Esthetic considerations in implant therapy.

Surgical management of soft tissues.

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Past

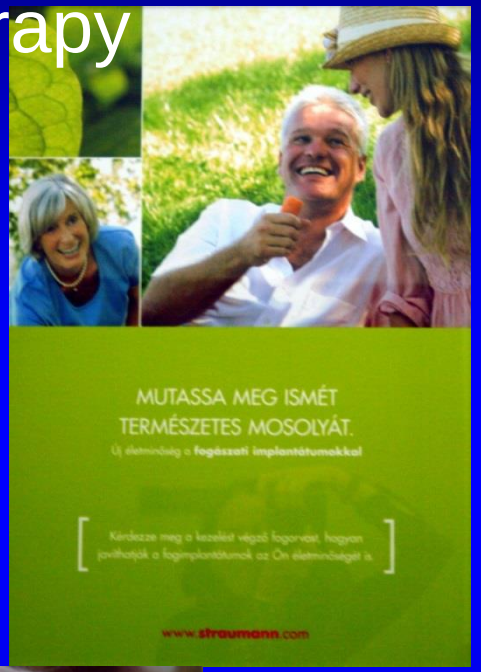
The indication of implant therapy was determined by the anat condition

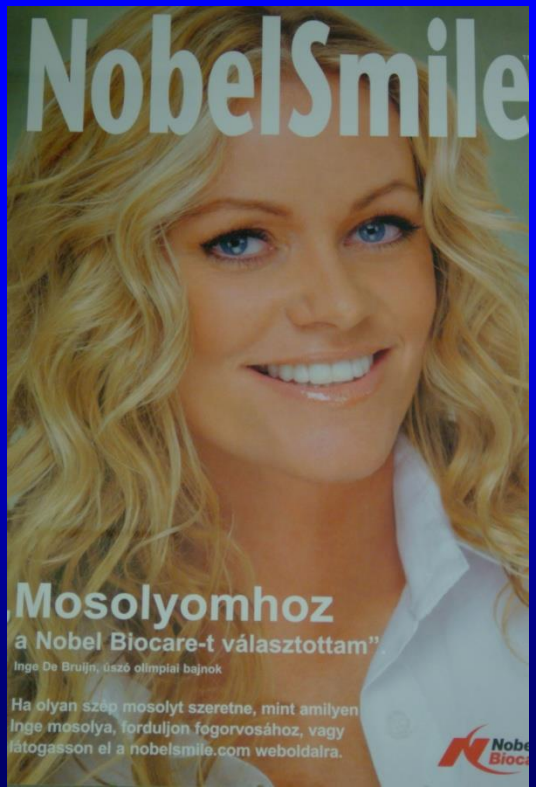
Present

The indication of implant therapy can be any of those

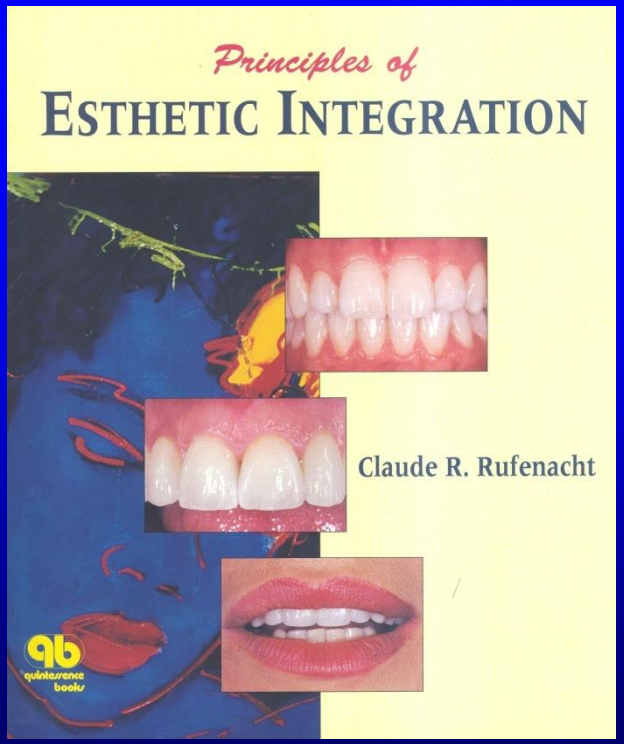
re-establishment of the function and esthetics of natural teeth.

Common commercials of implant therapy





Beauty does not arise from the particular character of a form, but from the dynamic relationship existing between forms.



Esthetic zone: **was defined as any dentoalveolar segment that is visible upon full smile**

/Consensus Statements and Recommended Clinical Procedures Regarding Esthetics in Implant Dentistry. 2004/



Factors determining the esthetic value of implant therapy

- position of the implant
- profile of surrounding hard and soft tissues

> surgical

- form and colour of prosthetic crown — prosthetic issue

Surgical stages of completing esthetic implant restorations

- patient evaluation, diagnostics
- surgical preparation
- implant placement
- soft tissue management

Surgical stages of completing esthetic implant restorations

- **patient evaluation, diagnostics**
- surgical preparation
- implant placement
- soft tissue management

Esthetic considerations in diagnostic evaluation

- risk assessment
- evaluation of anatomic conditions
  - hard, soft tissues
  - position of teeth

Examination of the form and display of teeth

From the upper incisor

at men ~ 1.91 mm

women ~ 3.40 mm

is visible

(Chiche G., Pinault A.: Esthetics of anterior fixed prosthodontics. 1994)

It can be more at young, and less at elderly people

Examination of the periodontium

- determination of the smile line

Excessive gingival display, over 3,0mm, can be esthetically displeasing

”gummy smile” = esthetic risk

(Chiche G., Pinault A.: Esthetics of anterior fixed prosthodontics. 1994)

Gingiva is not visible at smiling

Examination of the periodontium

- determination of the smile line
- examination of the gingival outline

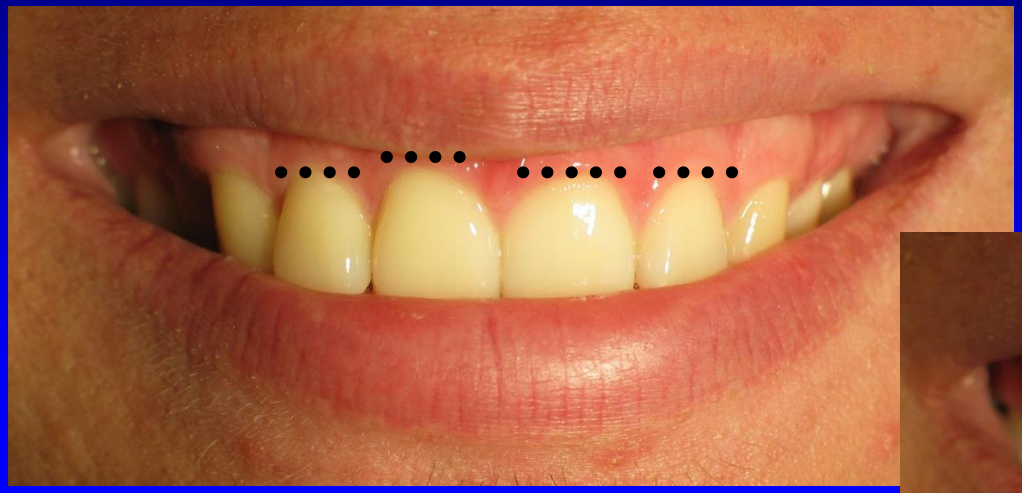
Straight pattern of gingival outline

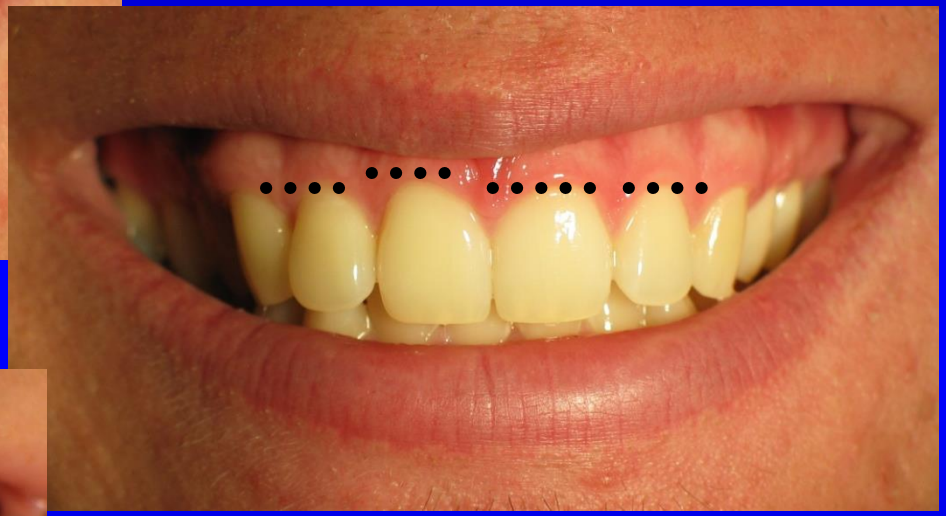
(Olsson M., Lindhe J.: J. Clin. Periodontol. 1991, 18:78-82)

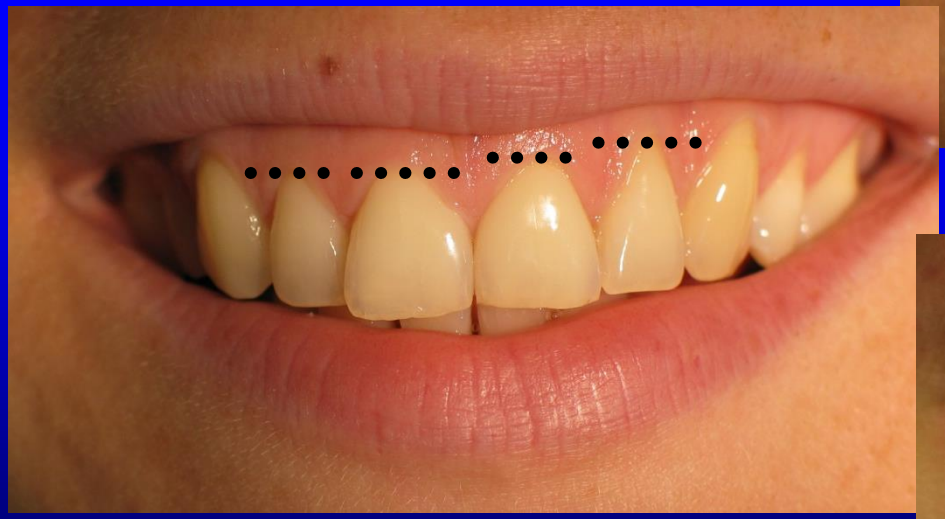
Sinuous pattern of gingival outline

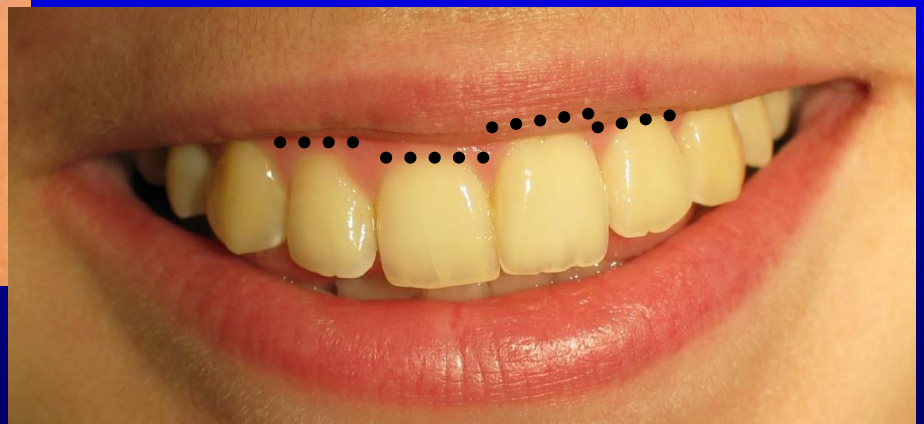
(Sclar A. G.: Soft tissue and esthetic considerations in implant therapy. 2003)

Asymmetries of gingival outline









Examination of the periodontium

- determination of smile line
- examination of the gingival outline
- biotype of the periodontium

Thick, flat periodontium

(Olsson M., Lindhe J.: J. Clin. Periodontol. 1991, 18:78-82)

- not inclined to recession
- higher degree of scar formation

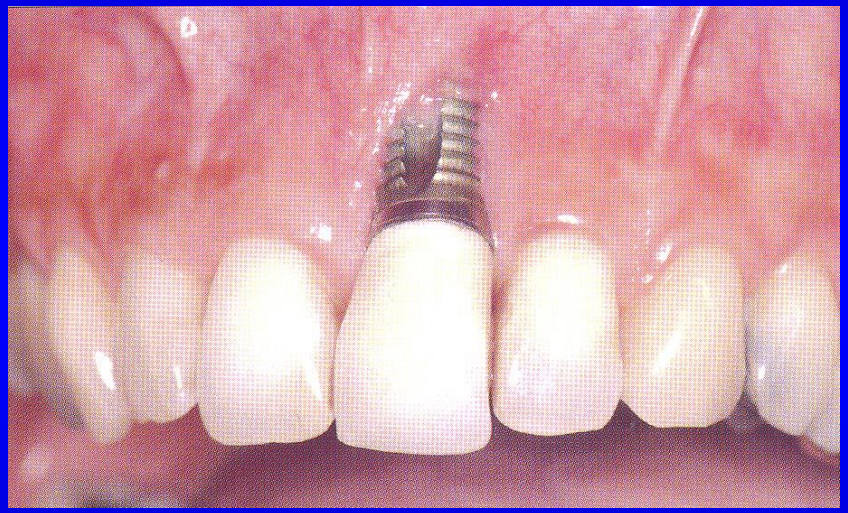
Thin, scalloped periodontium

(Olsson M., Lindhe J.: J. Clin. Periodontol. 1991, 18:78-82)

- inclined to recession
- low degree of scar formation

Thin, scalloped periodontium

(Olsson M., Lindhe J.: J. Clin. Periodontol. 1991, 18:78-82)



- inclined to recession
- low degree of scar formation

Thick,flat
biotype /15%/

Thin, scalloped
biotype /85%/

Surgical stages of completing esthetic implant restorations

- patient evaluation, diagnostics
- **surgical preparation**
- implant placement
- soft tissue management

Surgical preparation for implant therapy

- Bone grafting procedure
- Soft tissue preparation

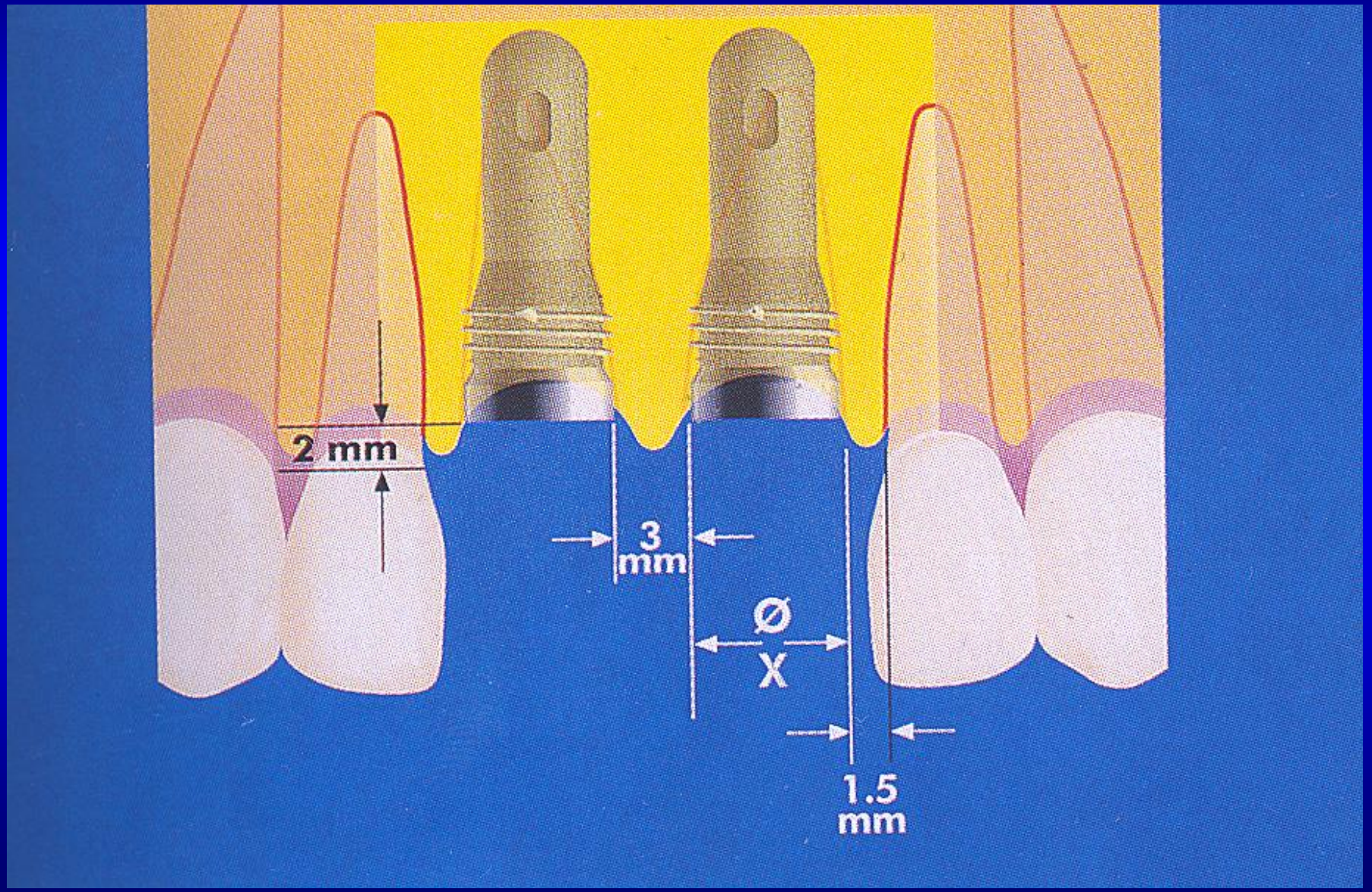
Frenulectomy

Frenulectomy

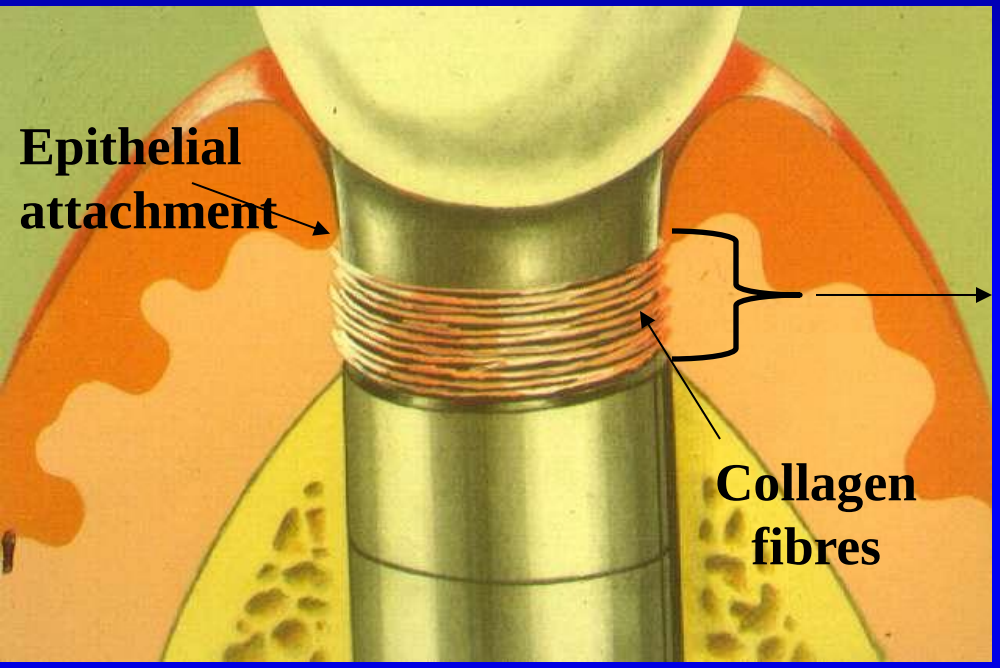
Surgical stages of completing esthetic implant restorations

- patient evaluation, diagnostics
- surgical preparation
- **implant placement**
- soft tissue management

Ideal position of dental implants



Biologic width



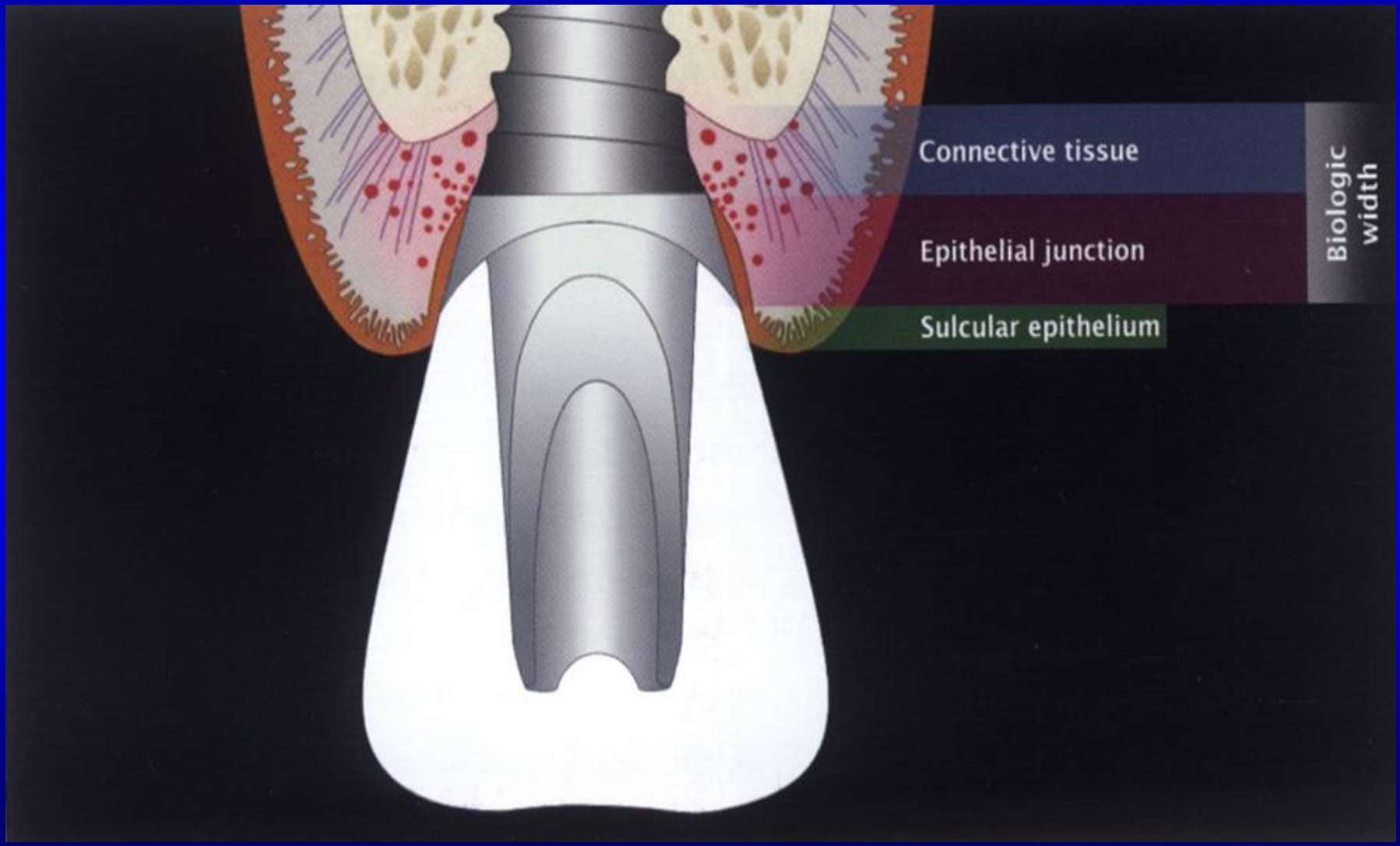
A constant vertical dimension of periodontal, **periimplant** soft tissues

Hermann JS, Buser D, Schenk RK, Schoolfield JD, Cochran DL.:

Biologic Width around one-and two-piece titanium implants

Clinical Oral Implants Research 12, 2001; 559-571

Biologic width



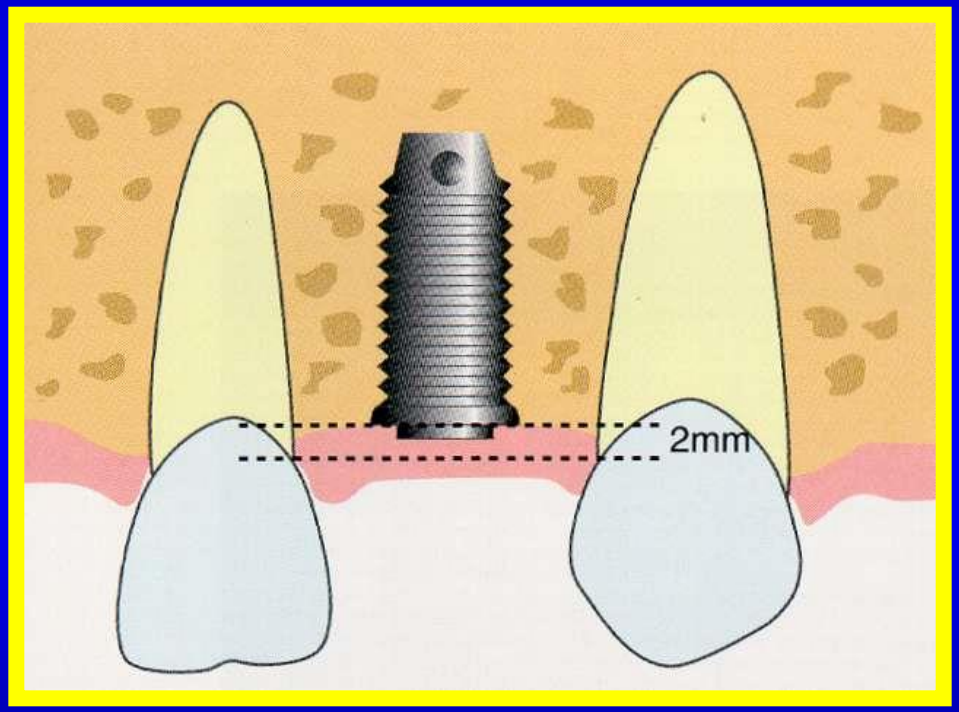
Average values of biologic width, measured in cadavers

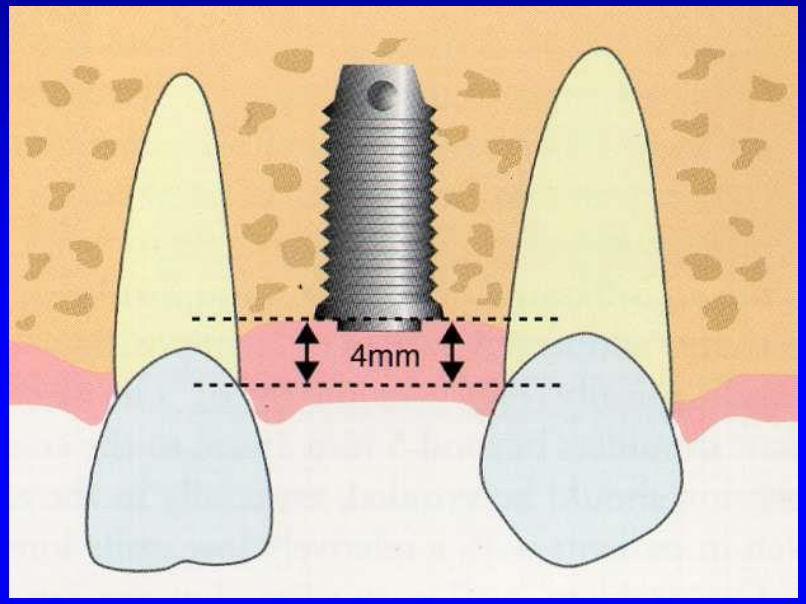
2.04 mm /Gargiulo A. W. et al. 1961/

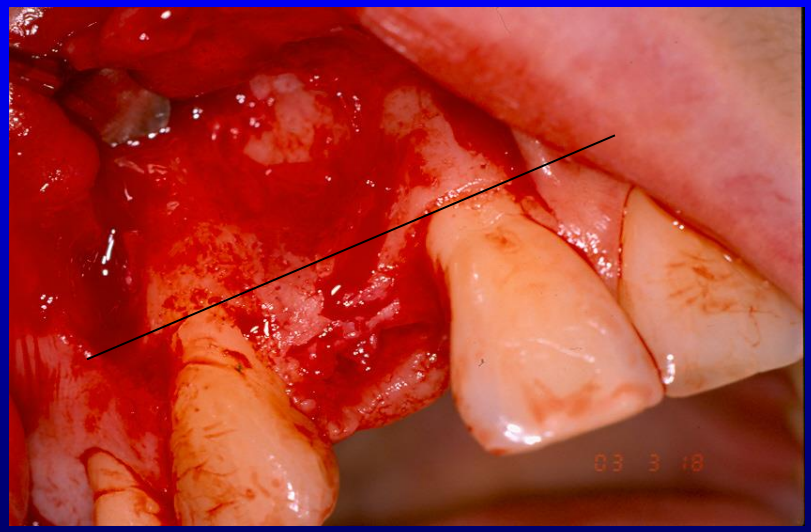
0.75-4.33 mm /Vacek J. S. et al. 1994/

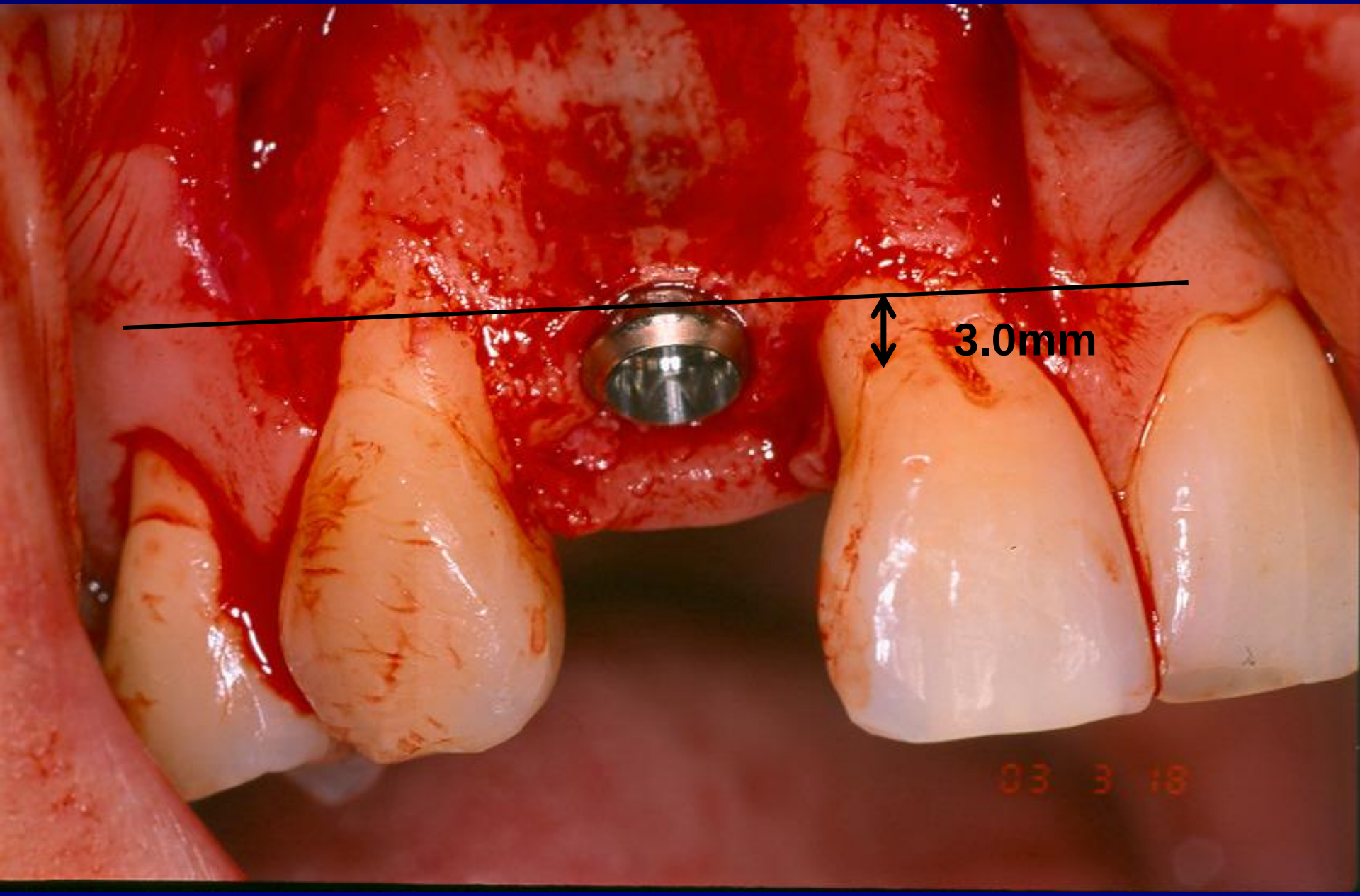
Cinical average value: 3.0 mm

The optimal vertical position of dental implant



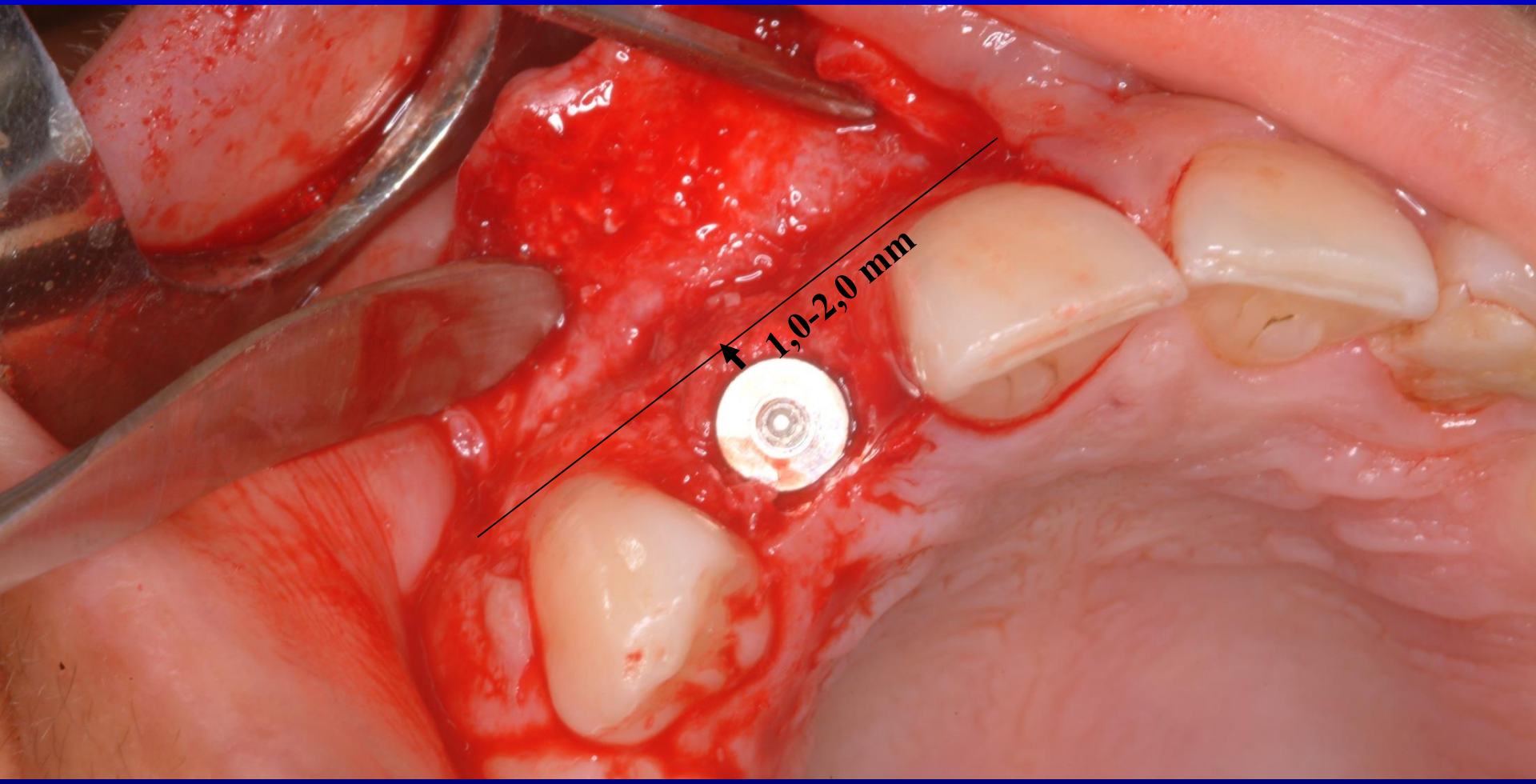


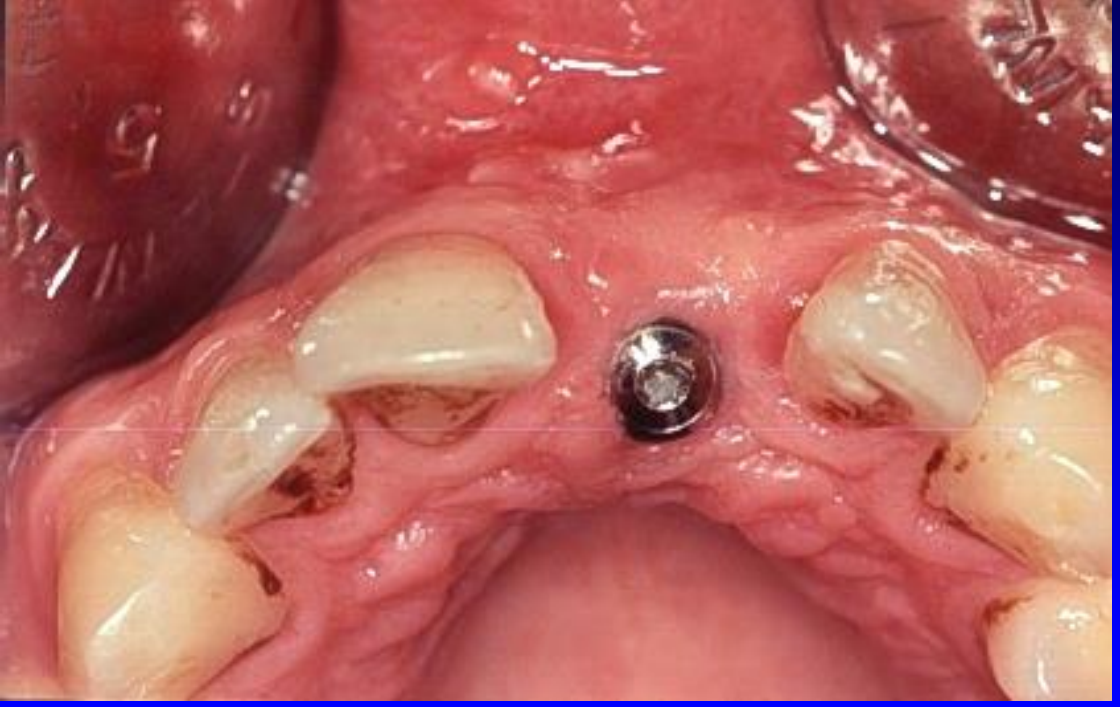



3.0mm

Inproper vertical implant placement

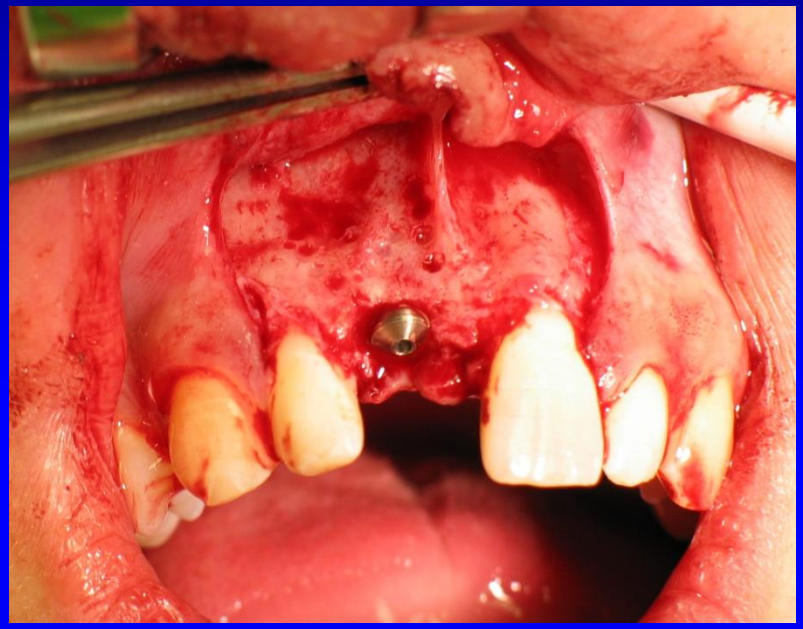
The optimal oro-vestibular position of dental implant



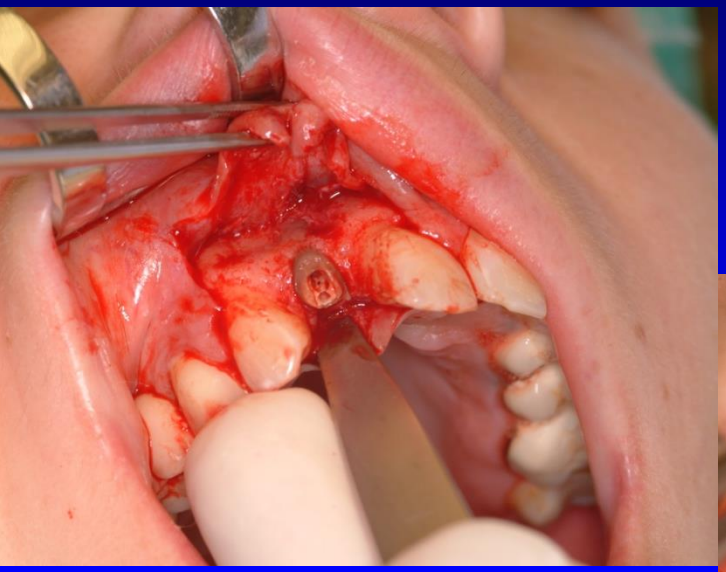


Implant placed too far palatally

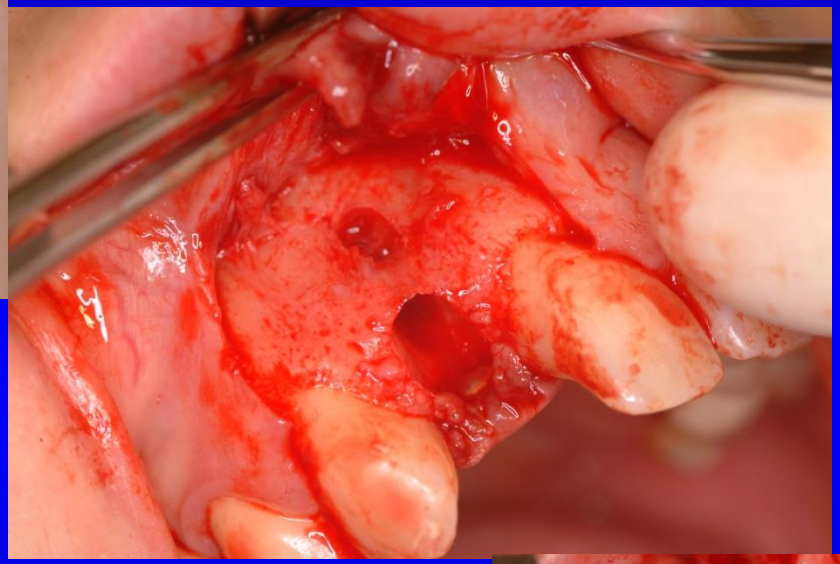
Forming of the alveolar process by grafting procedure

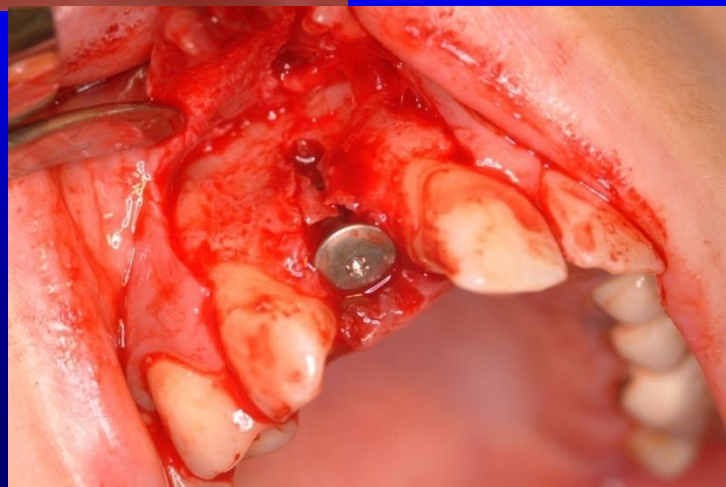


Immediate implantation with GBR



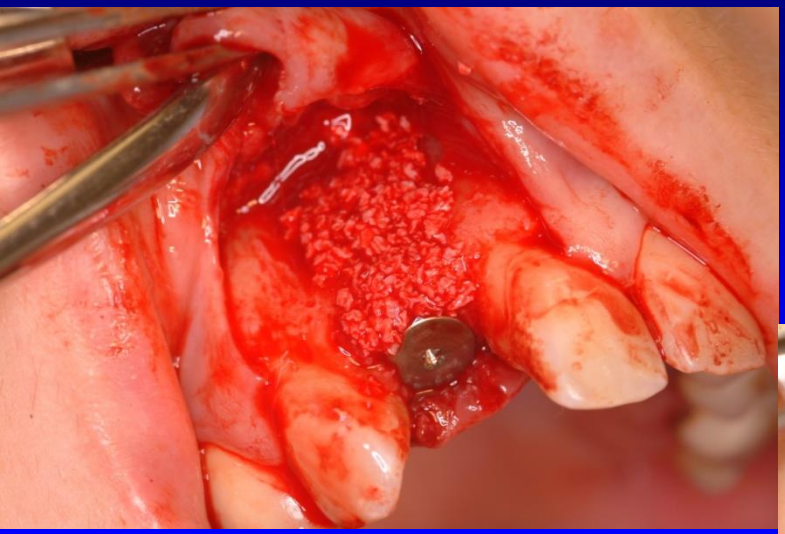
I.

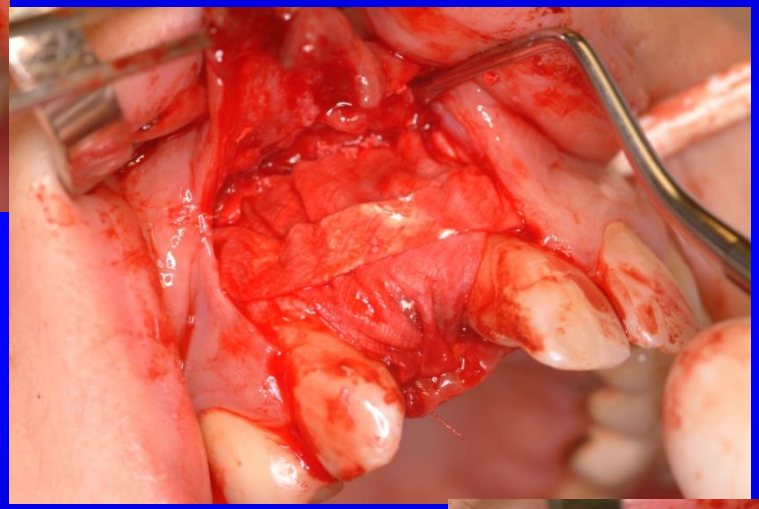




Immediate implantation with GBR

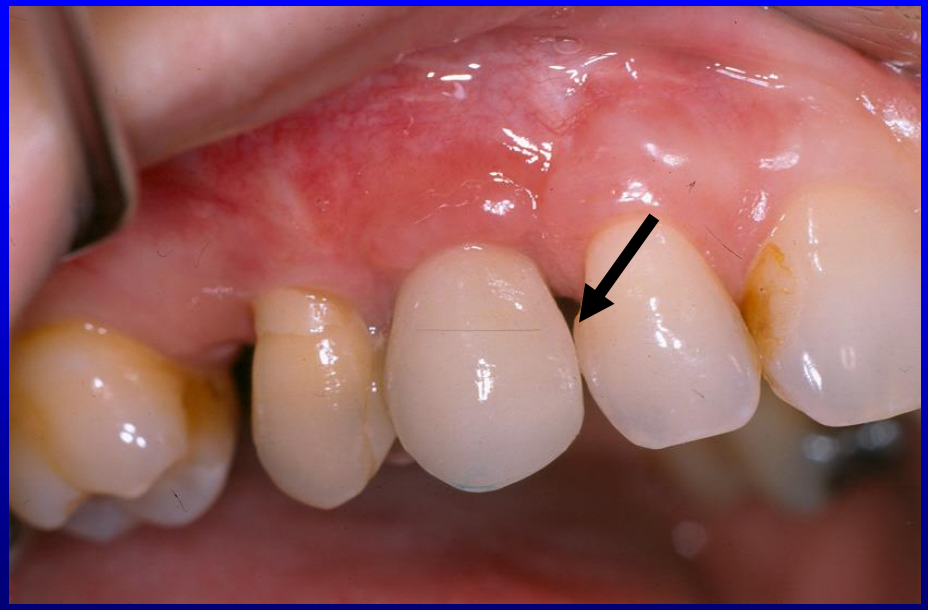
II.

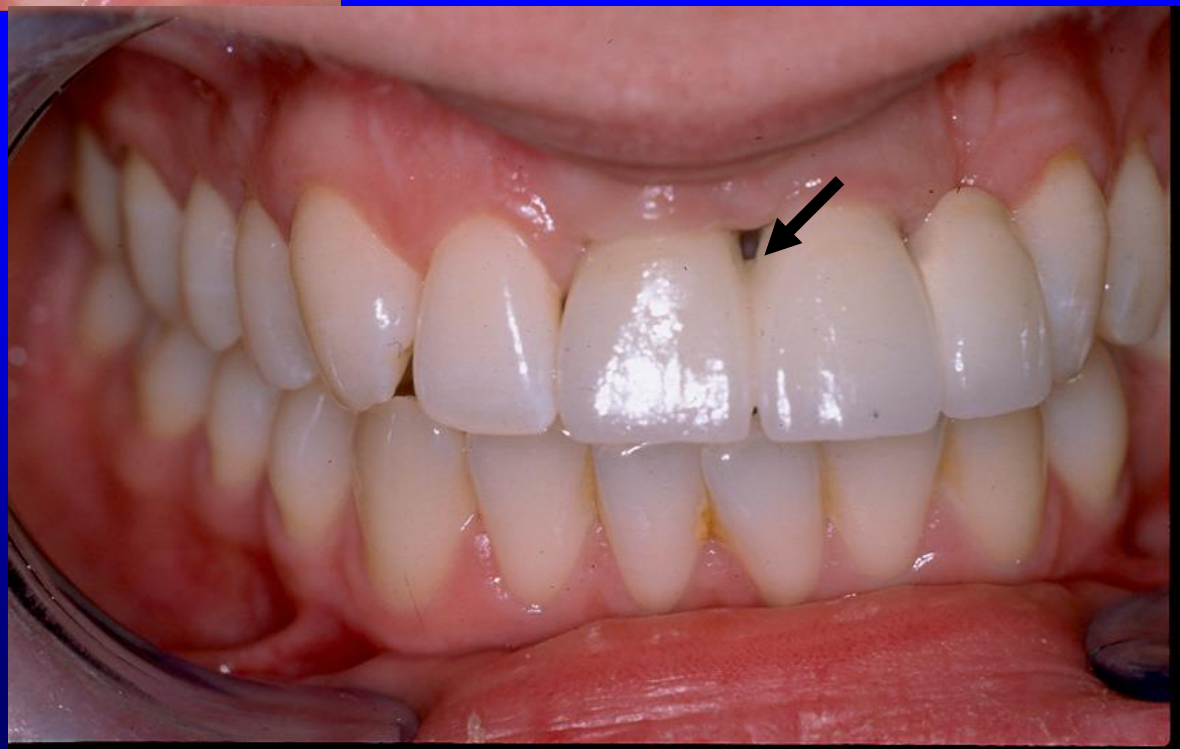




Major issue:

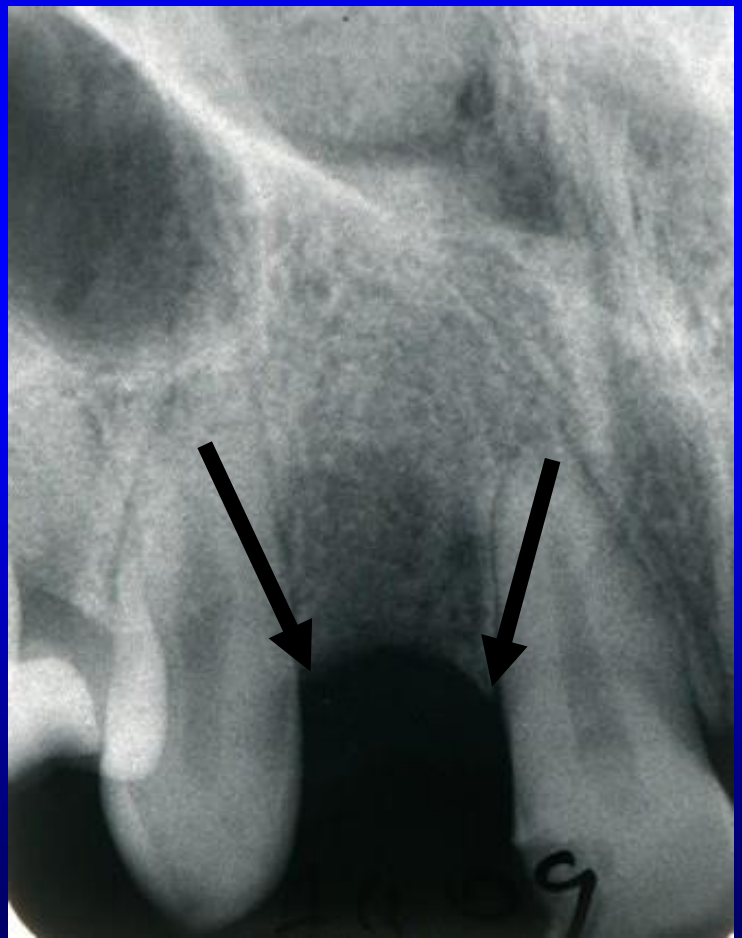
the missing papilla



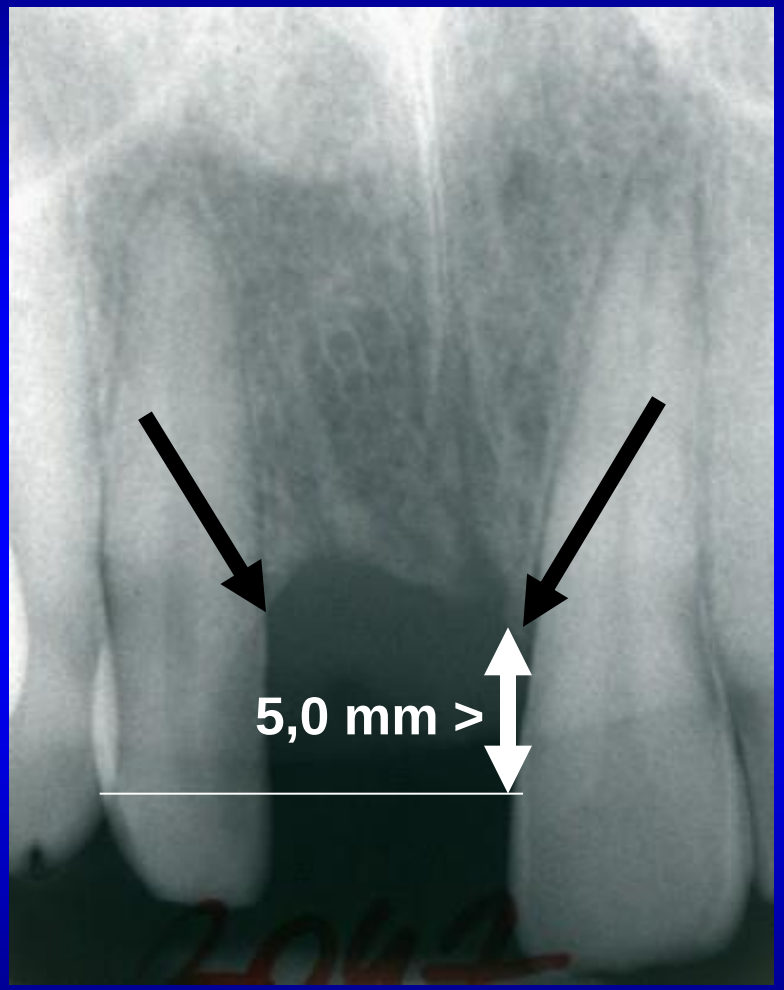


Arteficial gum is not esthetically pleasing

The form of papilla adjacent to the implant, is determined by the vertical height of alveolar septum

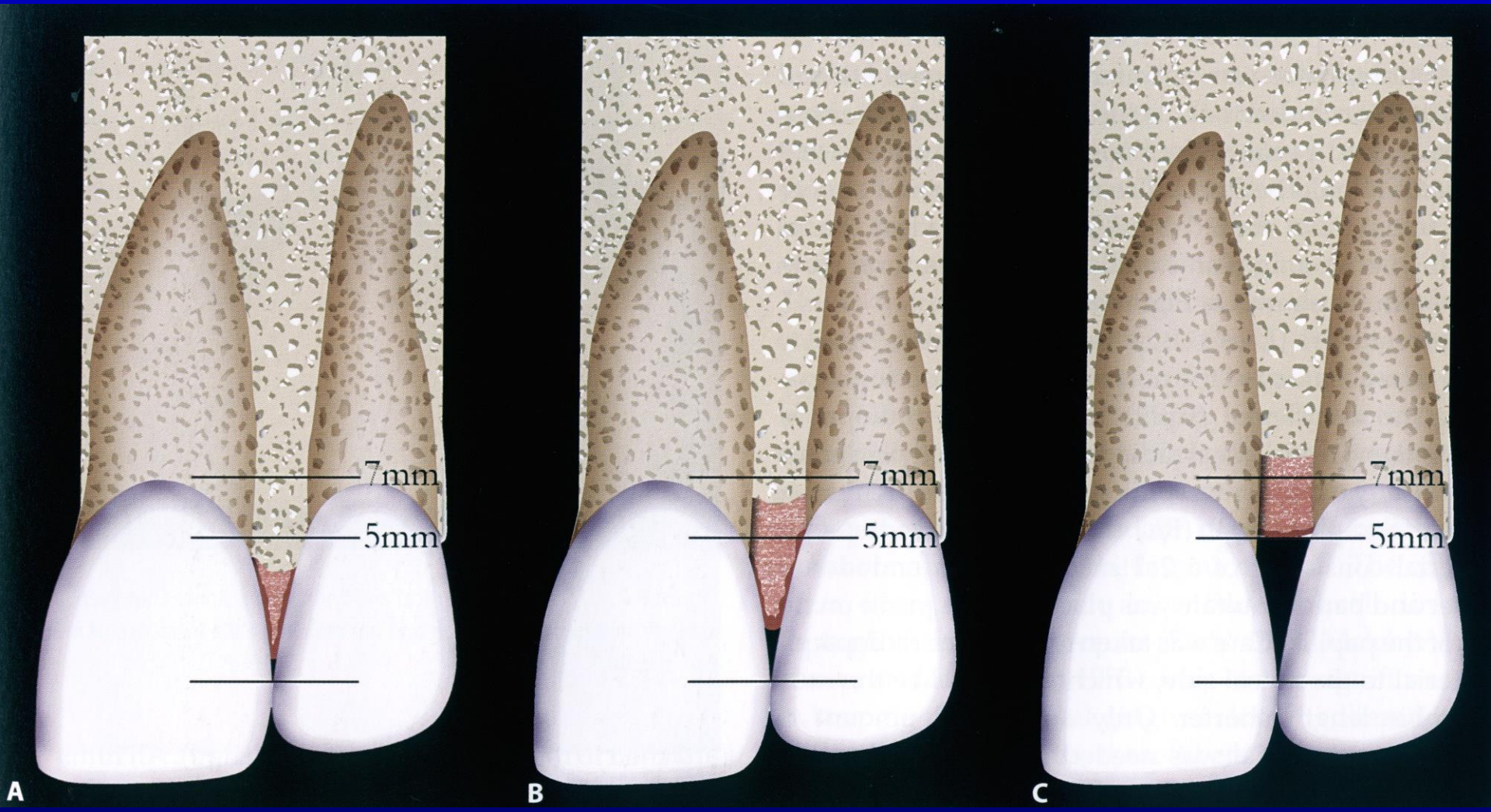


In the case of more than 5,0 mm distance between the peak of septum and the contact point of crowns, the developement of a papilla is uncertain



/Tarnow D. P. et al.. 1992, Chocquet U. et al. 2001/

Form of papilla and the height of the **septum**



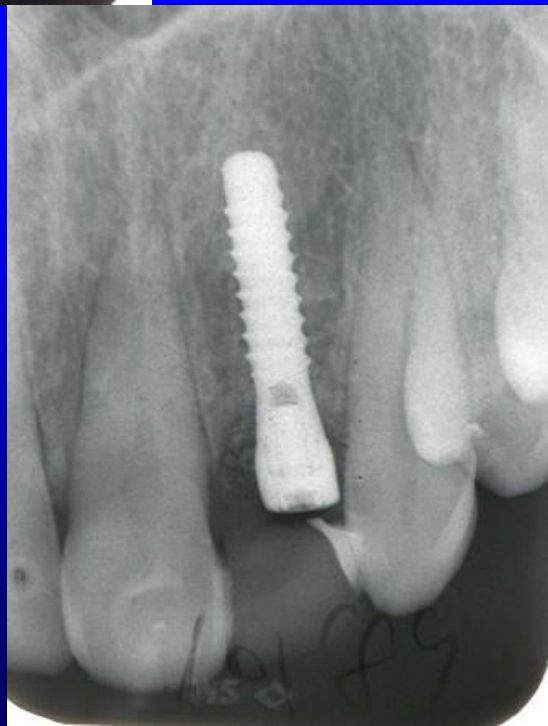
Possible times of implant placement following the loss of tooth

/Hammärle et al. 2004/

- **Immediate-** at the same time of tooth removal
- **Delayed** - 4-8 weeks later
- **Early** - 3-4 months later
- **Late** – completely healed jaw,

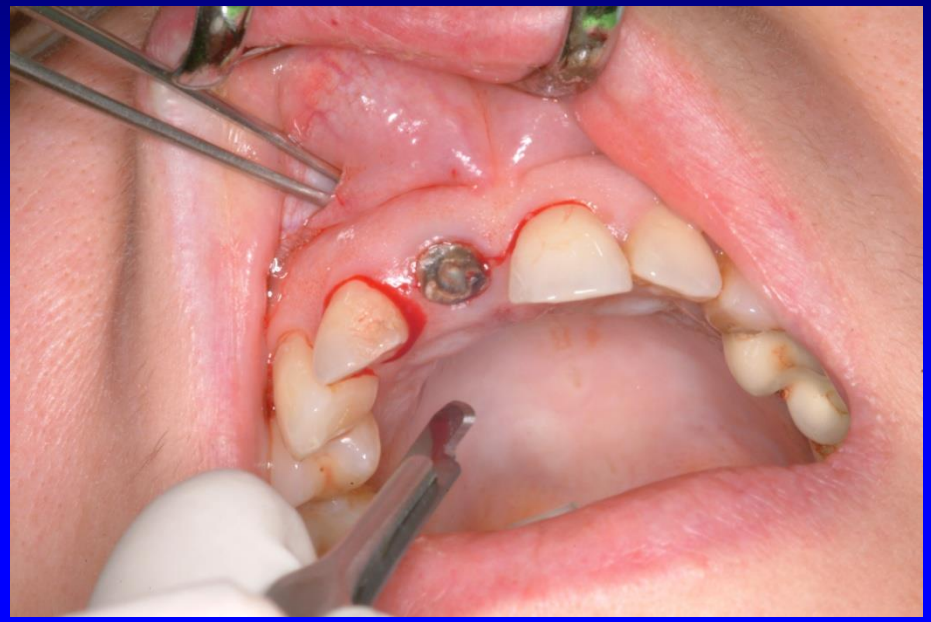
  4-6 months later

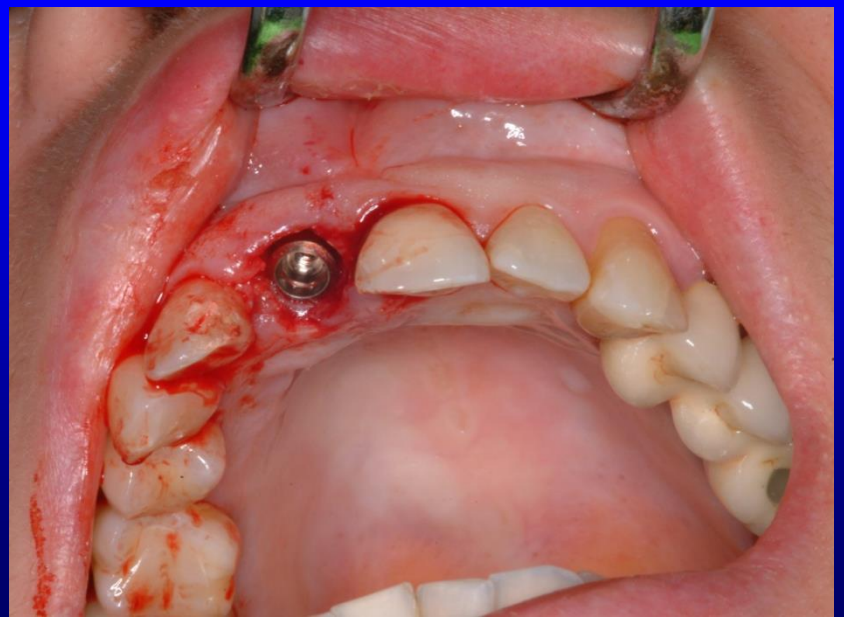
Immediate implantation



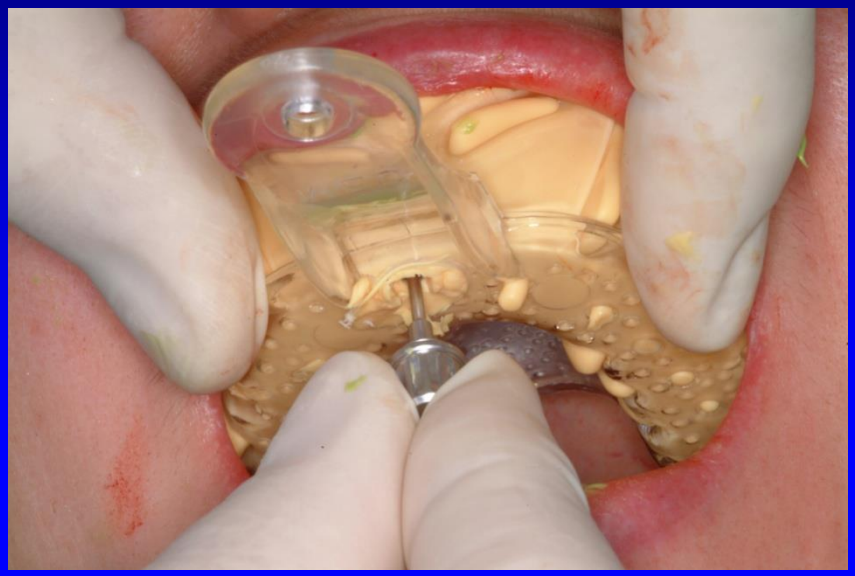
Immediate implantation, prosthetic restoration

Immediate implantation





Temporary crown immediately after implant placement



Surgical stages of completing esthetic implant restorations

- patient evaluation, diagnostics
- surgical preparation
- implant placement

- **soft tissue management**

Surgical protocols of implant placement can be:

- **One-Stage**

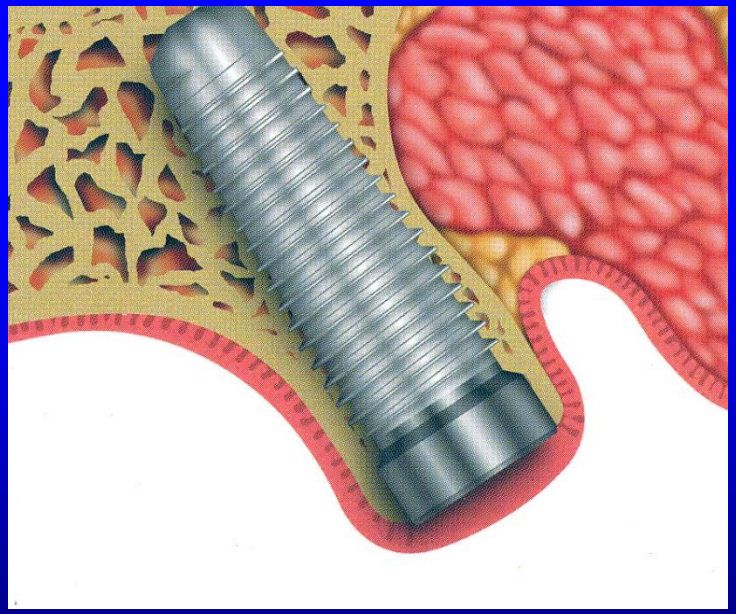
  Implant placement.

  Transgingival healing.

- **Two-stage**

  I. Implant placement, submerged healing

  II.Exposing and forming of gingiva. Abutment connection.



Types of second stage surgery

Sufficient
Quantity,quality of gingiva

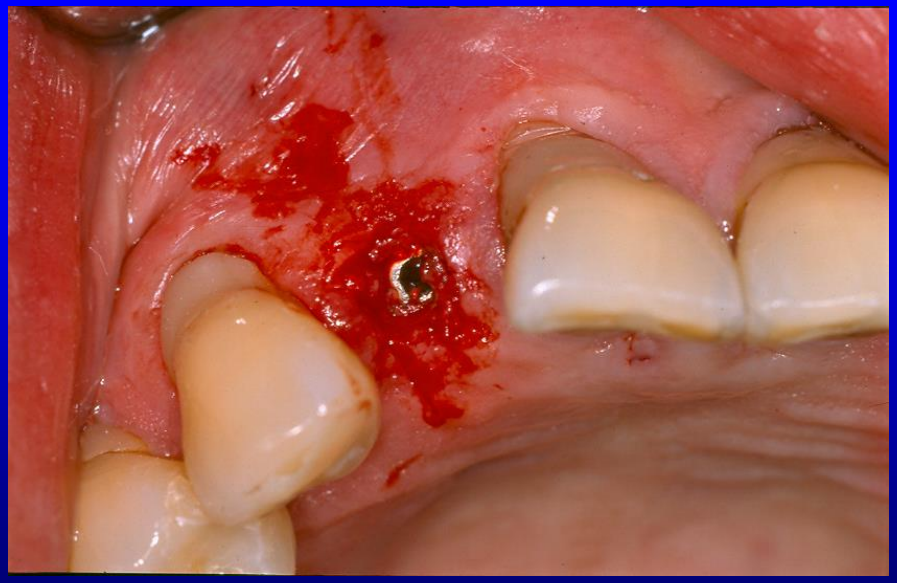
Insufficient
Quantity, quality of gingiva

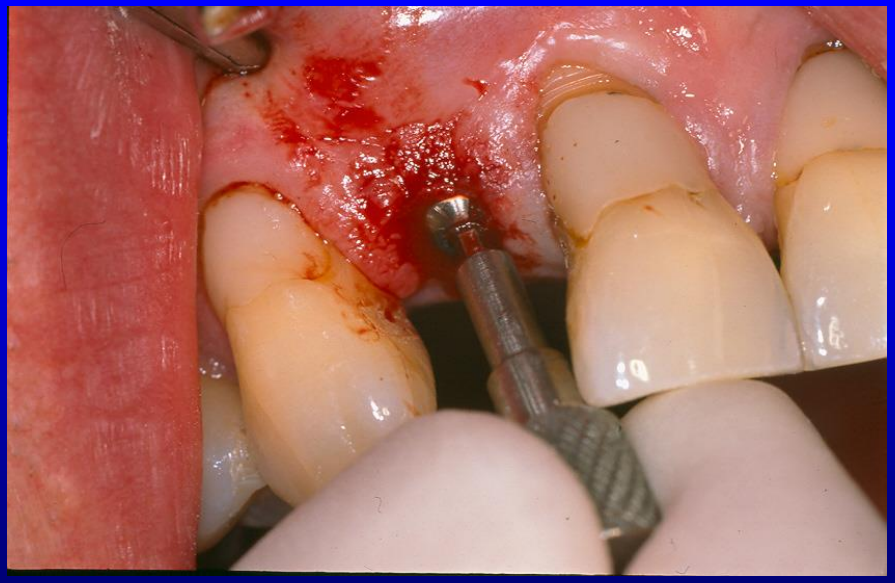
Apically positioned flap

Papilla reconstruction

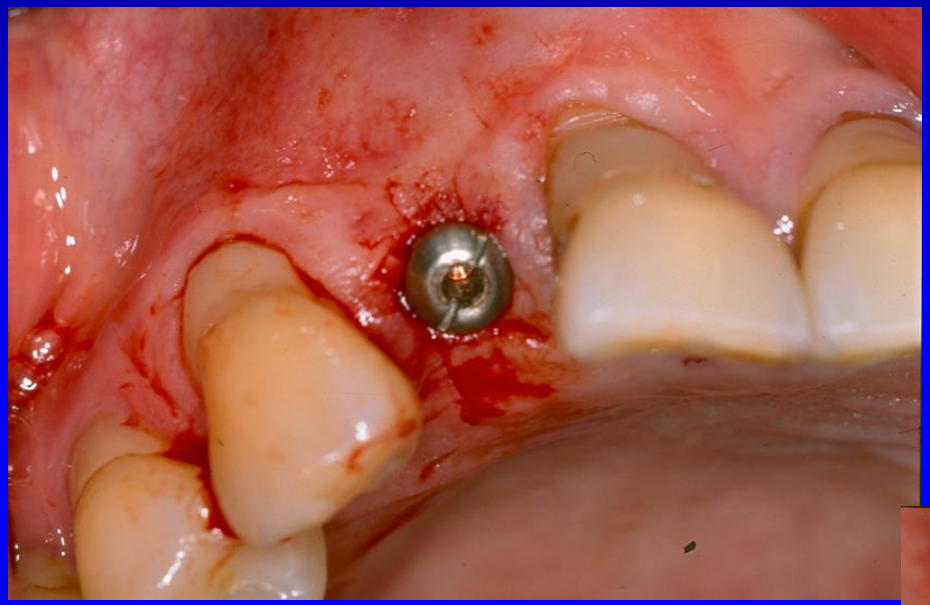
Connective tissue graft

Gingiva excision





Gingiva formed by transmucosal abutment



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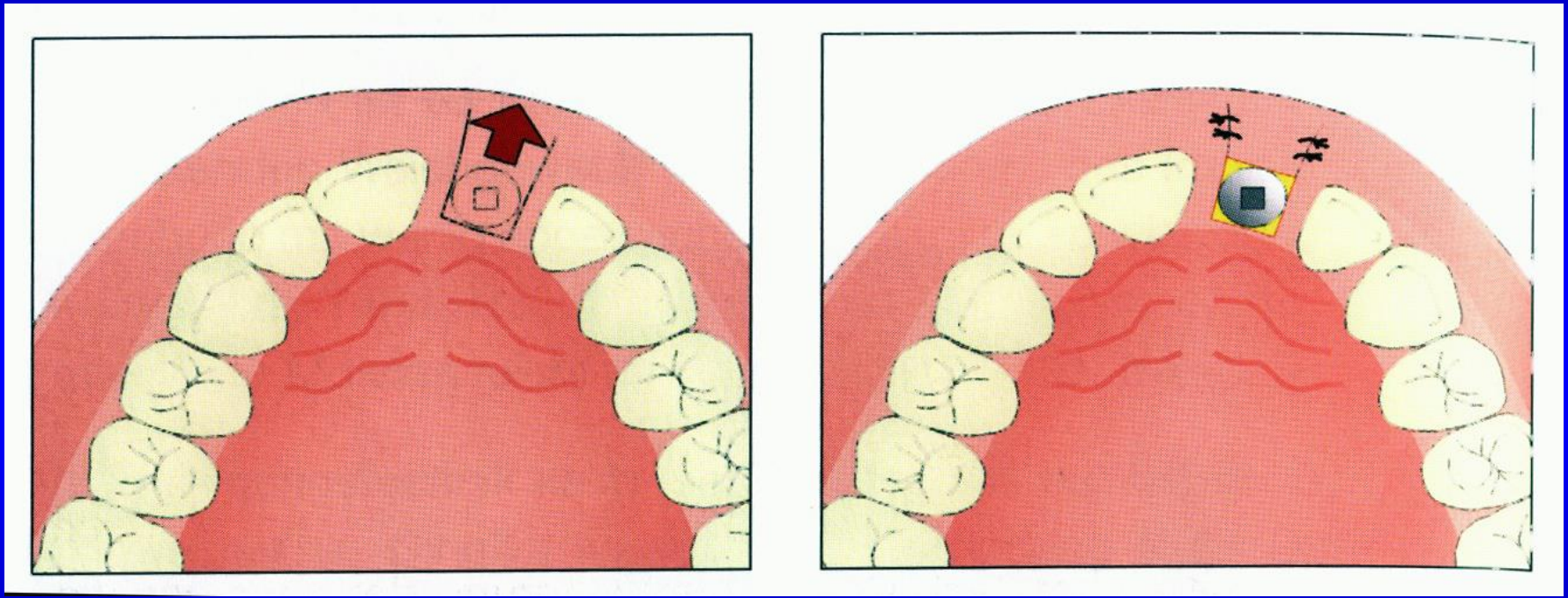
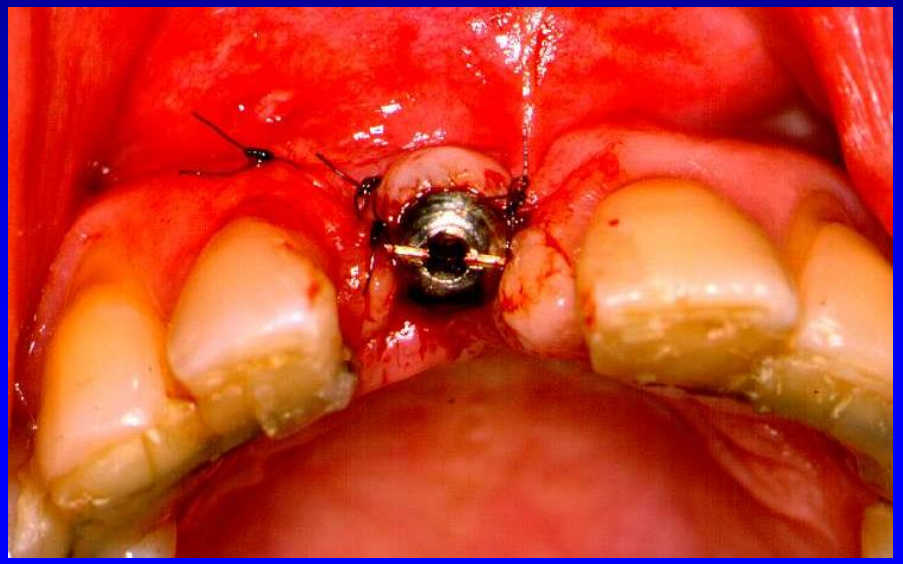
Gingiva forming with apically positioned flap



Gingiva formed by apically positioned flap

Gingiva formed by apically positioned flap

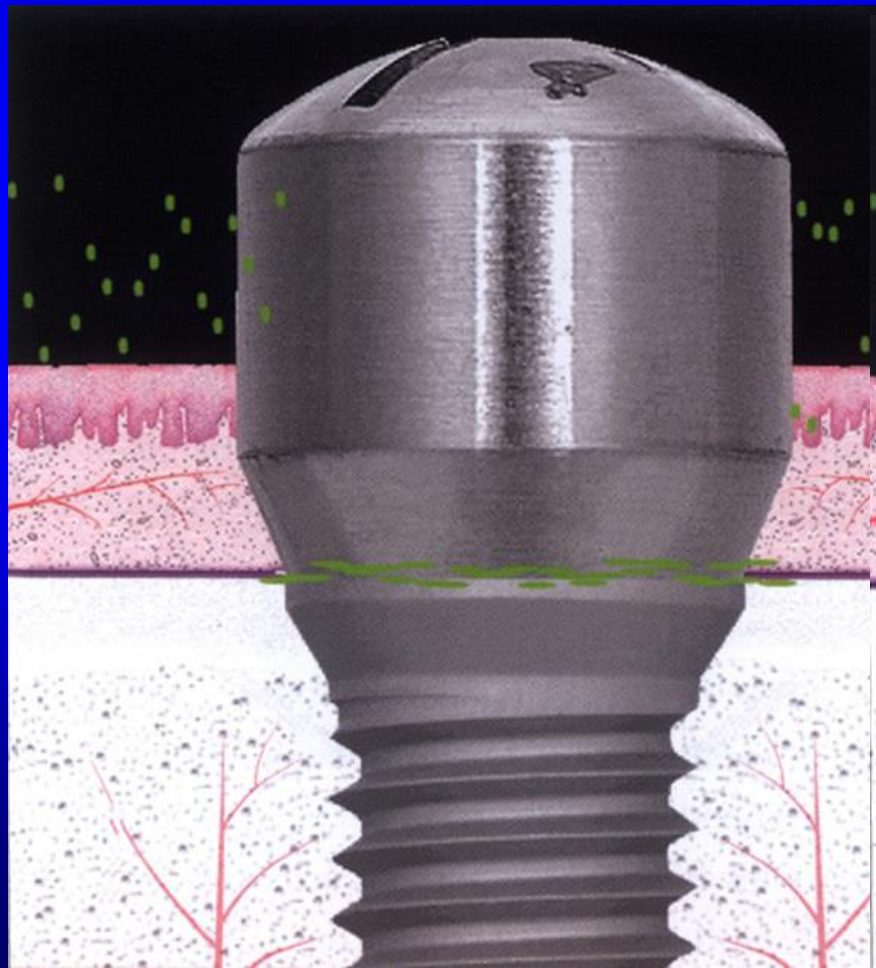


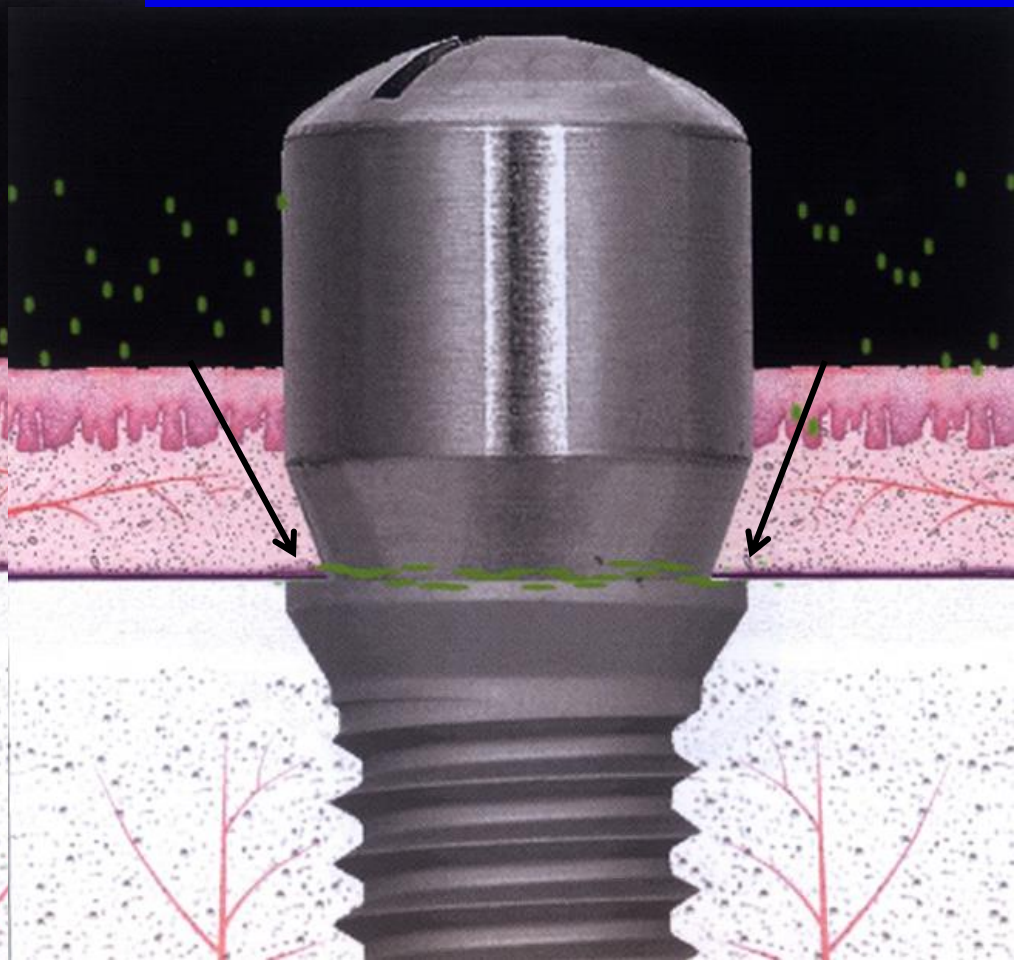
Gingiva forming by apically positioned flap and temporary crown

Implant-abutment connections

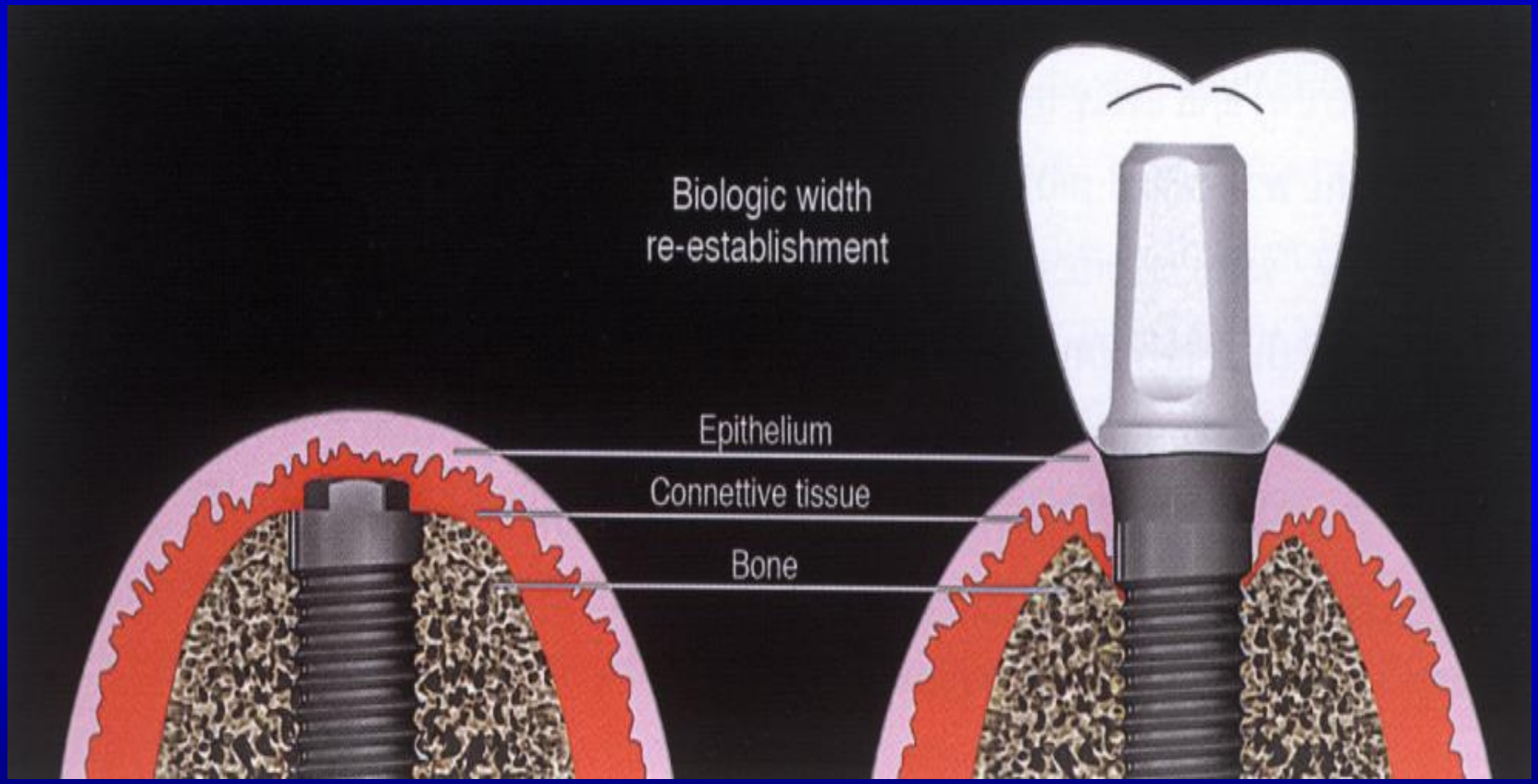
Conventional

Platform switching,
/Platform shifting/





Re-establishment of biologic width after conventional abutment connection



Re-establishment of biologic width after abutment connection

Platform switching,
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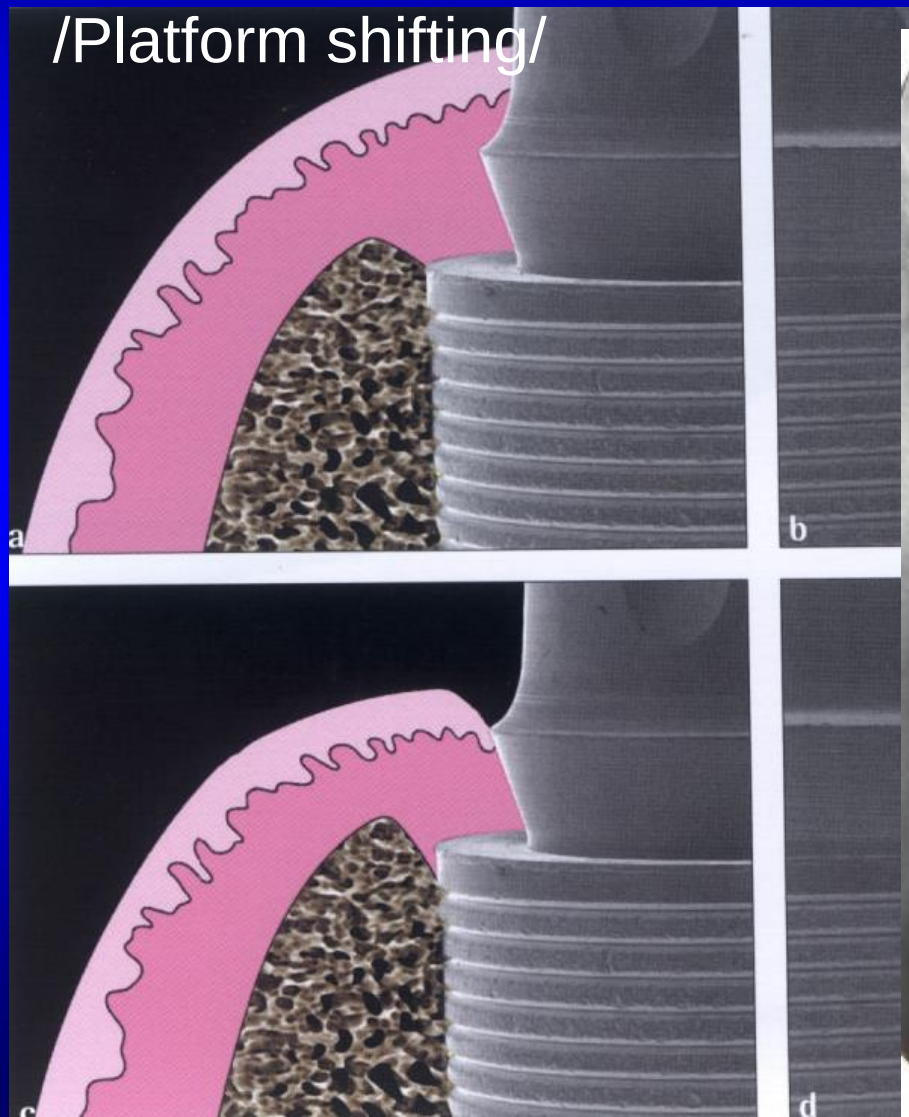
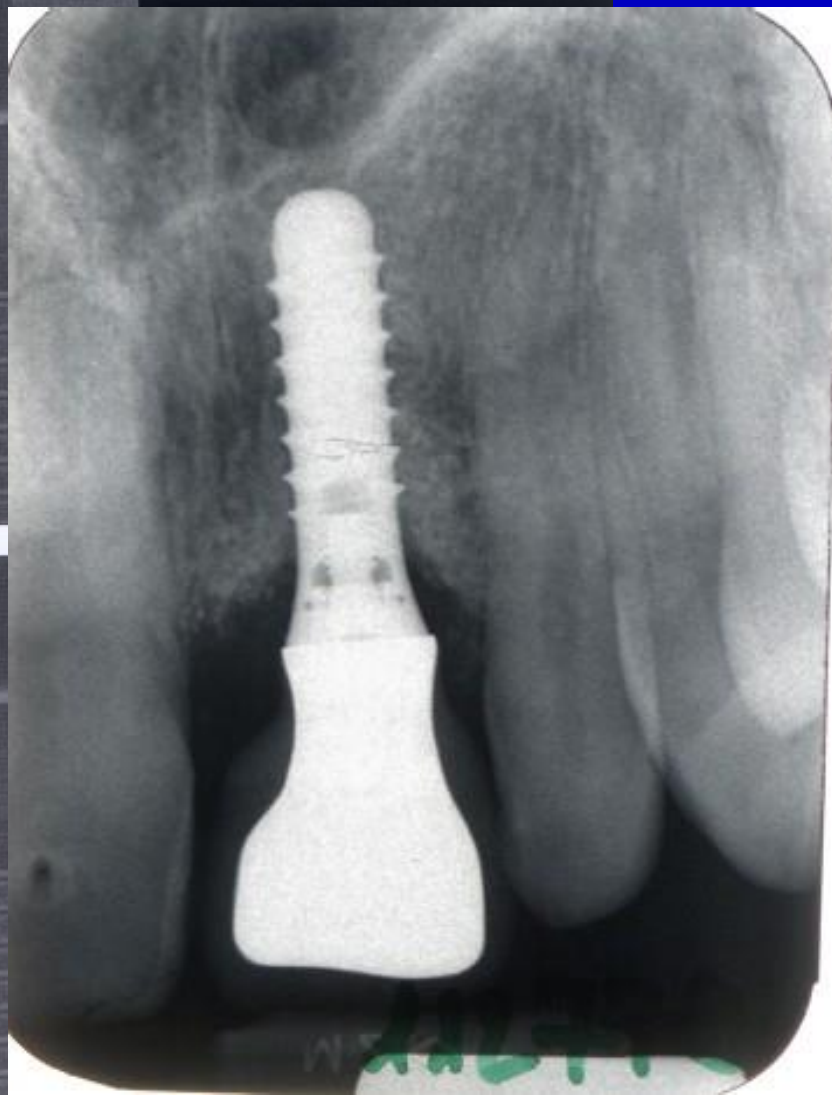


Conventional connection



Types of second stage surgery

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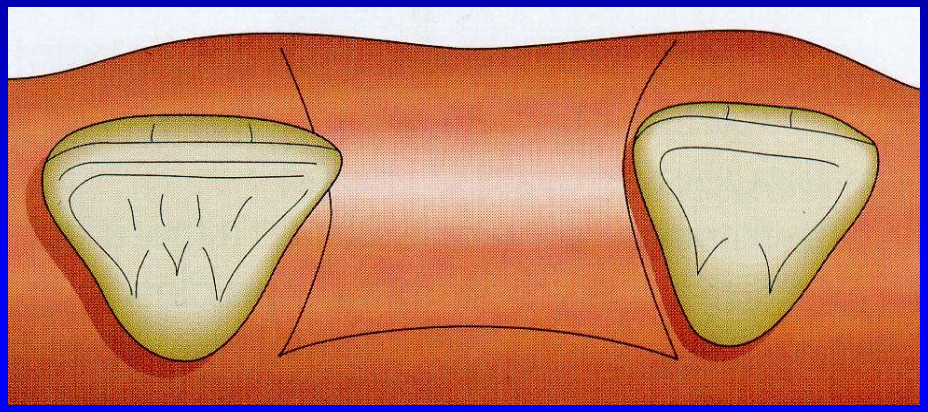
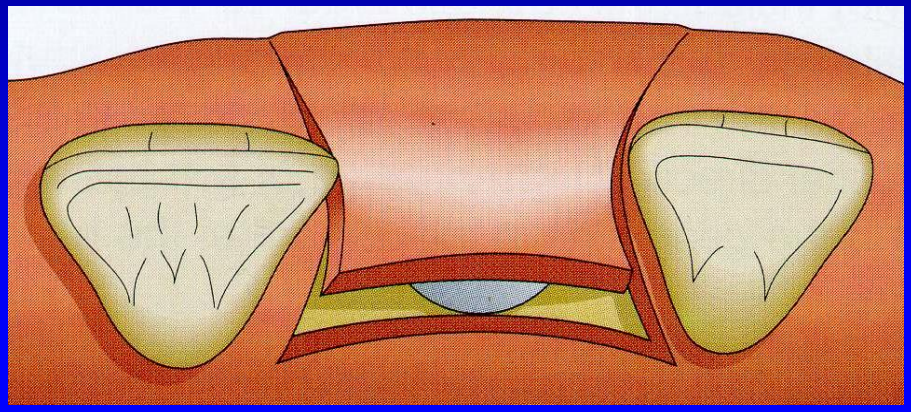
Connective tissue graft

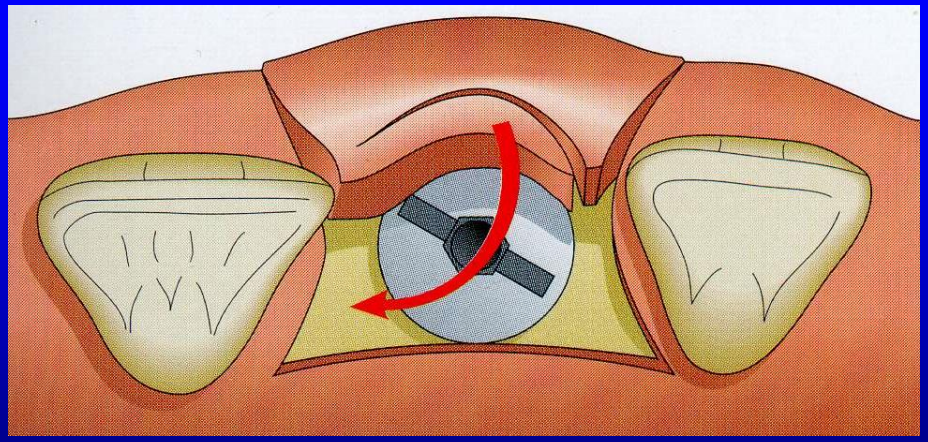
Gingiva excision

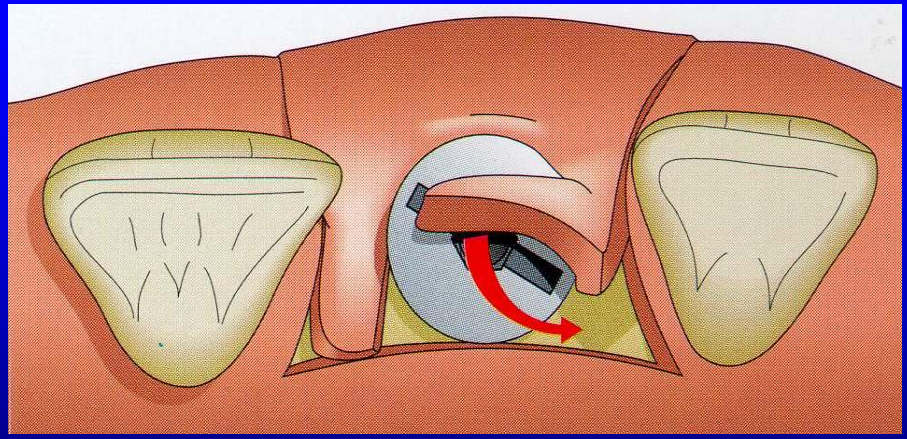
Papilla regeneration technique I.

/P. Palacci/



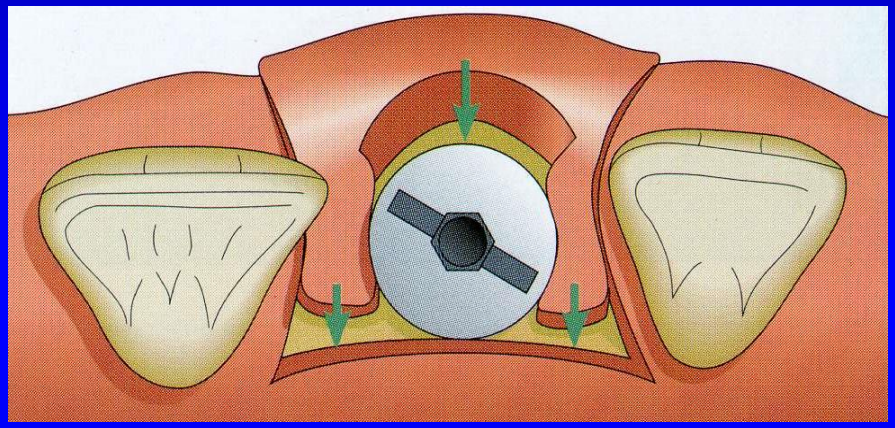


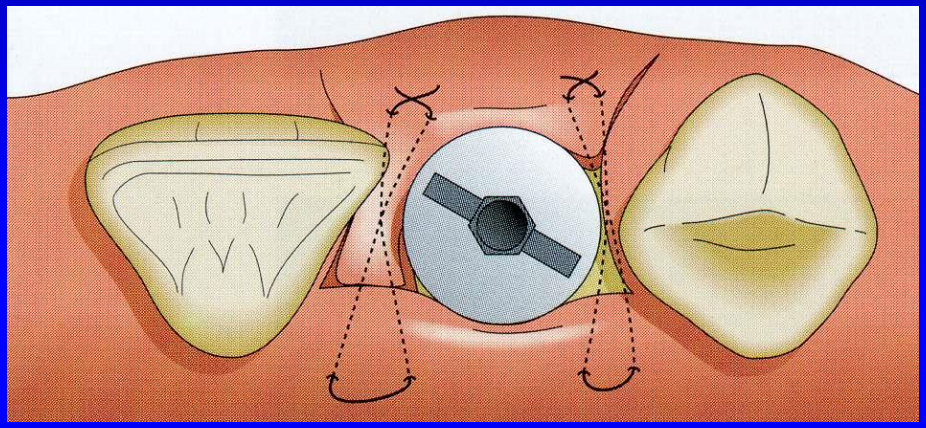


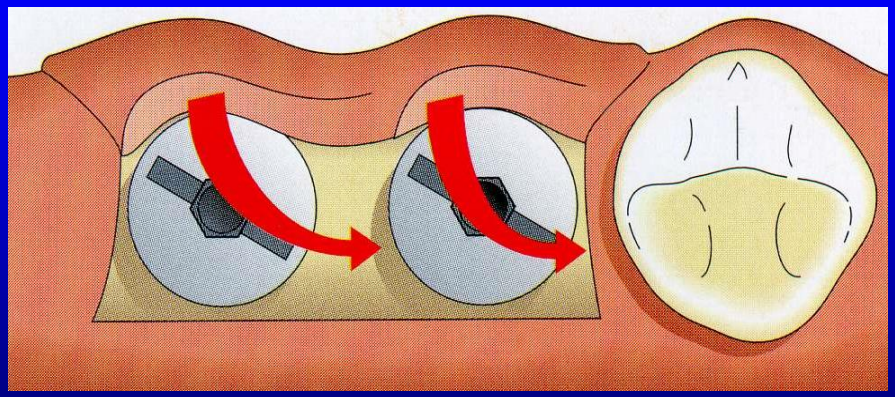


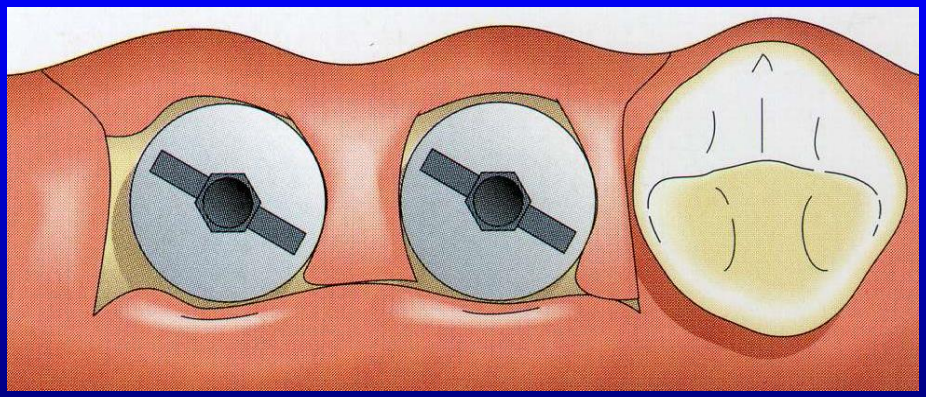
Papilla regeneration technique II.

/P. Palacci/



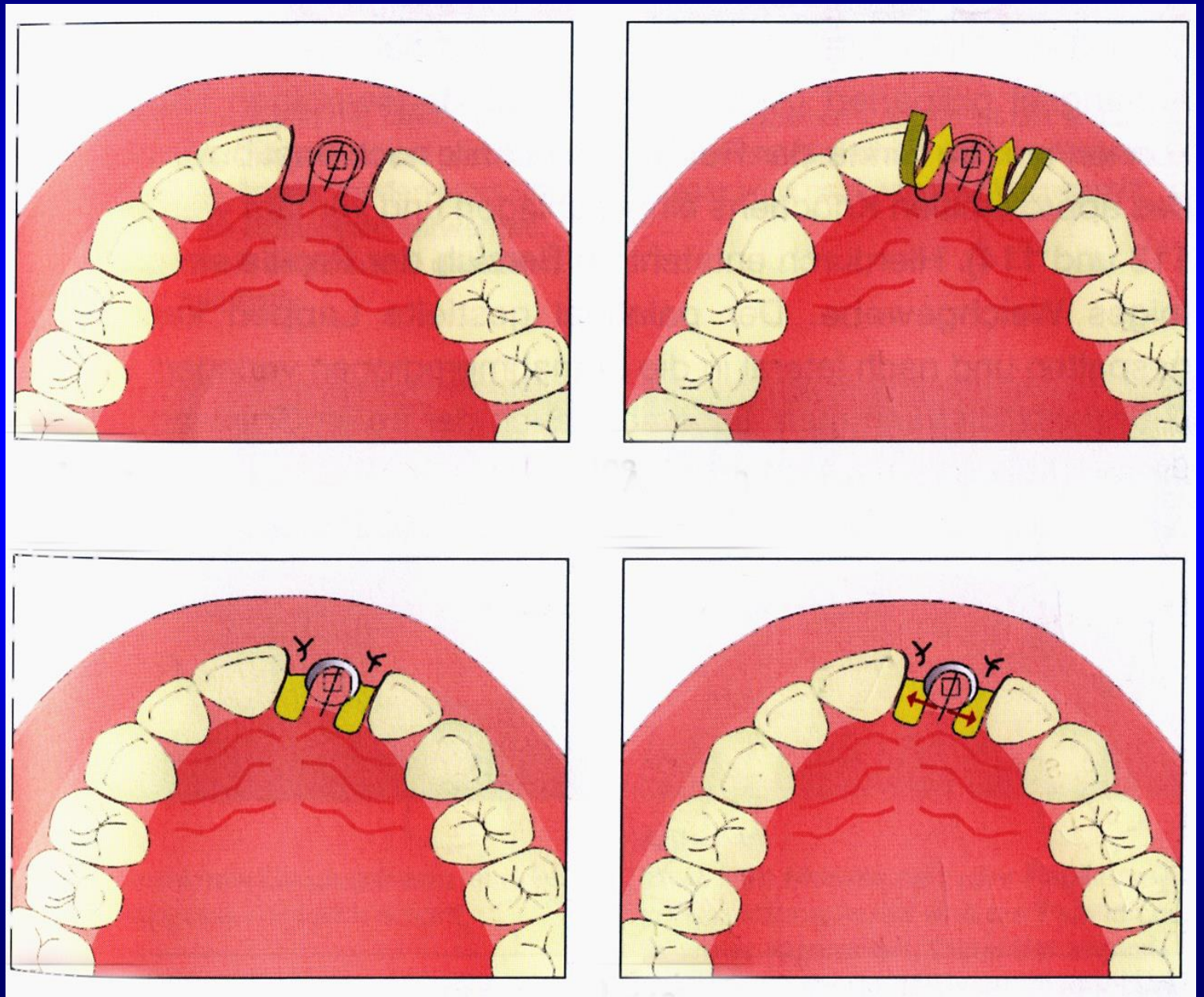






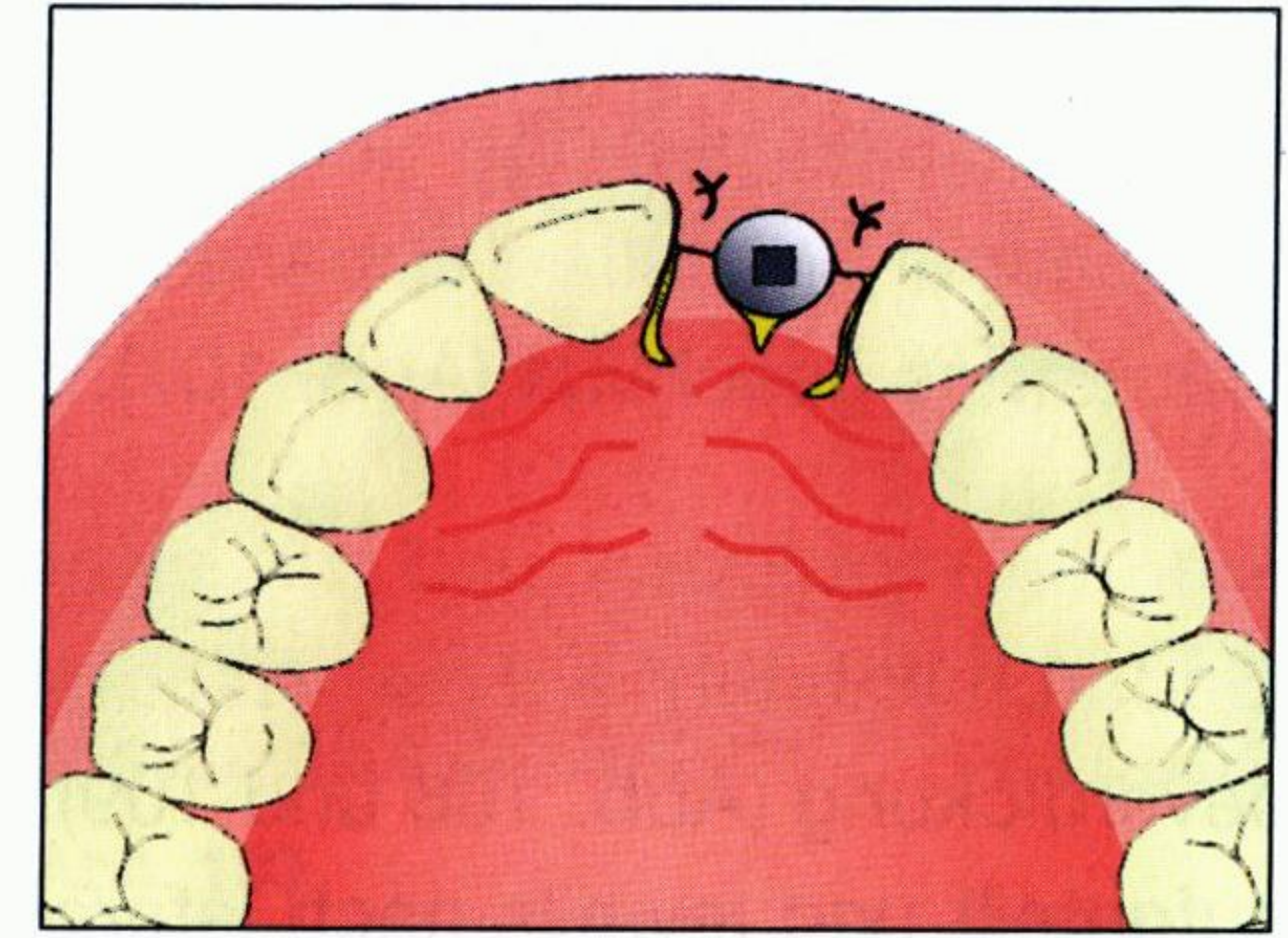
Opening of the implant with reconstruction of the papilla

/ Haessler ,Kornmann 1998 ,Misch 2004 / I.Figure



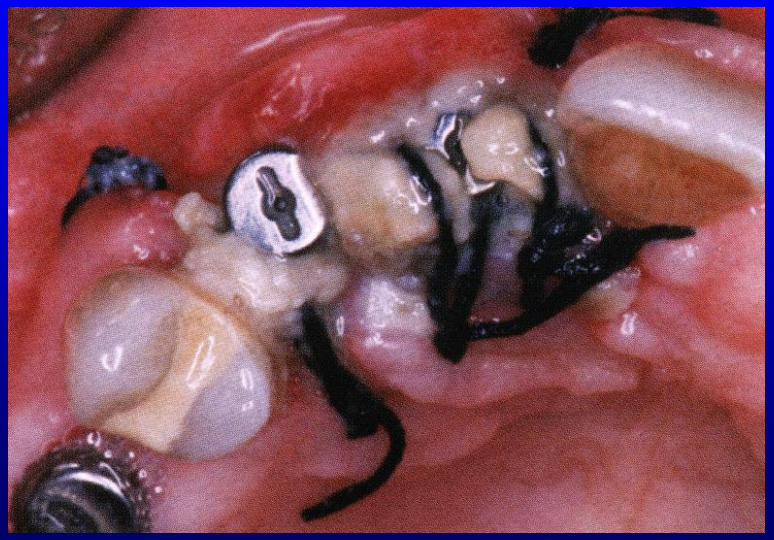
Opening of the implant with reconstruction of the papilla. II.Figure

„Split finger”technique

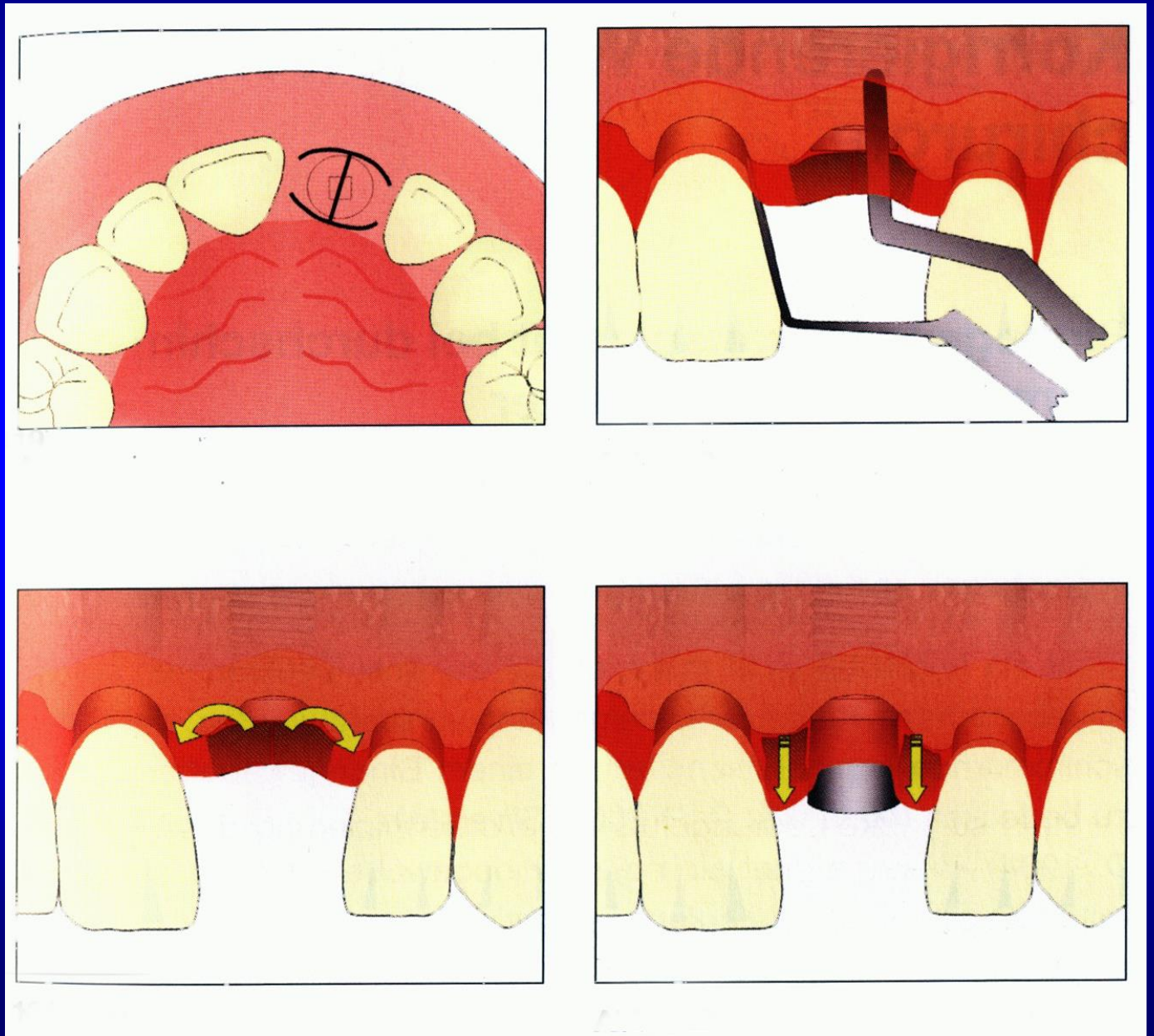


At small pedicle flaps, due to the impaired blood supply, ***necrosis*** may occur

/Rosenquist 1997, Adriaenssens et al.1999/

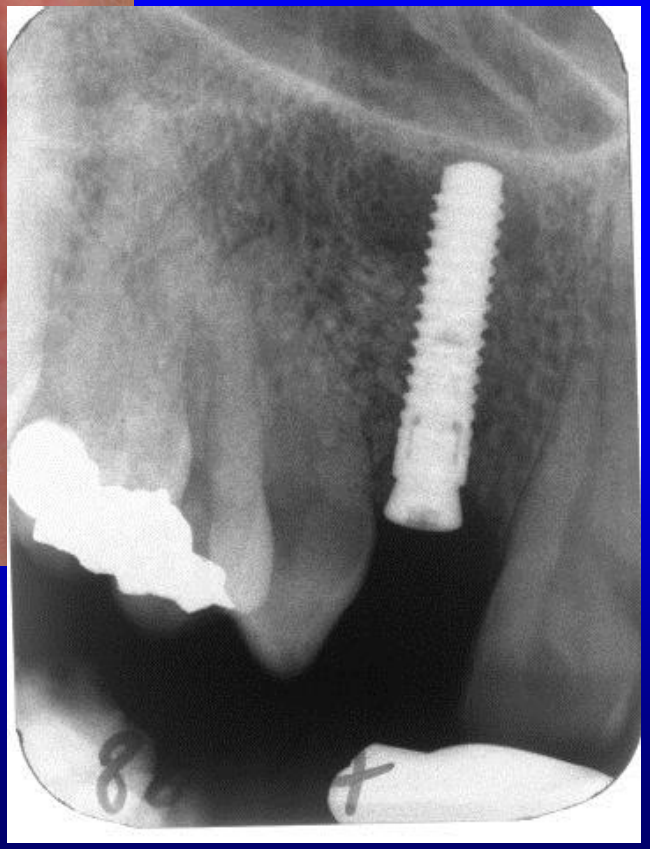


Papilla reconstruction with H-shape flap /Hahn et al.2005, Shahidi et al.2008/

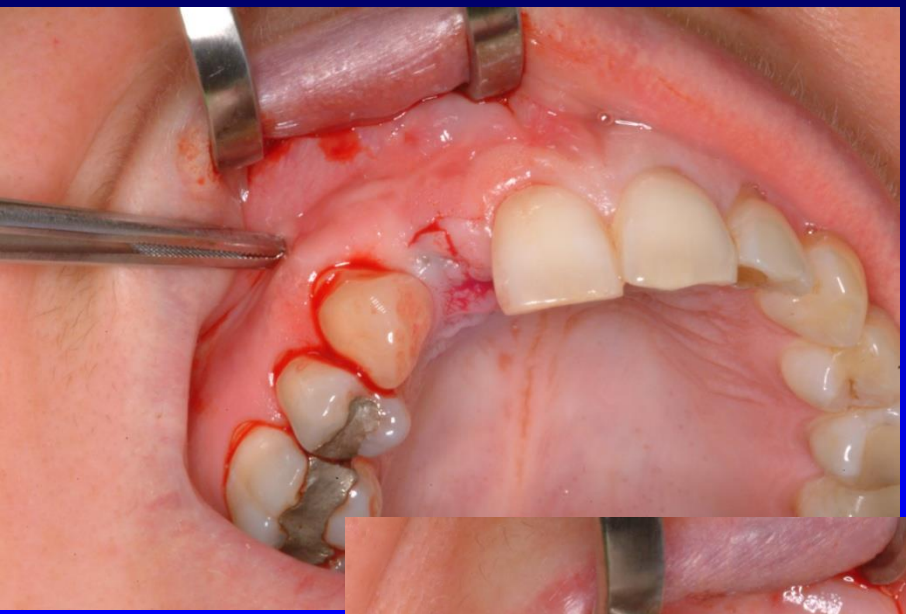


Upper lateral incisor before removal

Placed and healed implant



Gingiva forming by H-shape flap



Abutment frased and ceramic crown completed

Types of second stage surgery

Sufficient
Quantity,quality of gingiva

Insufficient
Quantity, quality of gingiva

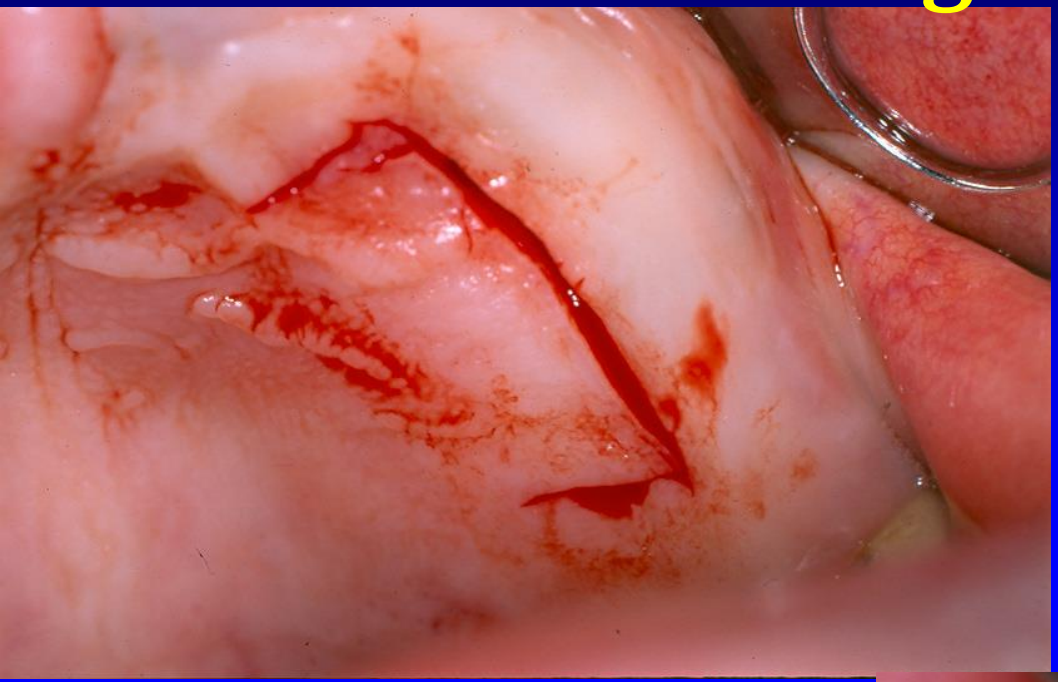
Apically positioned flap

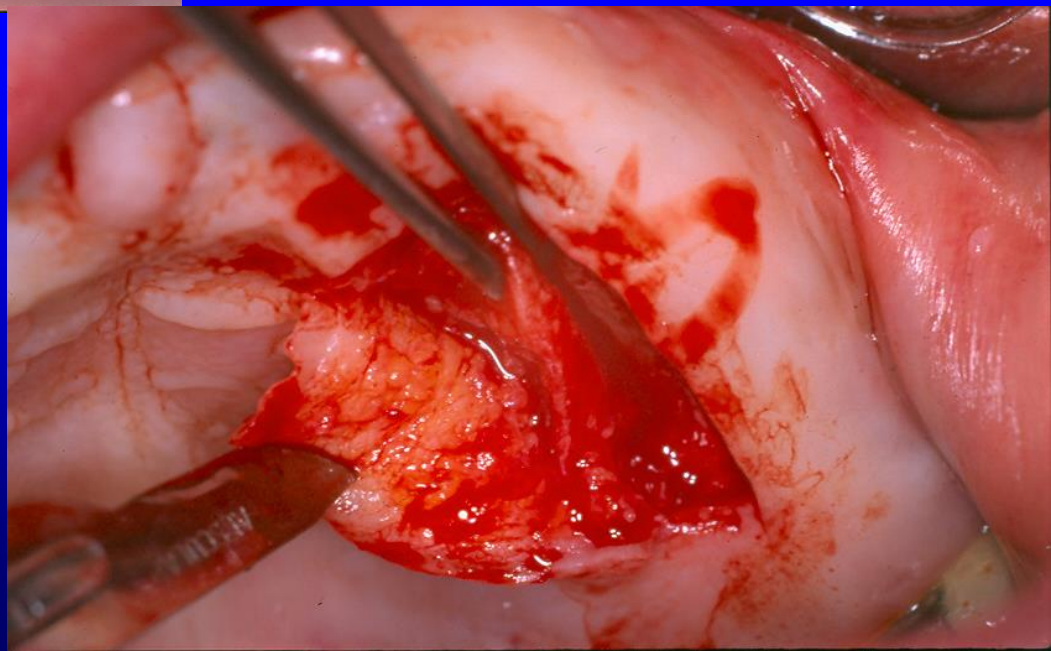
Papilla reconstruction

Connective tissue graft

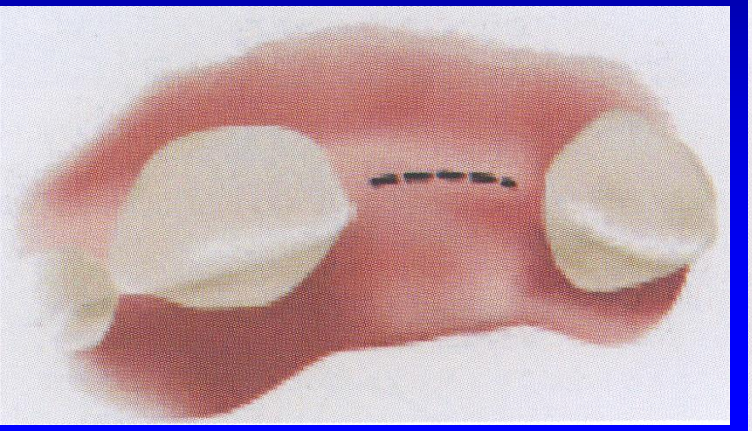
Gingiva excision

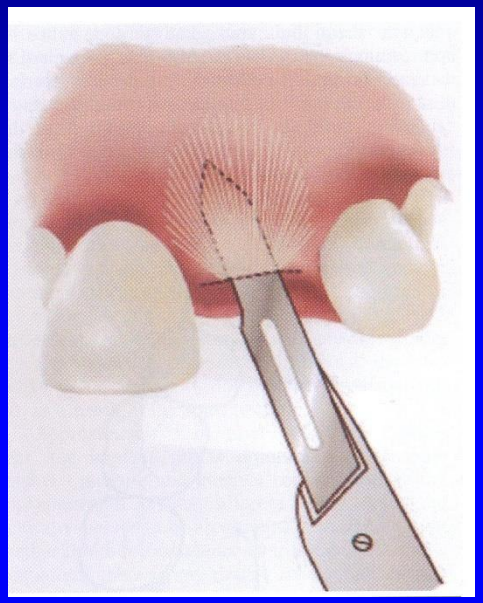
Connective tissue graft from the palate

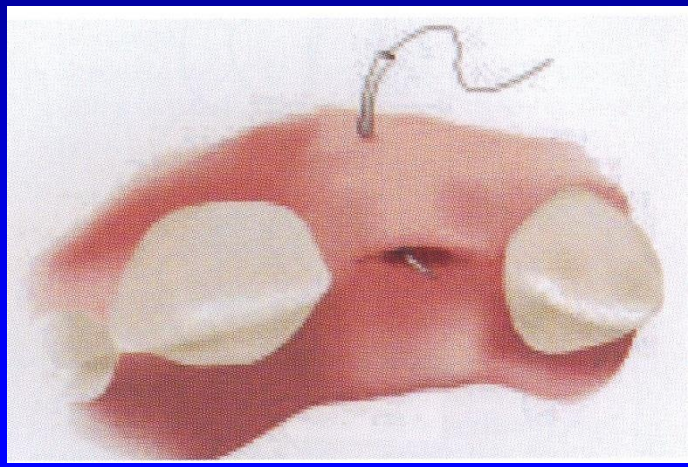


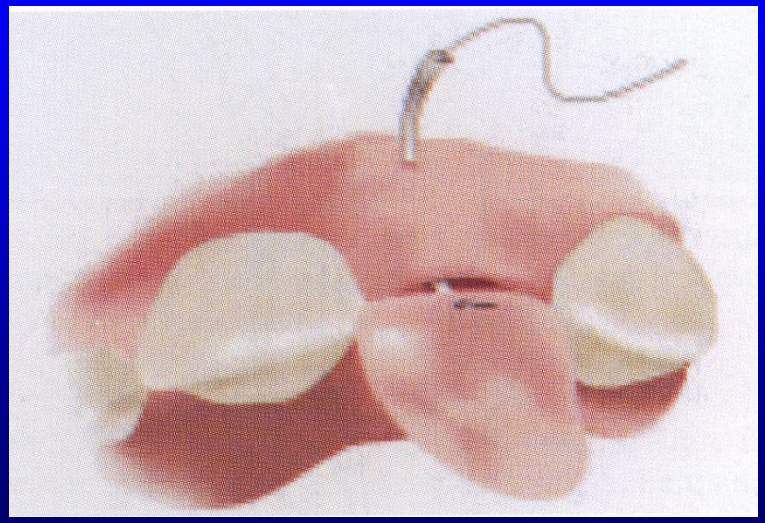


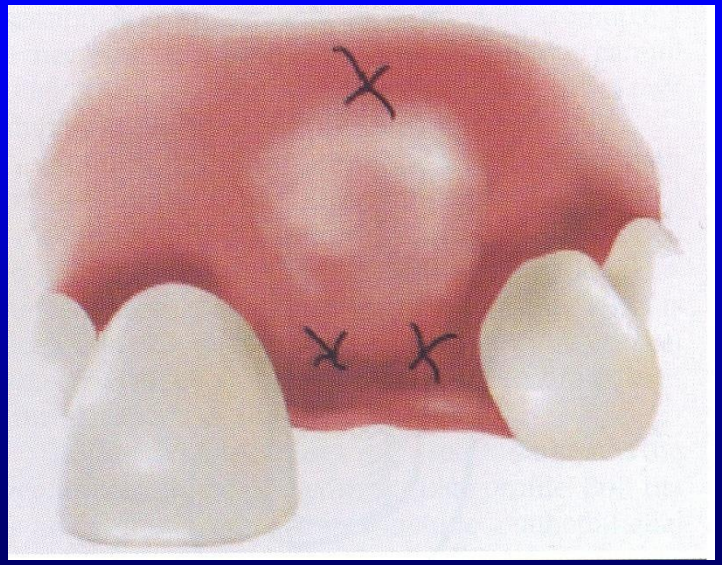
Schematic illustration of connective tissue grafting



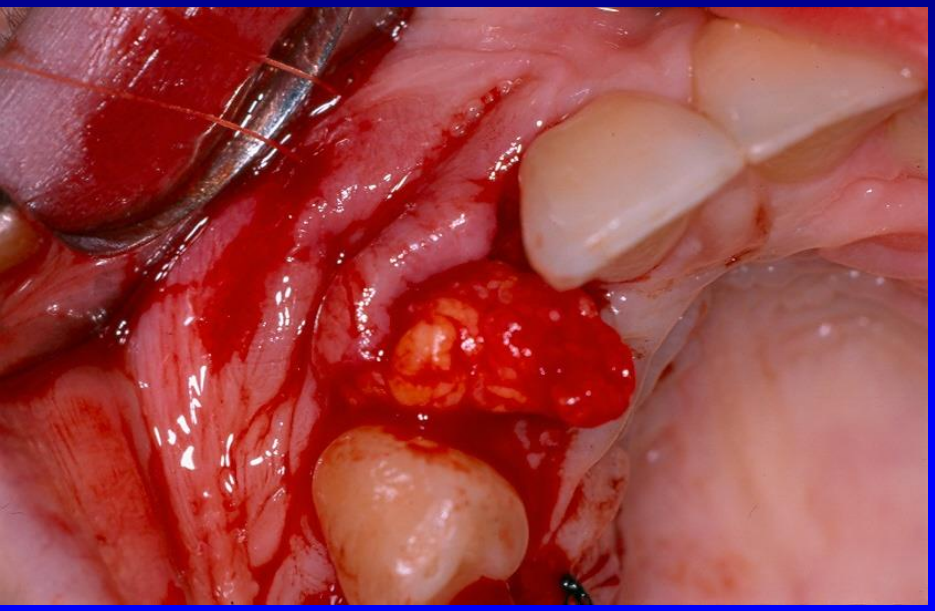


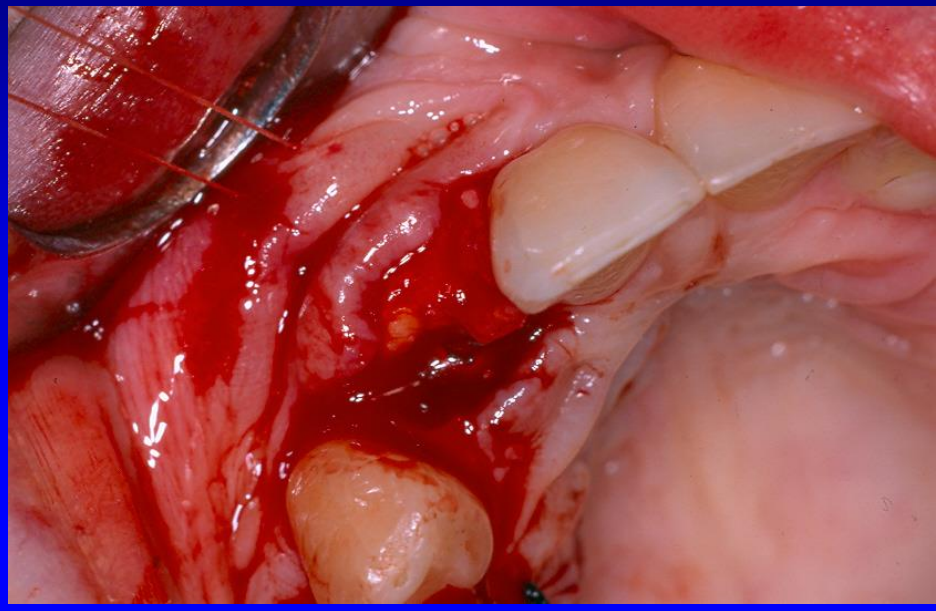


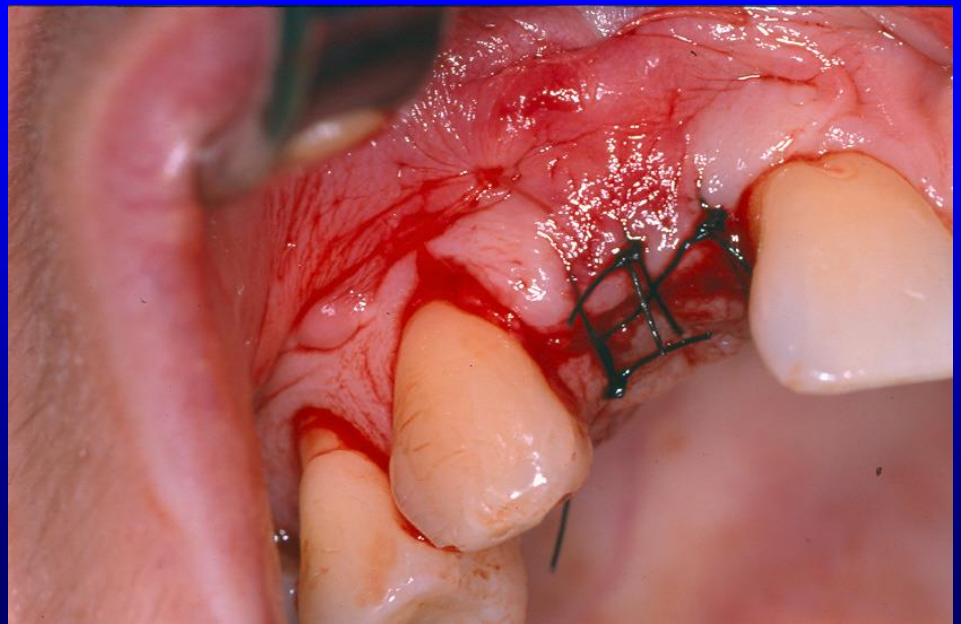




Connective tissue grafting







Connective tissue grafting

Recommended timing of connective tissue grafting

3,5 months

Implantation →

6 weeks

Tissue grafting →

Prosthetic therapy

←→ **5 months**