General considerations of implant surgery

Körmöczi Kinga

Semmelweis University, Faculty of Dentistry

Department of Oral and Maxillofacial Surgery

The planning of implant rehabilitations happens with the <u>priority of the prosthetic aspects</u>, but in close harmony with the surgical ones.

Treatment plan in implantology (backward planning)

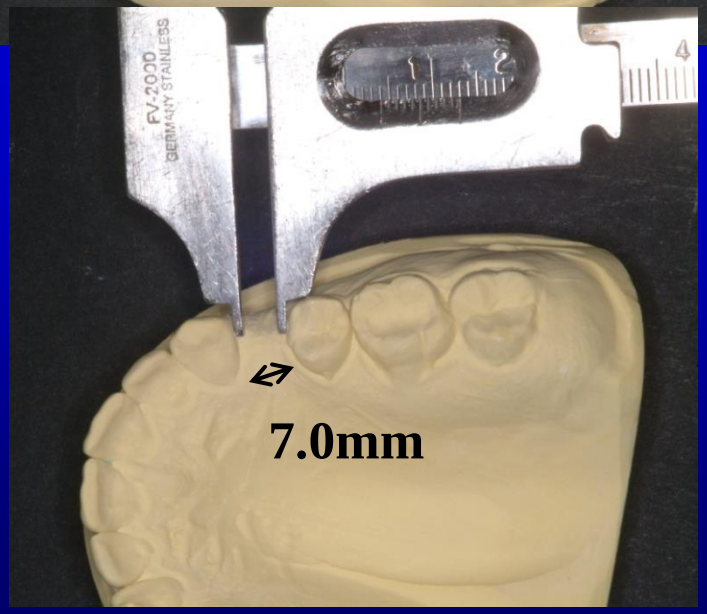
- Protetical planning:

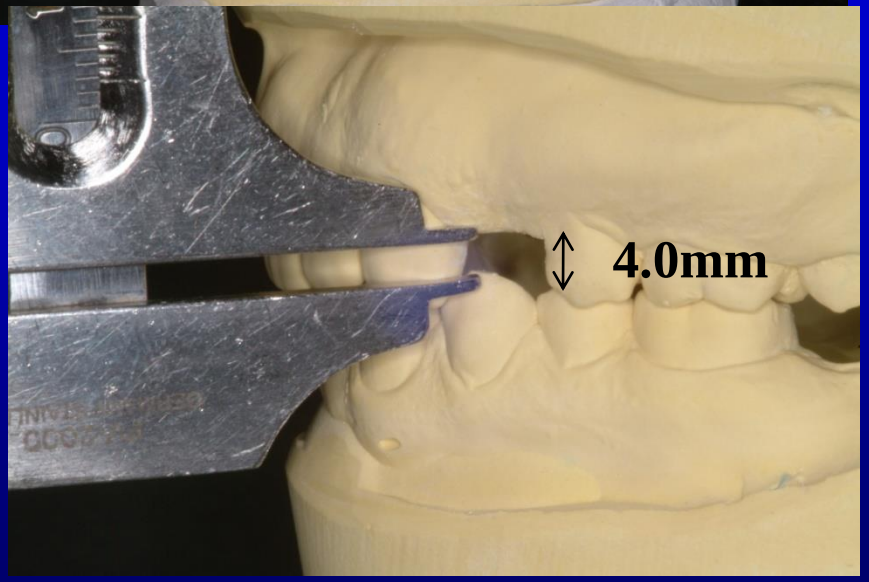
- Type of toothless
- Type of the prothesis
- The protetical possibility for transfer the force optimaly

- Sugical planning:

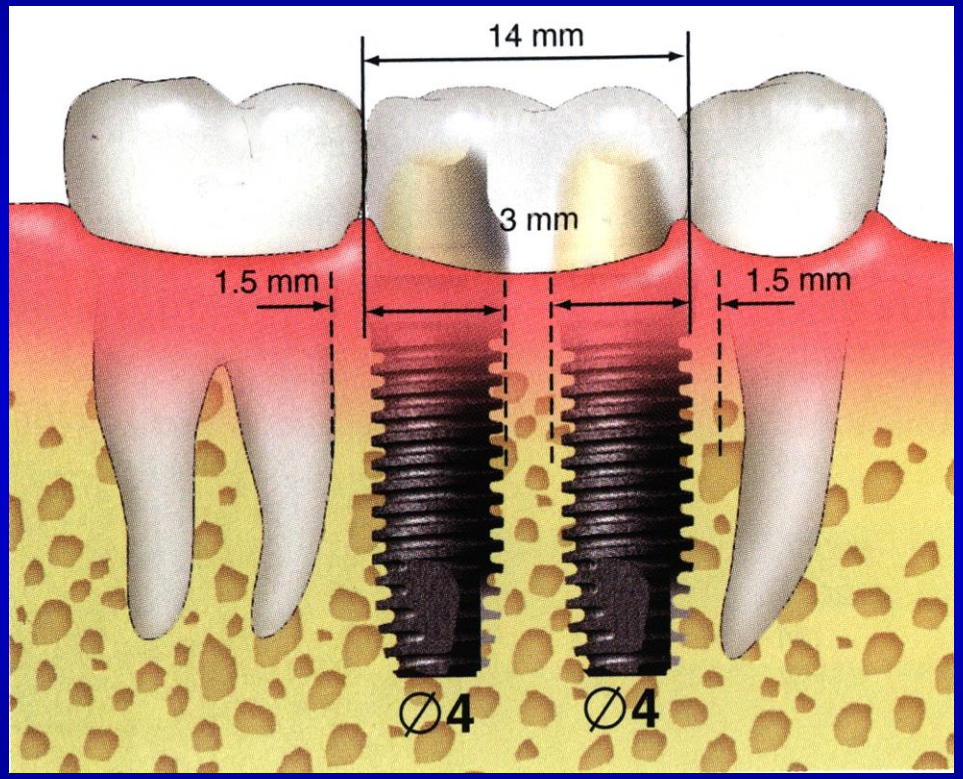
- Place of implants
- Number
- Size, shape
- Date of implantation

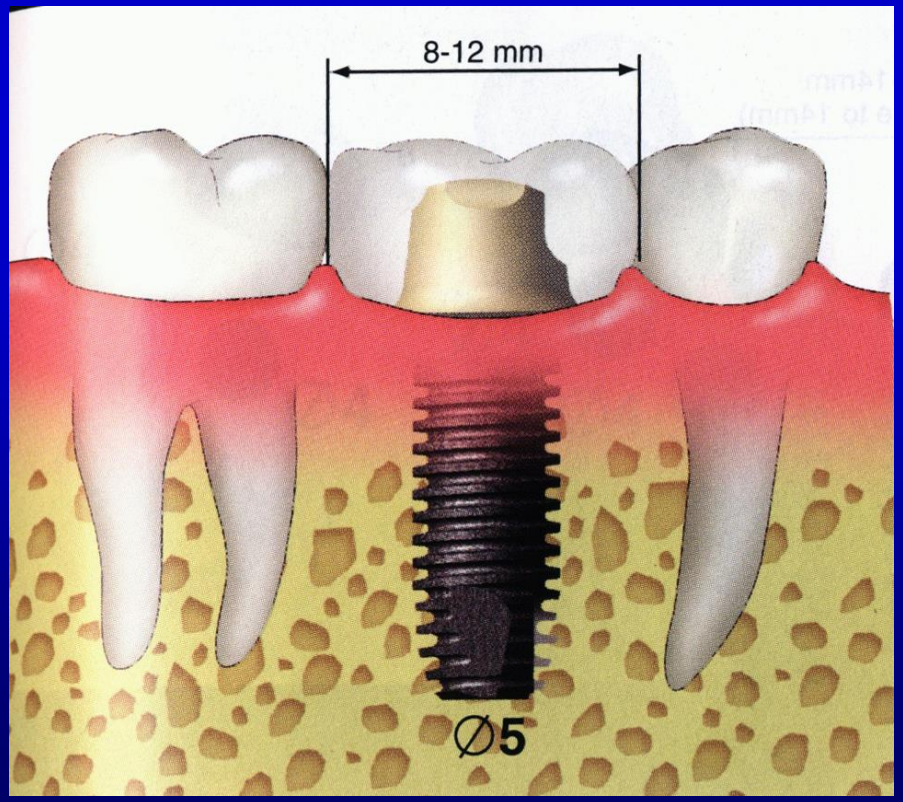
Model analysis before the surgery



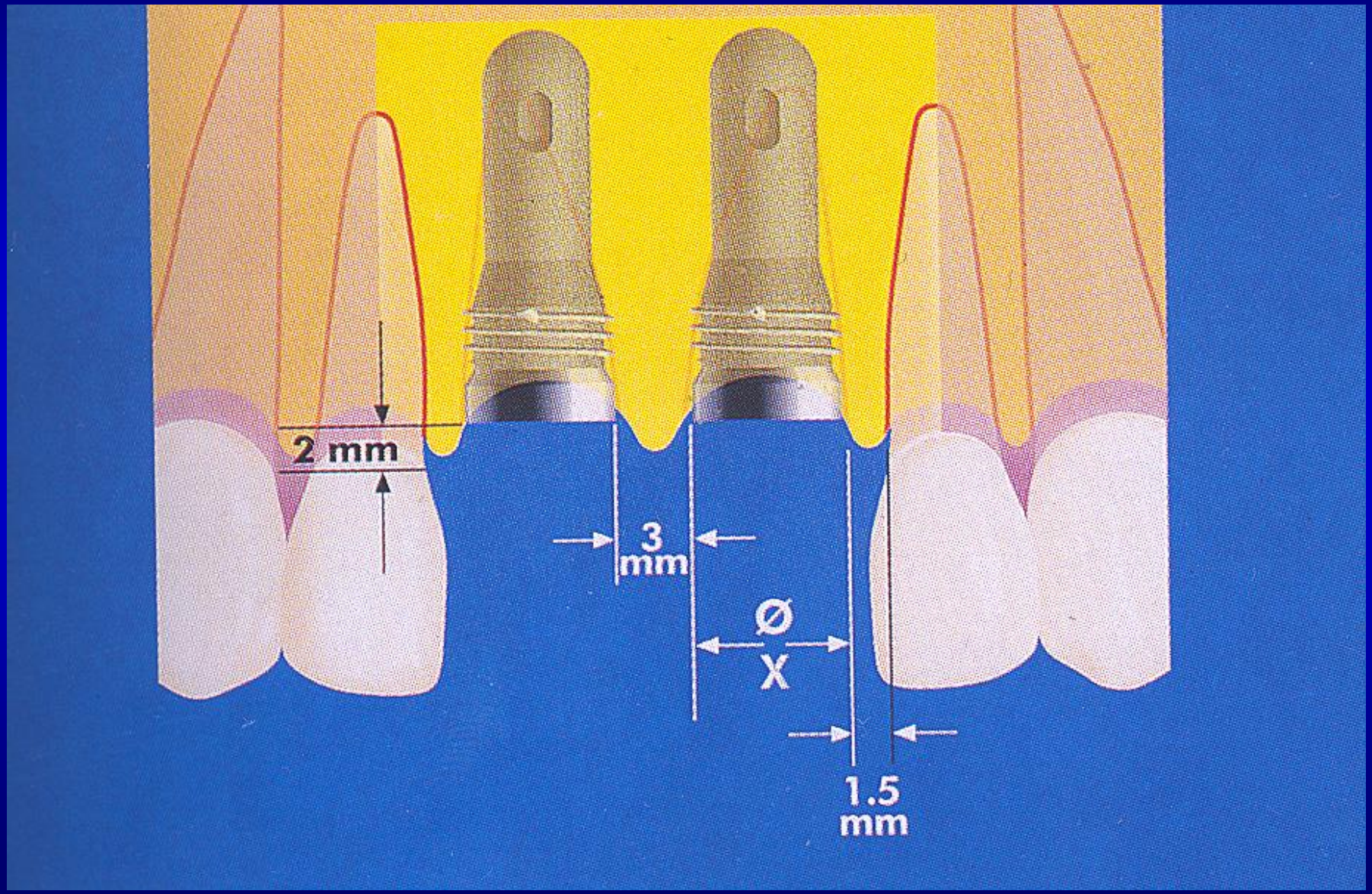


The ideal mesio-distal position of implants

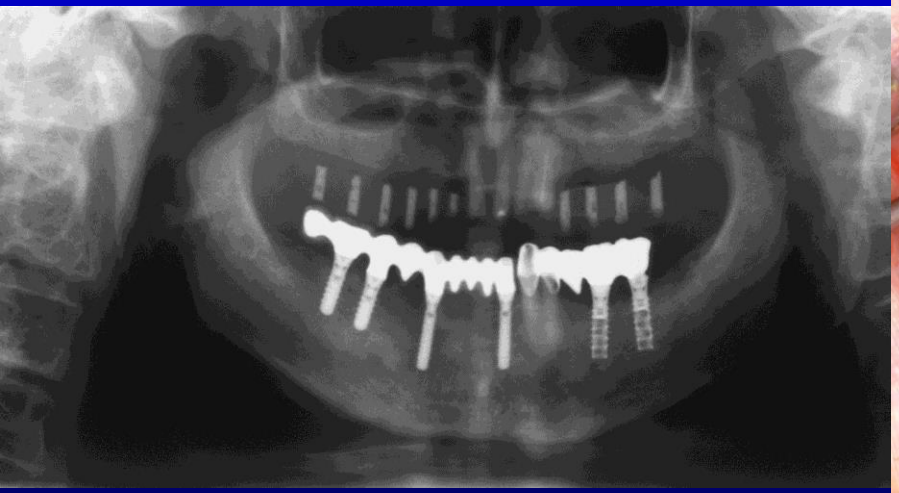


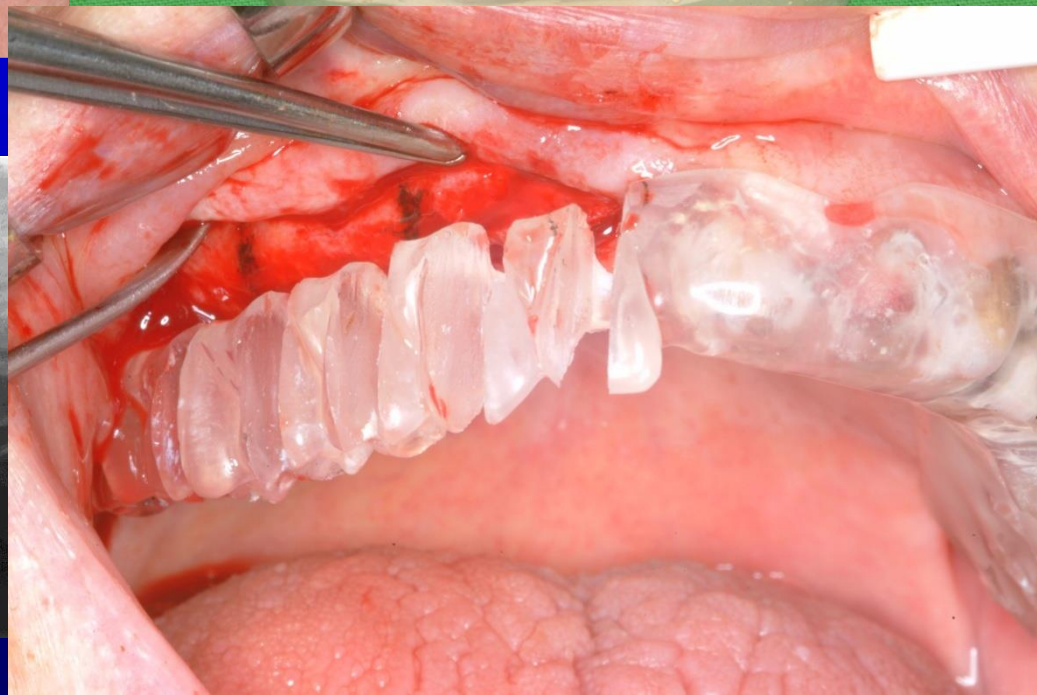


The ideal positioning of implants



Fabrication of X-ray, surgical template





Clinical aspects: Implant placement

- Sterility
- Speed of drilling
- Cooling
- Surgical technique

Clinical aspects: Implant placement

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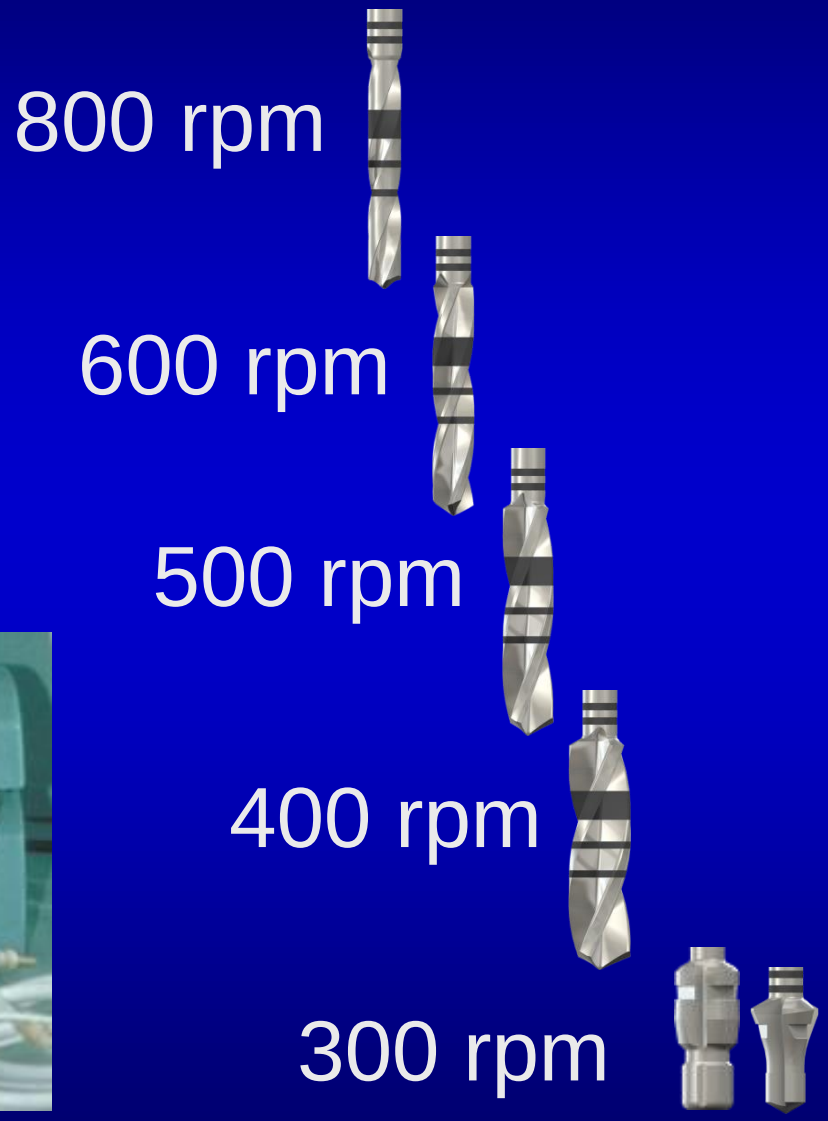

Clinical aspects: Implant placement

- Sterility
- Speed of drilling
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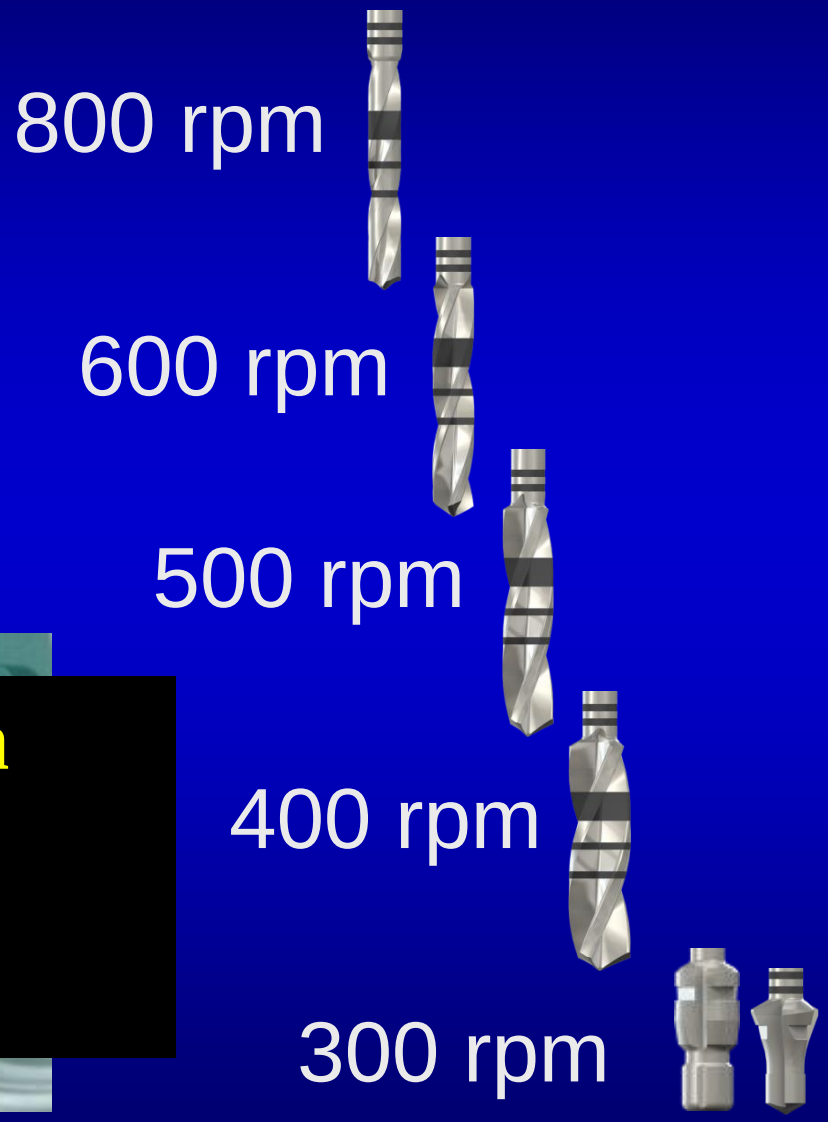


Report of bone cells death at temperature 40° C

/Eriksson AR.,Albrektsson J.: J.Prosth.Dent. 50:101,1983/

Surgical unit for implant placement:

- Adjustable speed and torque control
- Integrated cooling system
- Surgical hand-piece with cooling

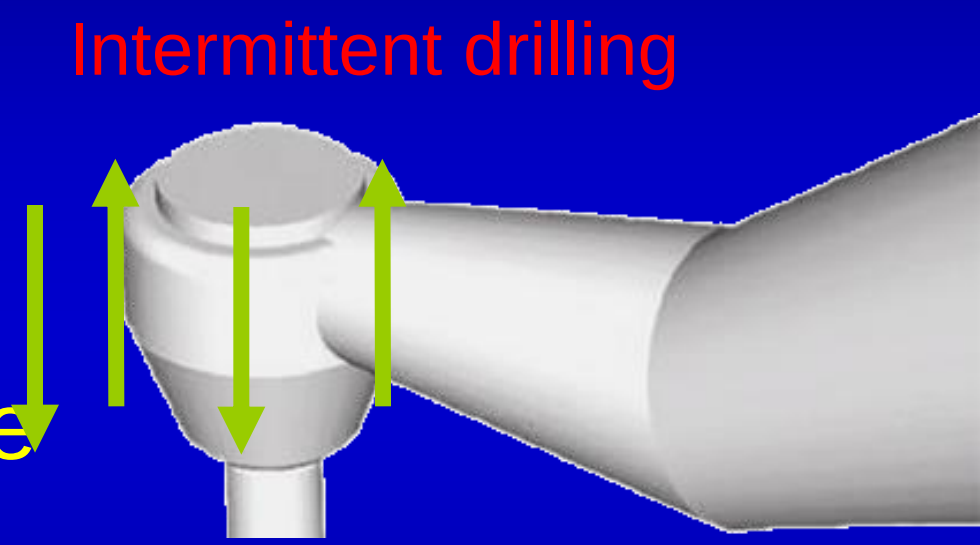
Clinical aspects: Implant placement

- Sterility
- Speed of drilling
- Cooling
- Surgical technique

Outer, 5° C sterile NaCl solution

Clinical aspects: Implant placement

- Sterility
- Speed of drilling
- Cooling
- Surgical technique



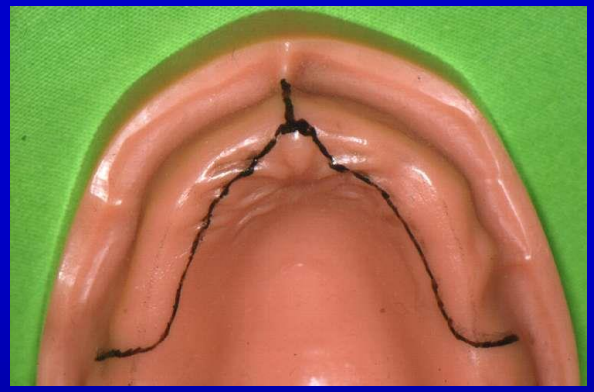
Surgical steps of implant placement

- **Flap design**
  - Marking drill
  - Pilot drill
  - Control measurements
  - Widening drill
  - Countersinking
  - Thread cutting
  - Implant placement

Various flap designs





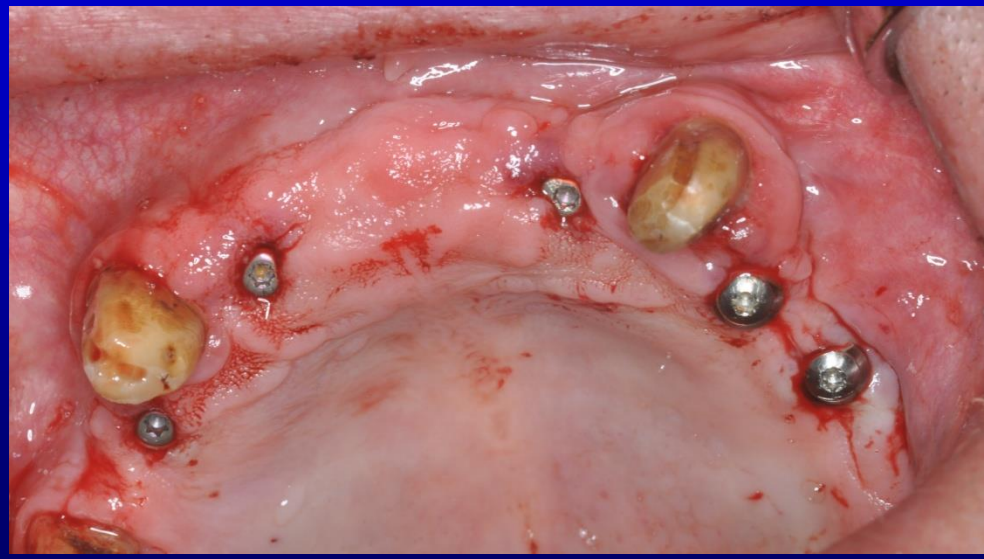




The flapless surgery can be predictable and safe at ideal anatomic conditions and proper diagnostic evaluations.

/Campelo L.D., Dominguez Camara J. R.,

Int. J. Oral Maxillofac. Impl. 2002; 17: 271-276/

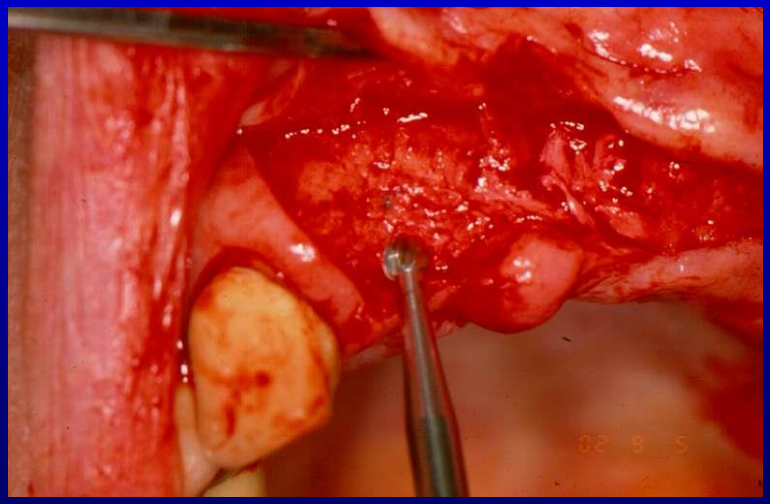
Flapless implant placement /Straumann /

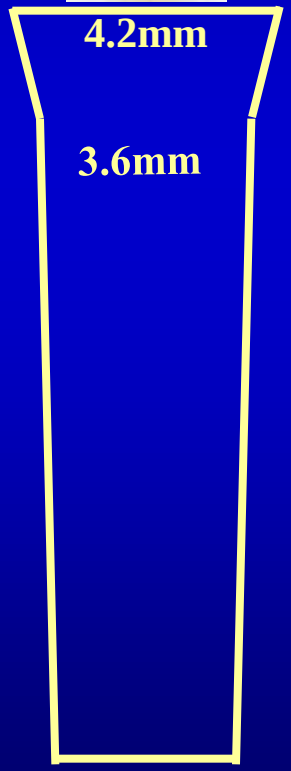


Surgical steps of implant placement

- Flap design
- **Marking drill 1200-1500 rpm**
  - Pilot drill
  - Control measurements
  - Widening drill
  - Countersinking
  - Thread cutting
  - Implant placement

Marking drill



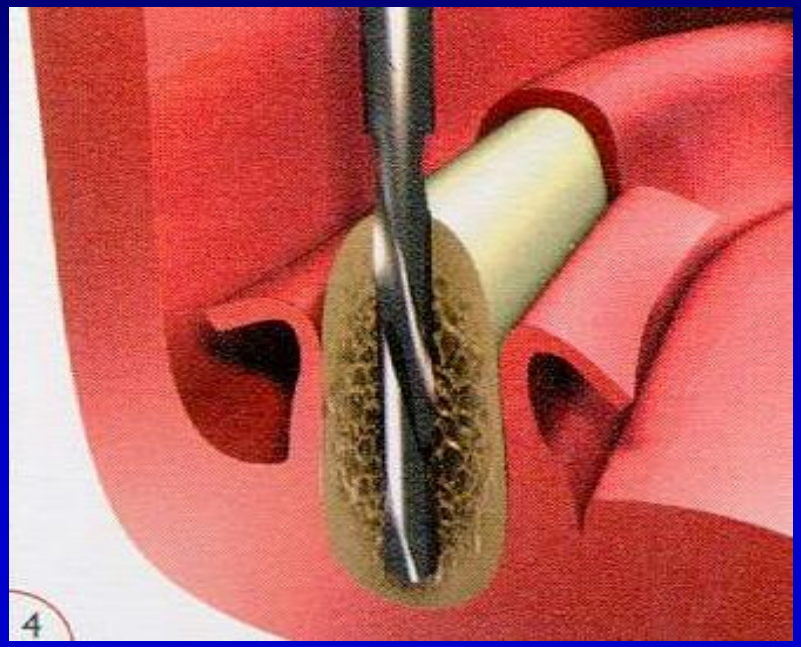


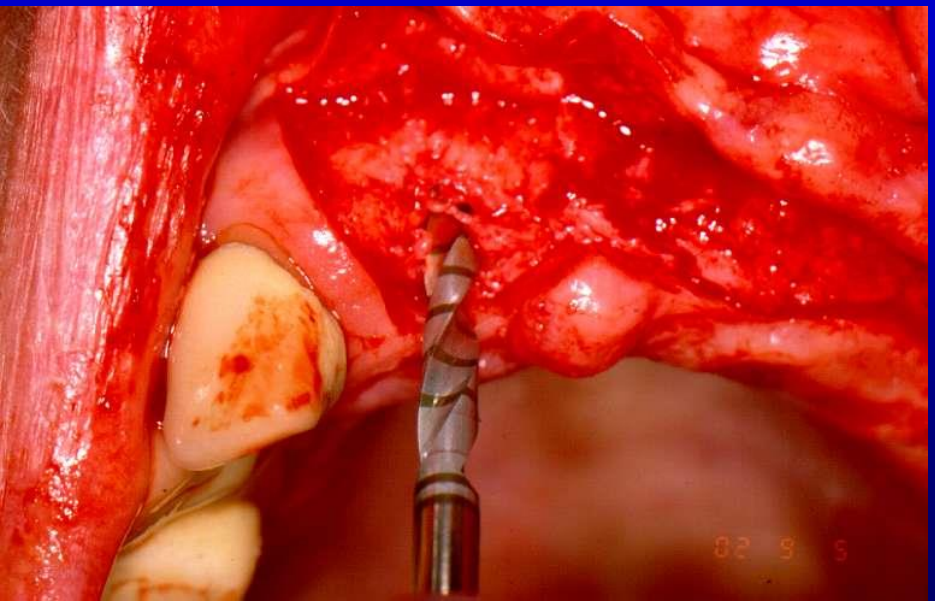
Surgical steps of implant placement

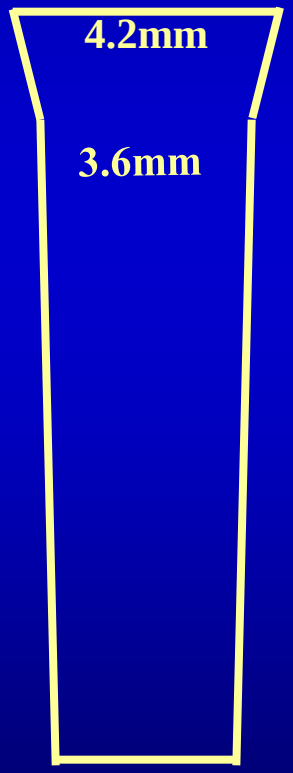
- Flap design
- Marking drill

- **Pilot drill 1200-1500 rpm**
  - Control measurements
  - Widening drill
  - Countersinking
  - Thread cutting
  - Implant placement

Pilot drill /Ø 2.2 mm/







Ø2.2mm

Surgical steps of implant placement

- Flap design
- Marking drill
- Pilot drill

- **Control measurements**

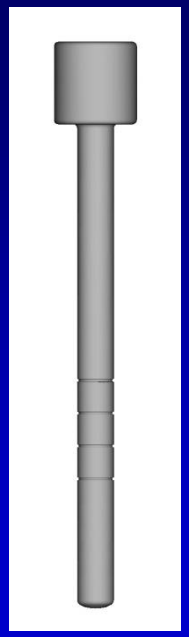
- Widening drill
- Countersinking
- Thread cutting
- Implant placement

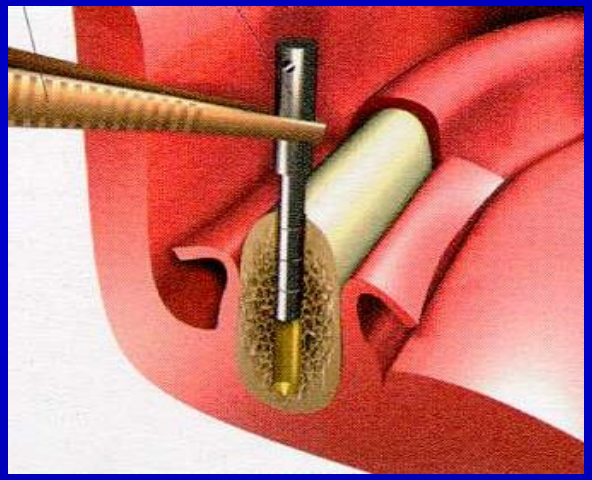
Controls

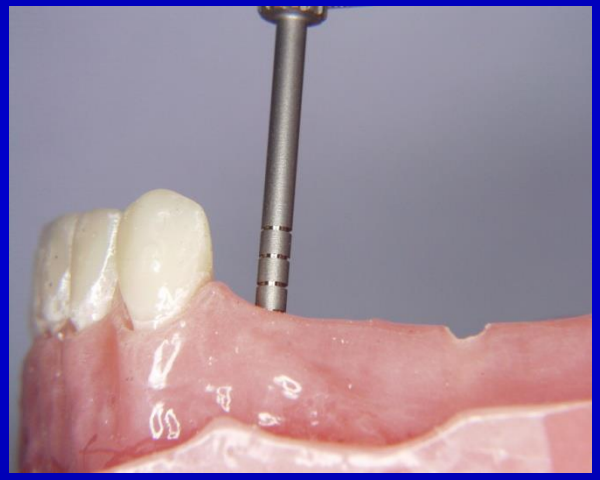
Depth gauge

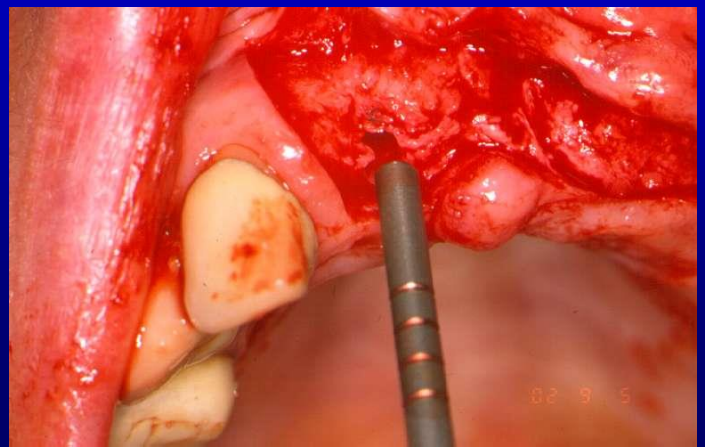
Drill guide

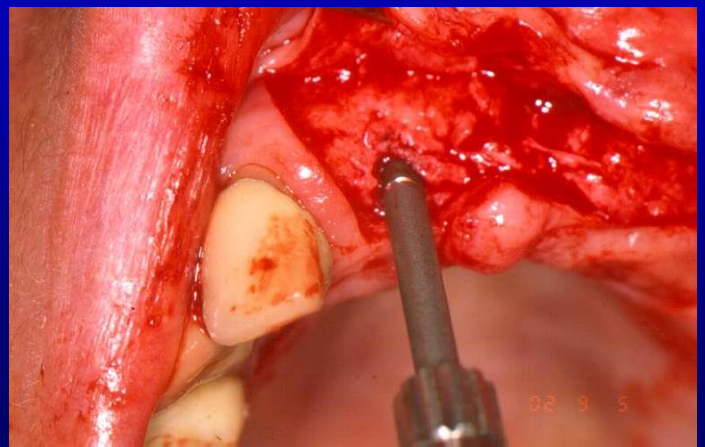
Parallel gauge









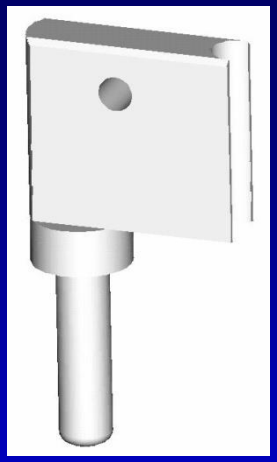


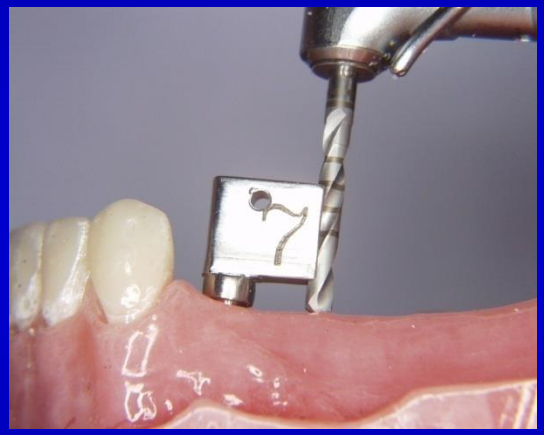
Controls

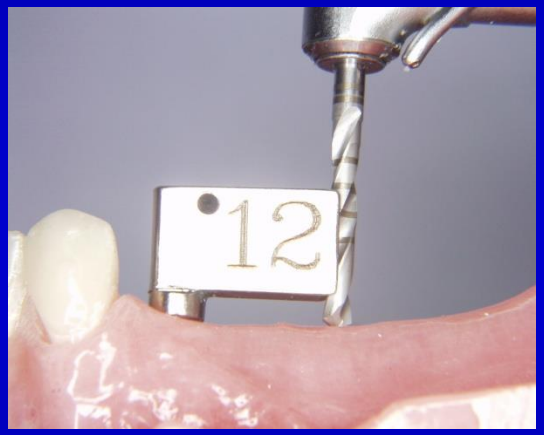
Depth gauge

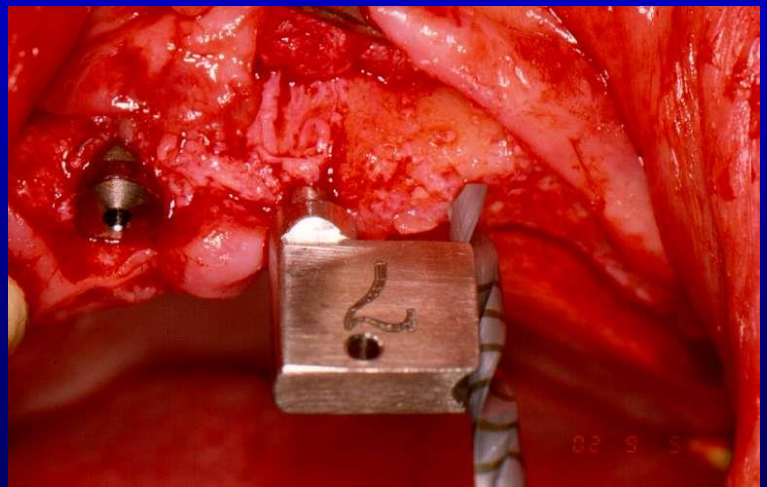
Drill guide

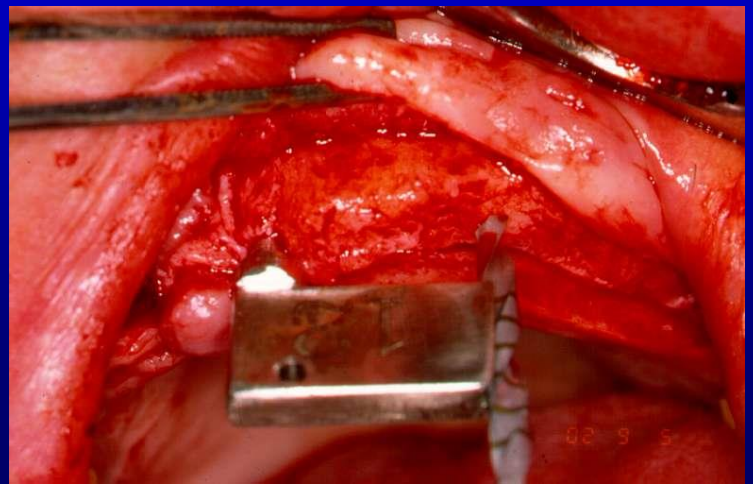
Parallel gauge





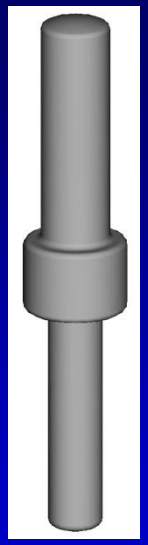


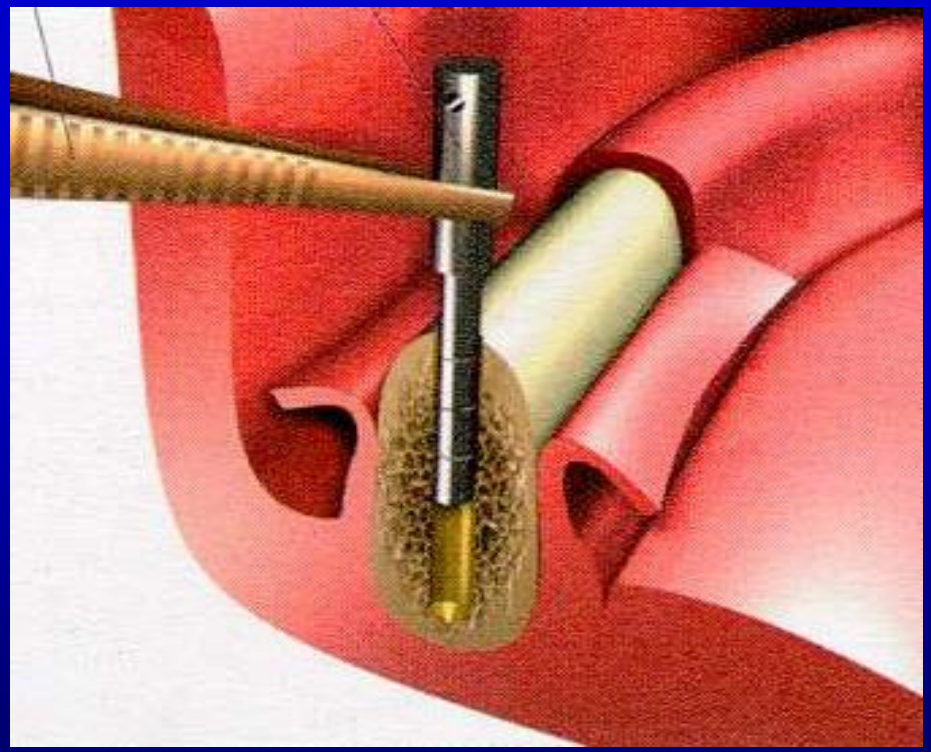




Controls

Depth gauge
Bur guide
Parallel gauge

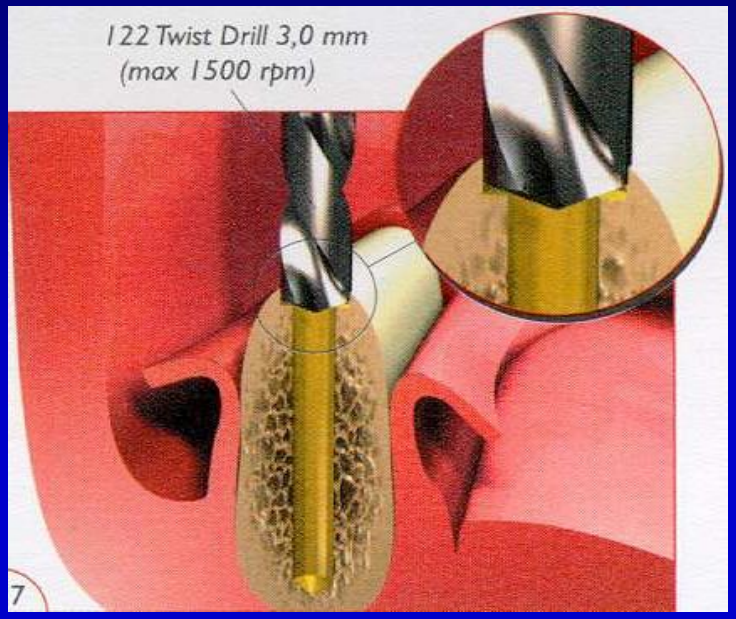


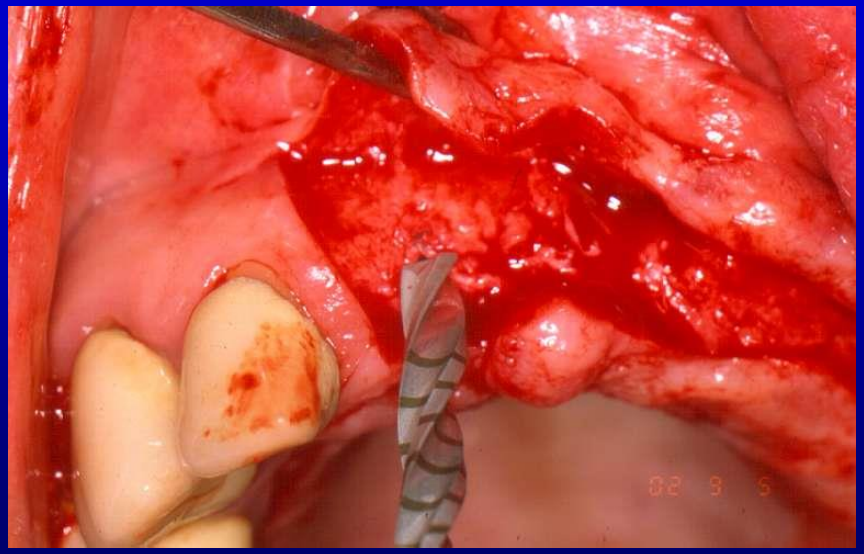


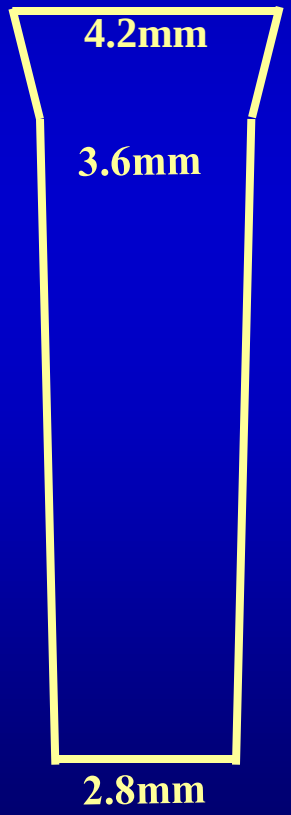
Surgical steps of implant placement

- Flap design
- Marking drill
- Pilot drill
- Control measurements
- **Widening drill** 600-800 rpm
- Countersinking
- Thread cutting
- Implant placement

Widening drill /∅ 2.8 mm/

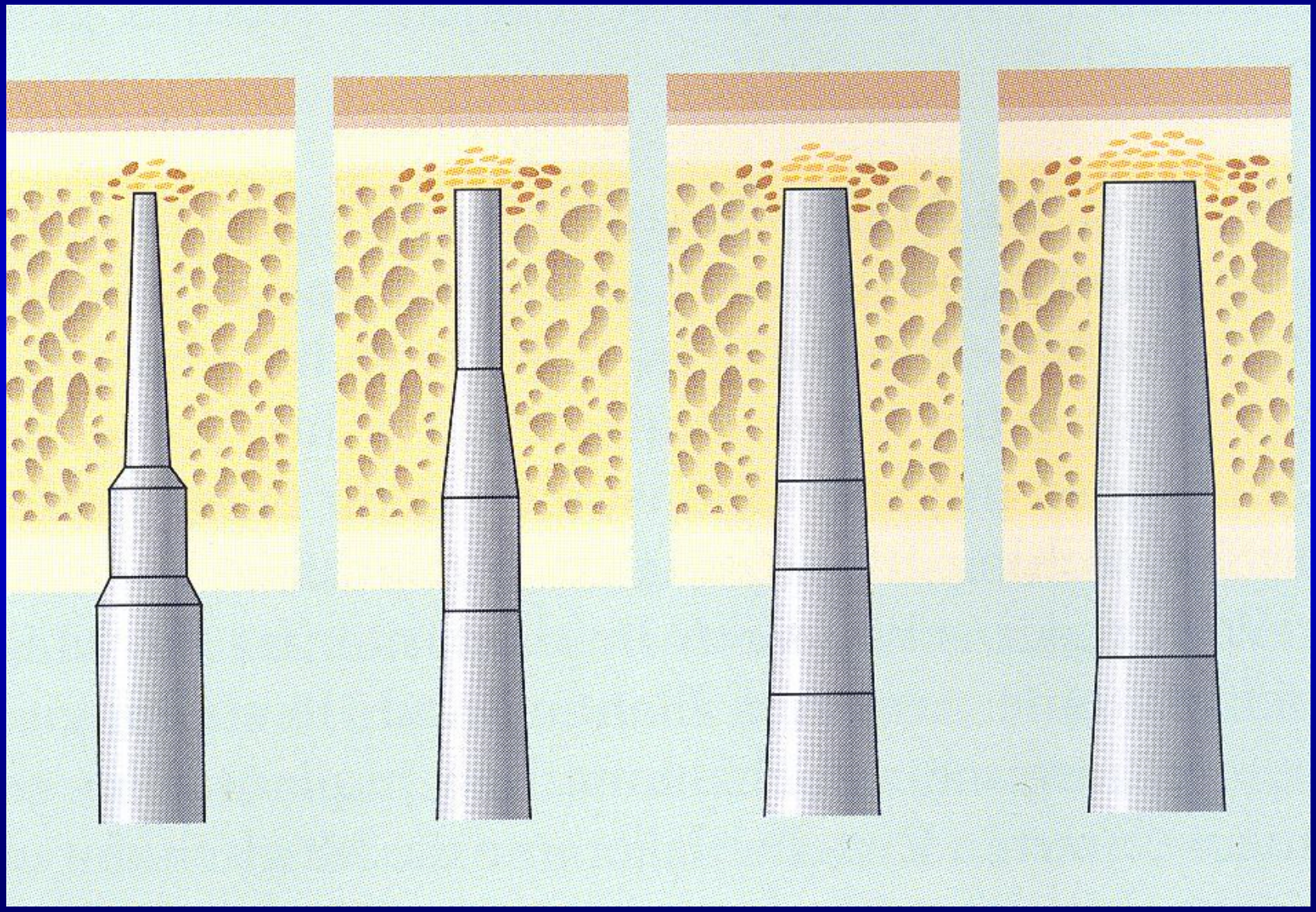




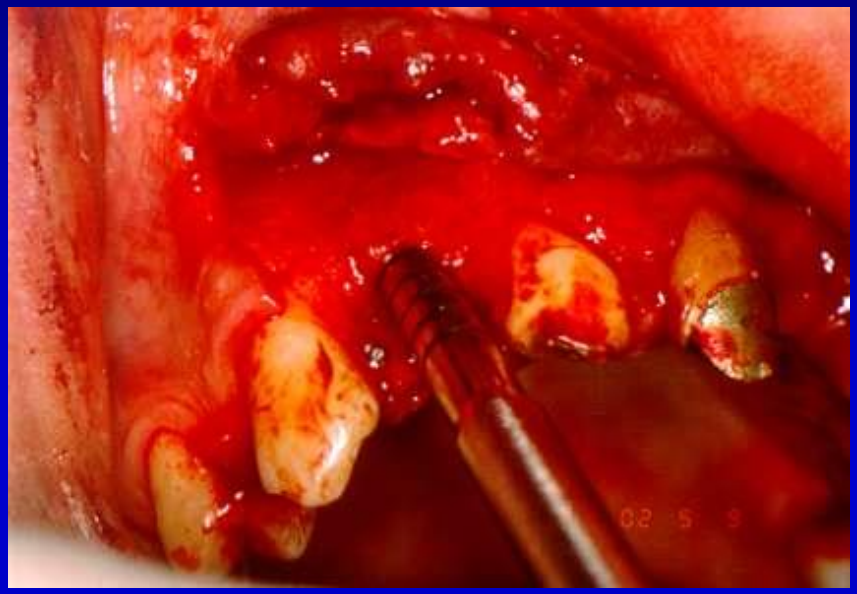


∅2.8mm

Surgical bone condensation with Osteotom



The technique of bone condensation with Osteotom

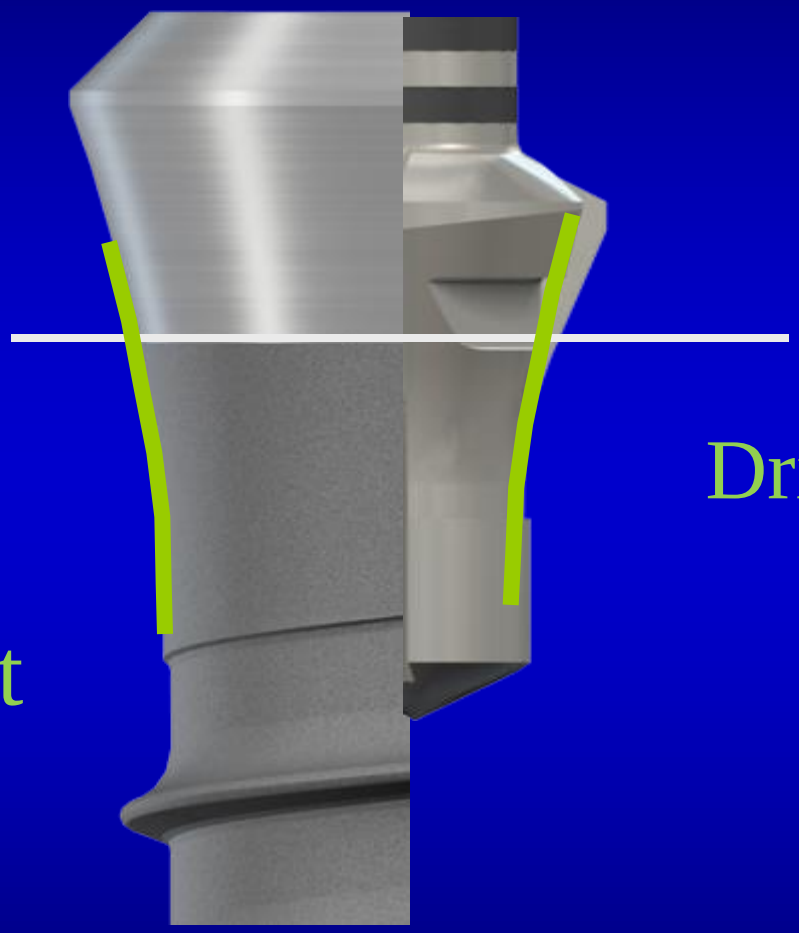


Surgical steps of implant placement

- Flap design
- Marking drill
- Pilot drill
- Control measurements
- Widening drill
- **Countersinking** /case dependent/
- Thread cutting
- Implant placement

300 rpm

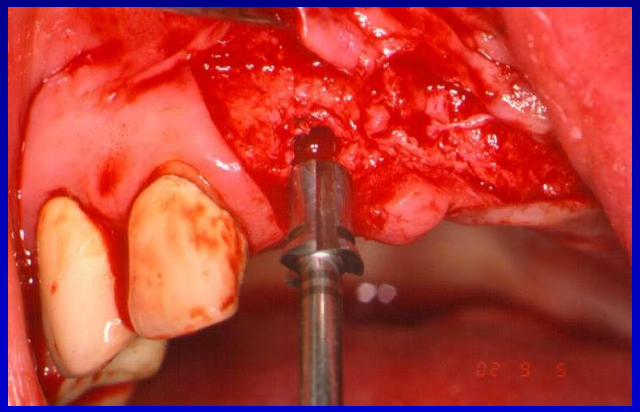
Geometry of the profile drill

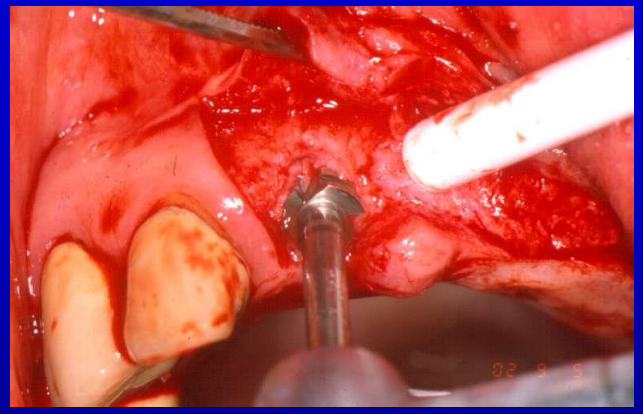


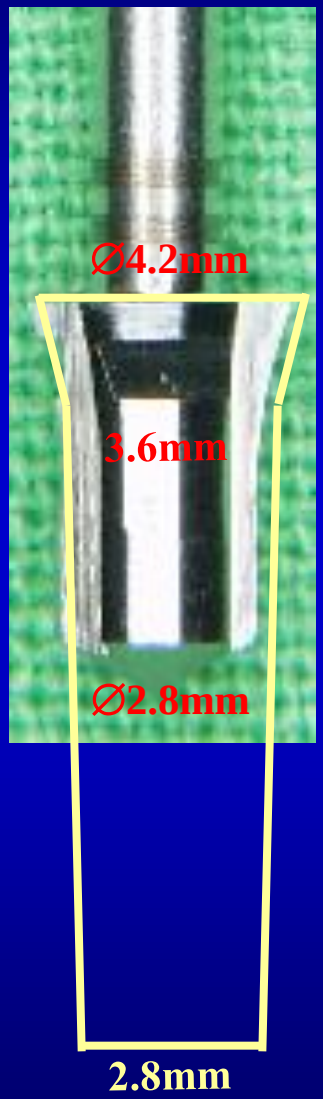
Drill

Funnel-shaped neck
of the
Implant

Countersinking, with profile drill







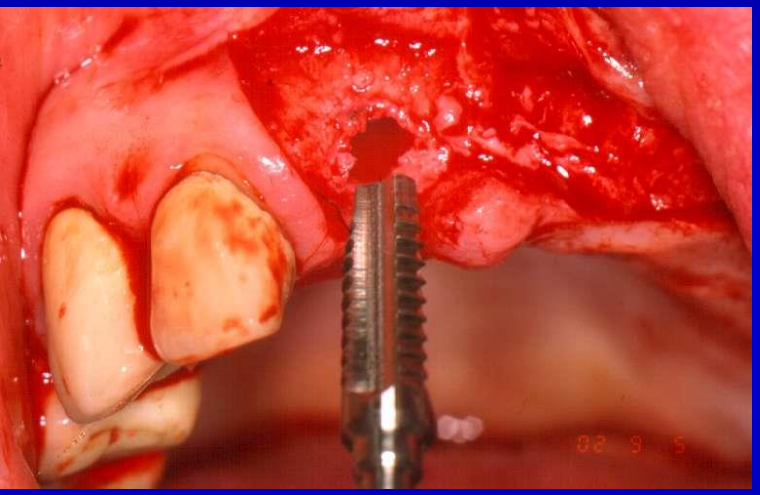
Surgical steps of implant placement

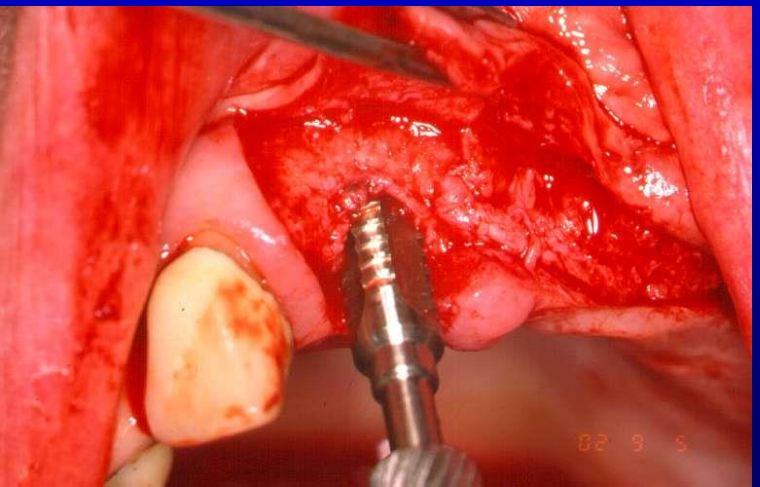
- Flap design
- Marking drill
- Pilot drill
- Control measurements
- Widening drill
- Countersinking
- **Thread cutting** /case dependent/
- Implant placement

25 rpm

Thread cutting

- Depends on the bone quality and the implant design





Surgical steps of implant placement

- Flap design
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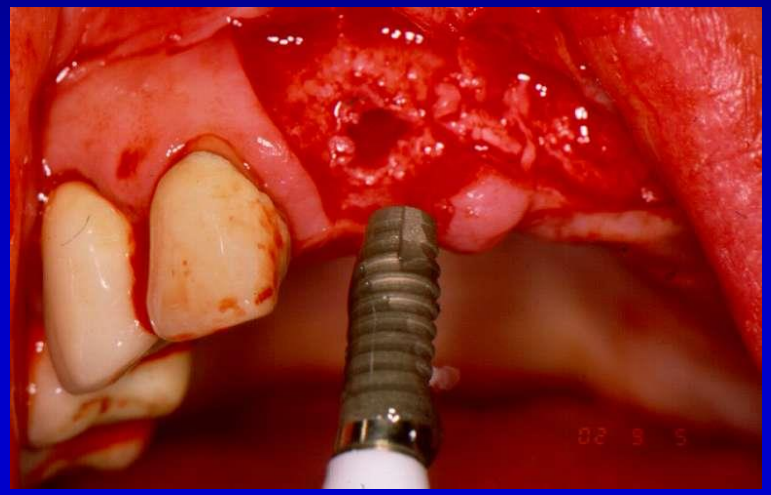
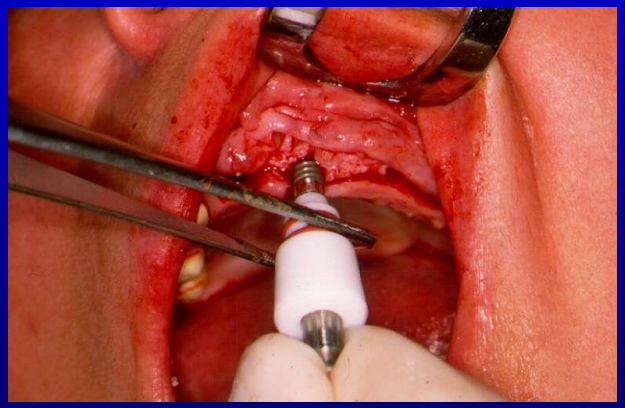
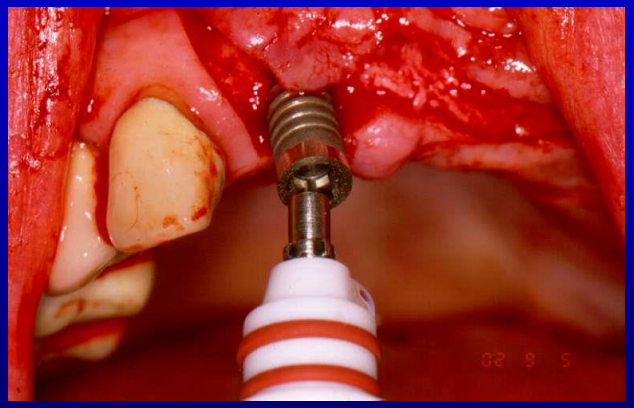
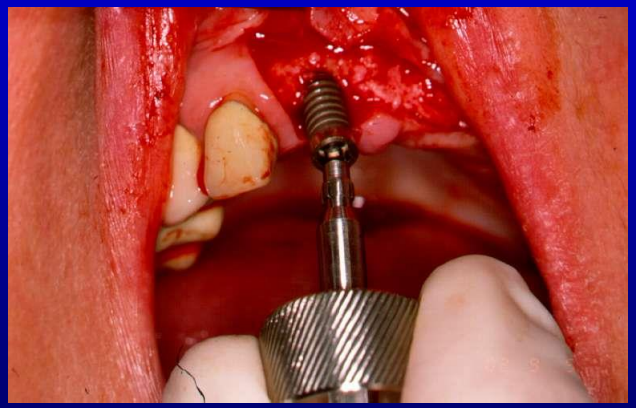
Implant placement I.

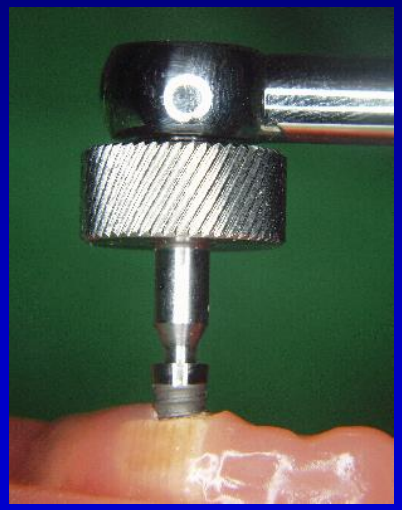


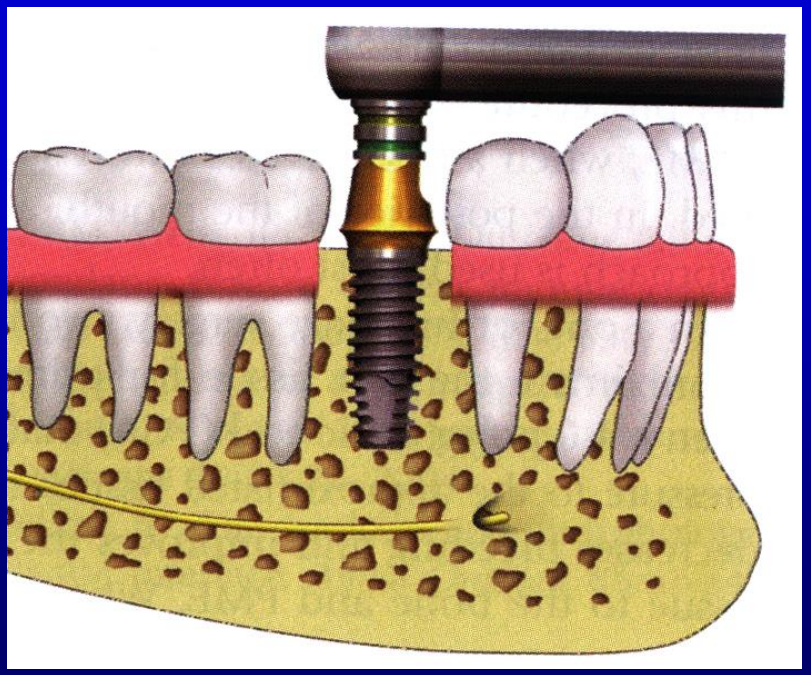


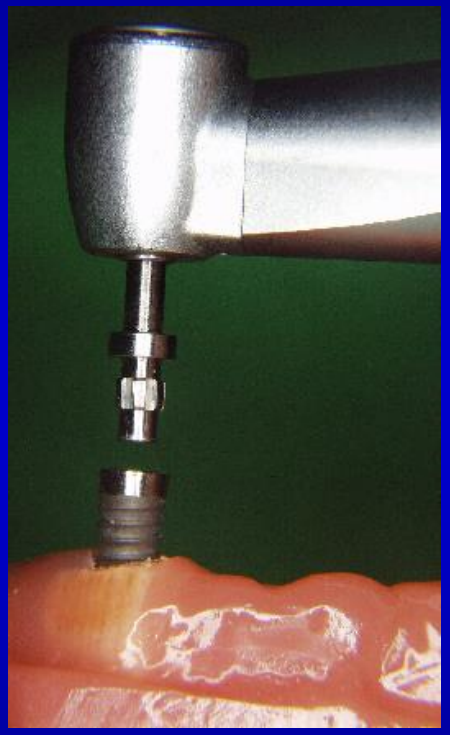




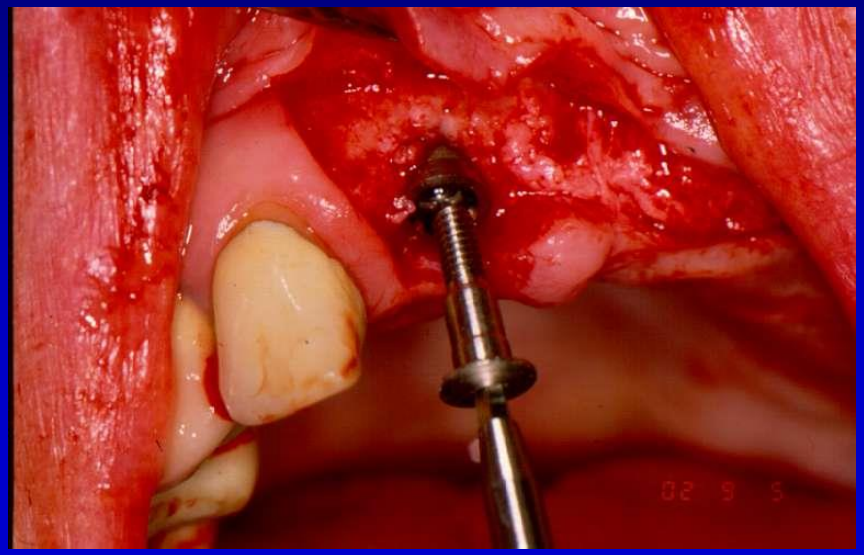
Implant placement II.

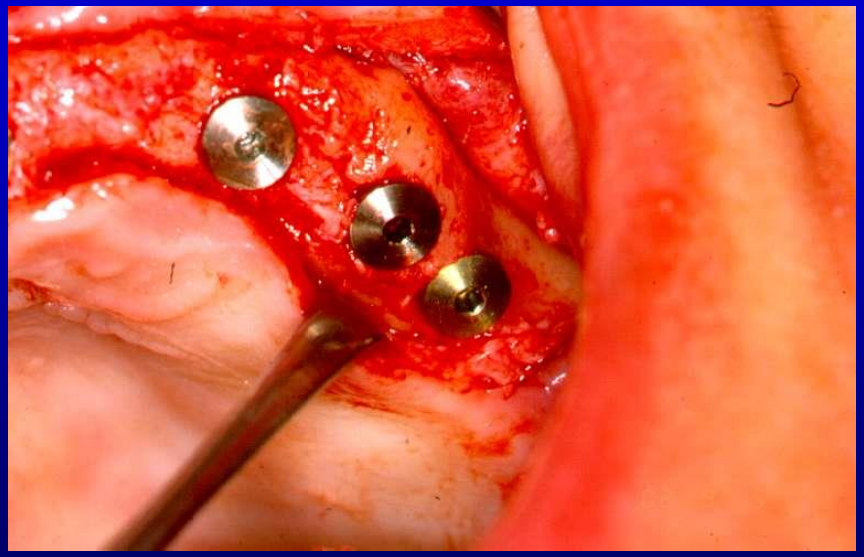




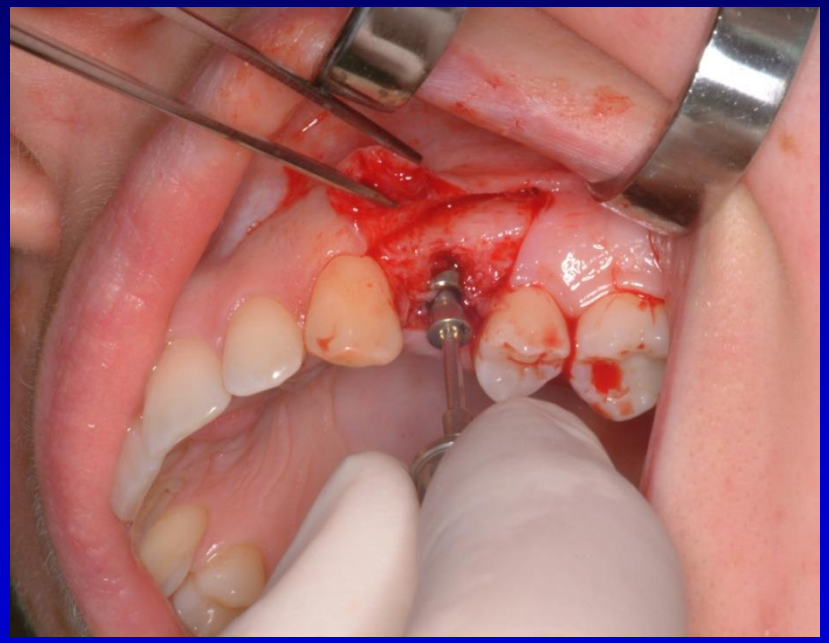


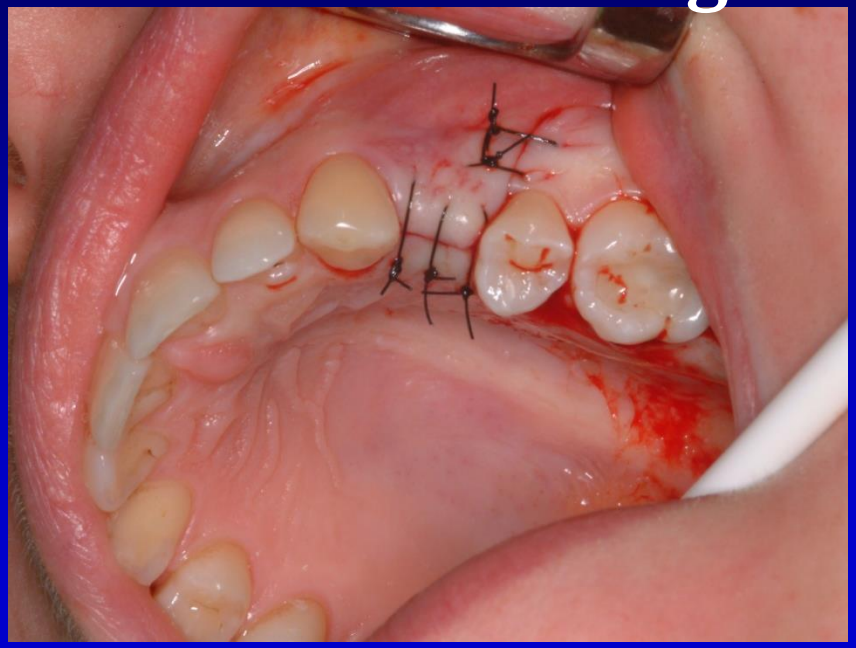
Implant placement III.

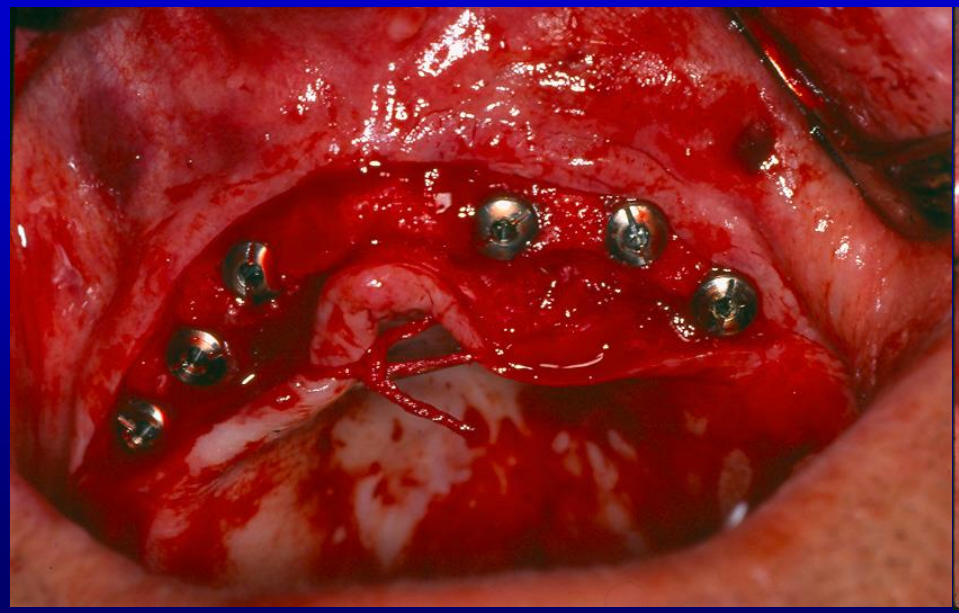


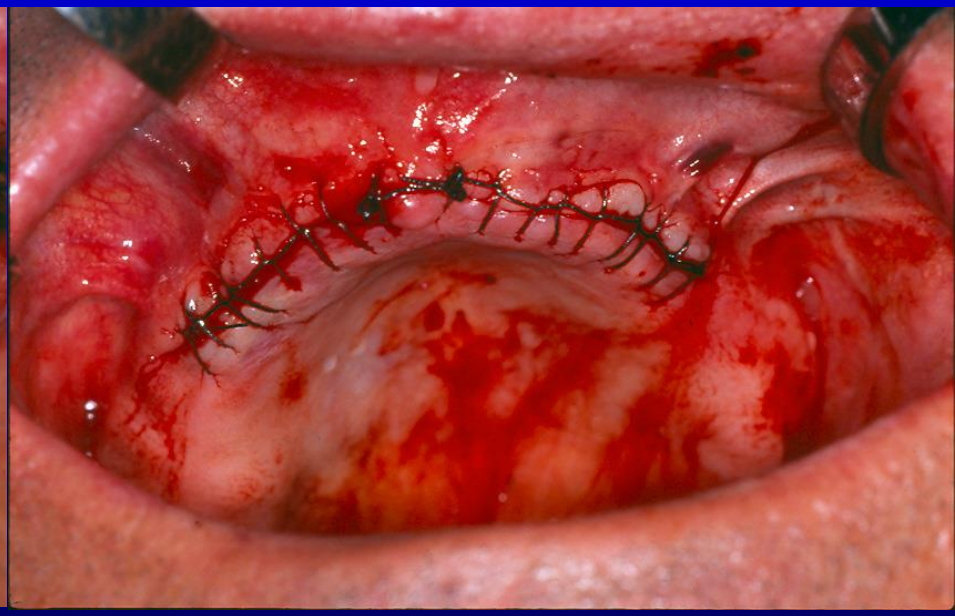


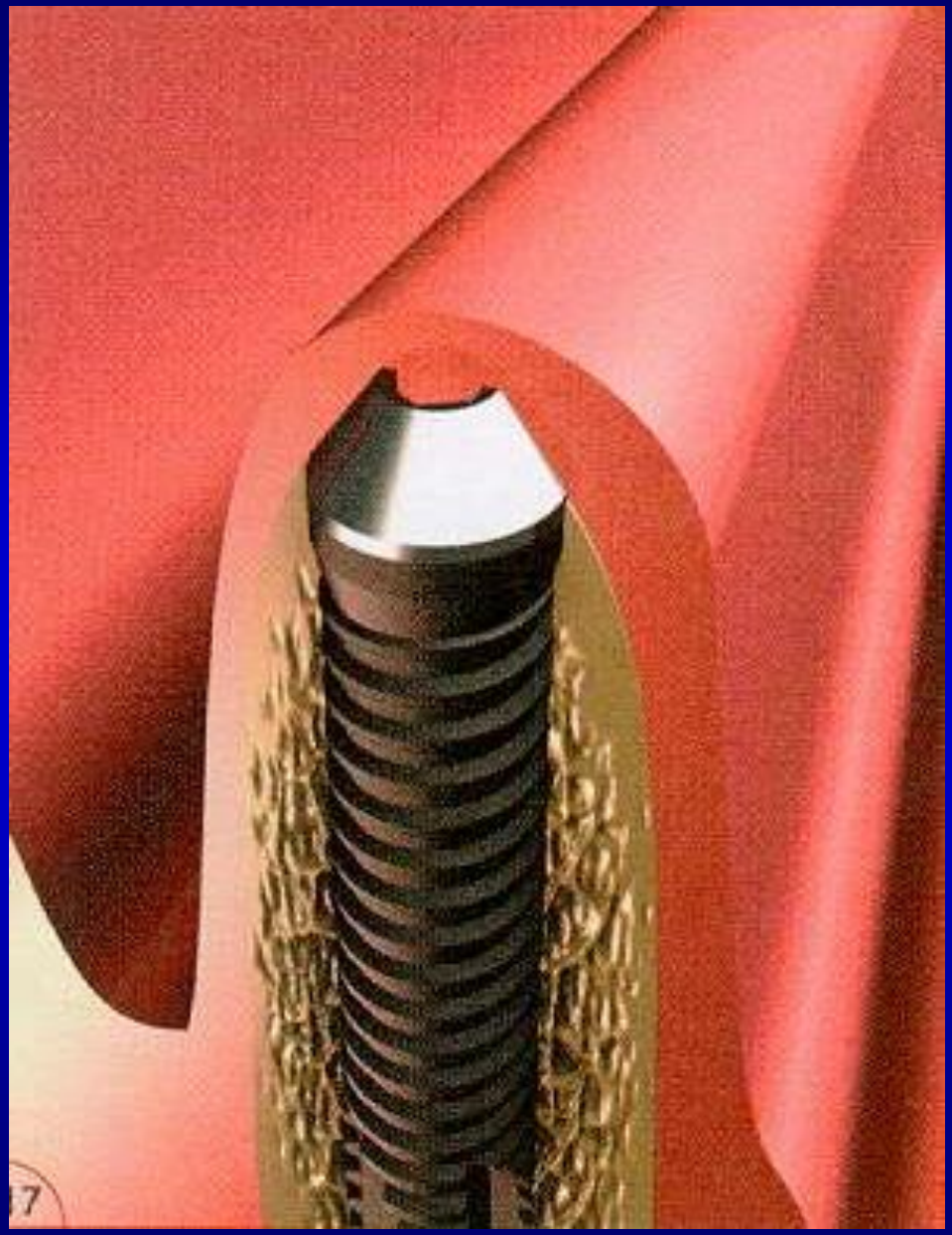
Placement of cover- screw and suturing











Healed implant before second surgery