Surgical extrusion with an atraumatic extraction system: - A clinical study**
- *Krug R, Connert T, Soliman S, Syfrig B, Dietrich T, Krastl G.*
- *Surgical extrusion with an atraumatic extraction system: A clinical study.*
- *J Prosth Dent 2018 (in press)*
- Excerpts from the manuscript
- **Purpose.** The purpose of this clinical study was to investigate the success rate and incidence of biological and technical complications after tooth extrusion with an atraumatic extraction system (AES).
- **Introduction**....Teeth with deep subgingival fractures or carious lesions are usually deemed nonrestorable.Surgical extrusion, also referred to as intra-alveolar transplantation, was introduced as a more rapid alternative to orthodontic extrusion.⁵⁻⁹**An atraumatic extraction system (AES), termed Benex**, was introduced primarily to reduce the trauma to the alveolar socket during tooth extraction to facilitate subsequent implant insertion.¹⁴Recently, a clinical report of surgical extrusion using AES reported its minimally invasive nature with fewer complications compared with previous extrusion procedures.¹⁵ Furthermore, an animal study revealed that extruded teeth using a specially designed extrusion instrument with a similar functional principle as that of AES showed significantly less cementoblast loss than teeth extracted using forceps.¹⁶ Thus, the **AES approach may reduce cemental damage and increase the likelihood of functional (periodontal) healing** compared with conventional extraction methods....
- **Discussion**....The present study showed a **favorable outcome after surgical extrusion of nonrestorable teeth** with a novel vertical extrusion system

- **from the e-mail of Ralf Krug <ralf_krug@web.de> , University Würzburg, Mo. 05.02.2018 21:45**
- “... that in cooperation with Benno Syfrig, Prof. Krastl, Thomas Connert and Prof. Dietrich our retrospective study of the teeth treated by Benno with Benex in the Journal of Prosthetic Dentistry has been accepted. On the other hand, we would like to inform you that in Würzburg the use of the Benex has gained an important status in tooth preservation. Simply indispensable...”
- Krug R, Connert T, Soliman S, Syfrig B, Dietrich T, Krastl G.
- Surgical extrusion with an atraumatic extraction system: A clinical study.
- J Prosth Dent 2018 (in press)

Owetschkin krönt seine Karriere



Josh Holden bleibt Zug nach der Aktivkarriere erhalten.



