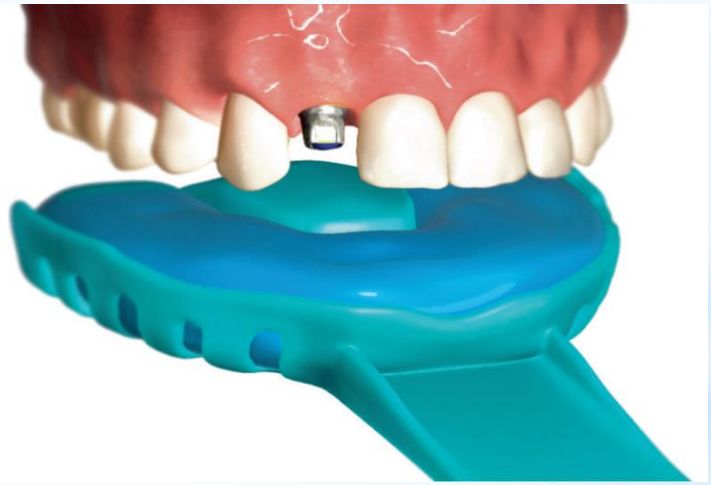
Implant Impression techniques



Prof. Dr. Thekra Ismael Hamad

*dental impression: a negative imprint or a positive digital image display of intraoral anatomy; used to cast or print a 3D replica of the anatomic structure that is to be used as a permanent record or in the production of a dental restoration or prosthe

*Objectives of making impression in implants dentistry:

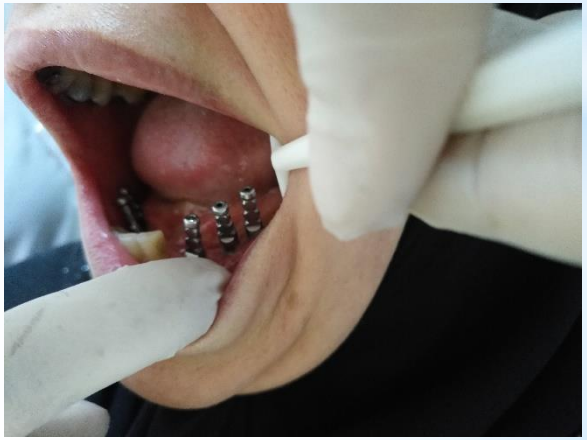
* Is to accurately relate an analog of the implant or implant abutment to the other structure in the dental arch.

*Is to copy the same position of dental implant inside the patient mouth to the cast where the lab will put abutments and work in it.

Impression equipment

Impression Posts:

- facilitate transfer of the intraoral location of the implant or abutment to a similar position on the laboratory cast.
- They may screw into the implant or onto the abutment and are customarily subdivided into fixture types or abutment types .



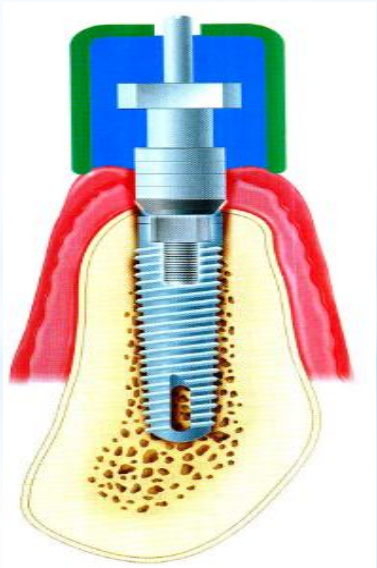
* A one-piece coping (screws onto abutment) is used if the abutment does not need to be changed on the laboratory cast.

**A one-piece (transfer) is attached directly to the fixture if the abutment does need to be

* A standard transfer impression post is a sleeve that matches the implant diameter. A screw penetrates through its center.

* The screw can be placed through the impression post sleeve and carried to the mouth with the standard hex driver.

* A two-piece (pick-up), used to orient the anti-rotational feature or to make impressions of very divergent implants.



* *Impression coping*

* **The Impression coping is ‘self-seating’. This means that the screw will not engage the implant if the coping is not correctly seated.**

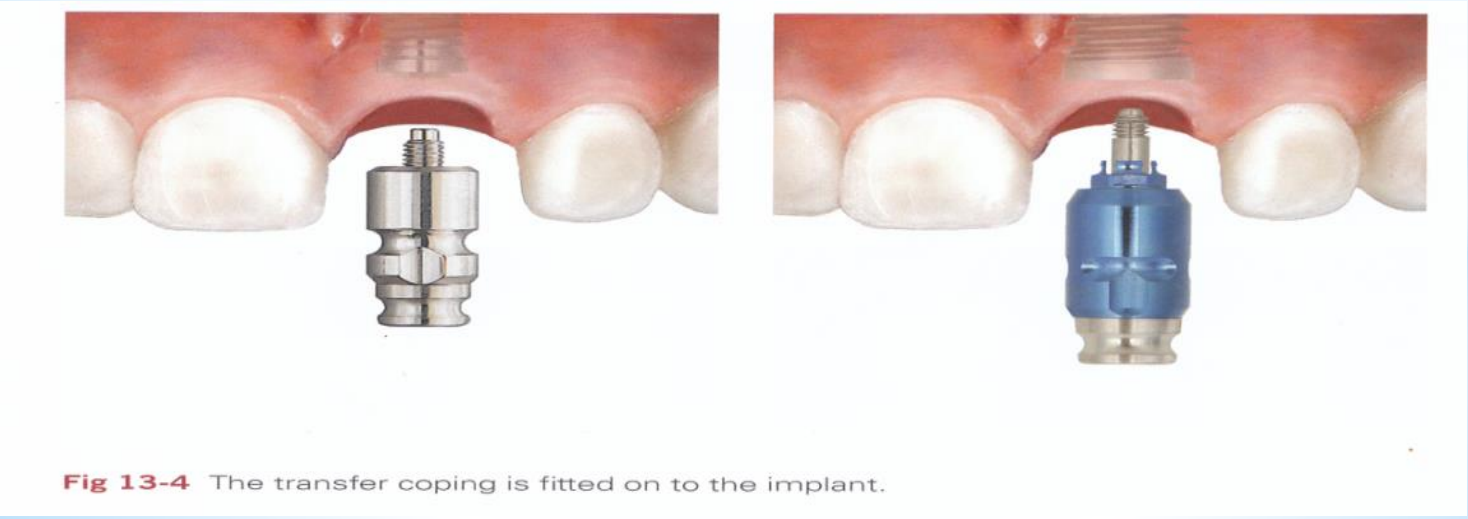


Fig 13-4 The transfer coping is fitted on to the implant.

* **a radiograph is recommended if there is any uncertainty or risk of soft tissue entrapment.**

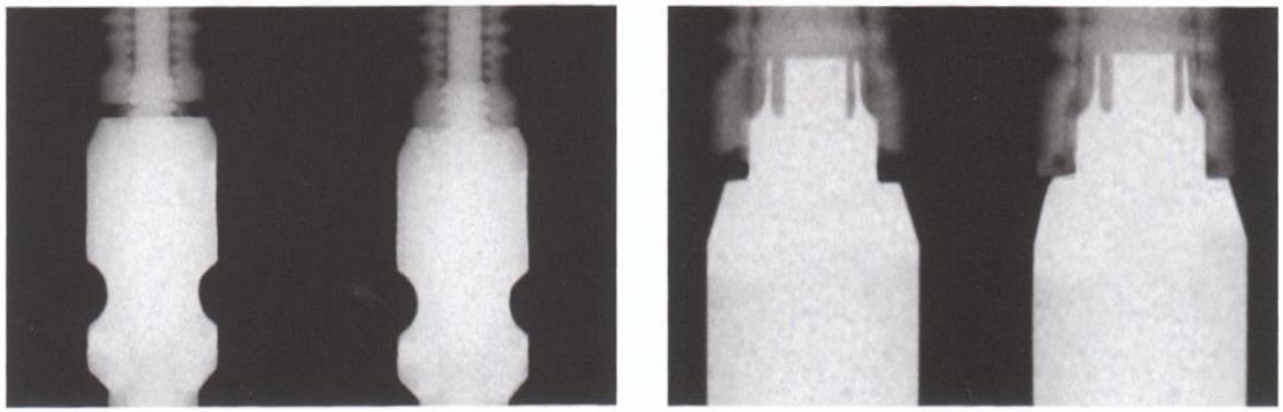


Fig 13-6 Radiograph showing unseated transfer coping *(left of each frame)* and seated coping *(right of each frame)*.

* Laboratory Analogs.

* are made to represent exactly the top of the implant fixture or the abutment in the laboratory cast. Therefore, they can be classified as fixture analogs and abutment analogs .

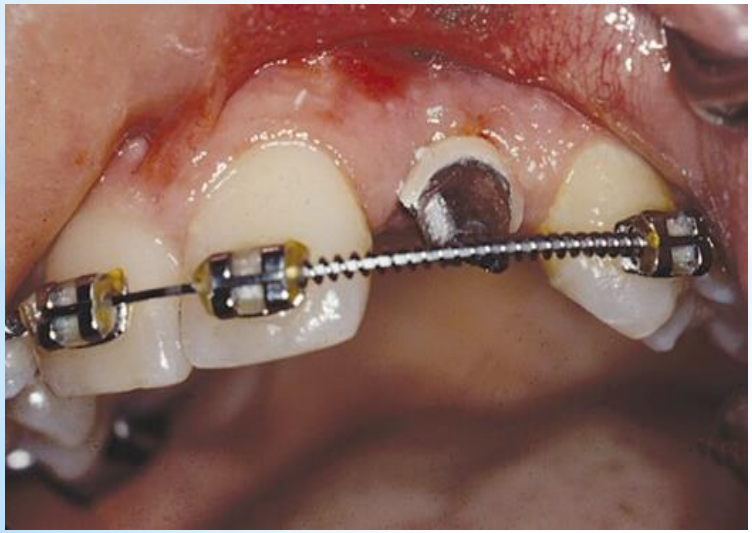
* Laboratory analog corresponding to the size of the implant.

*The Abutment:

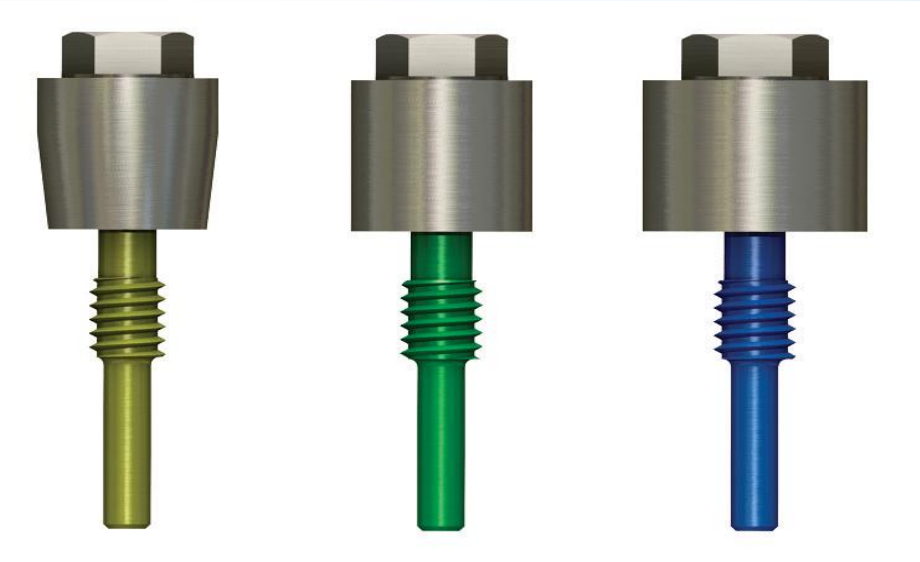
The abutment is the portion of the implant that supports or retains a prosthesis or implant superstructure.

* **A superstructure is defined as a metal framework that attaches to the implant abutment(s) and provides either retention for a removable prosthesis (bar for over denture)**

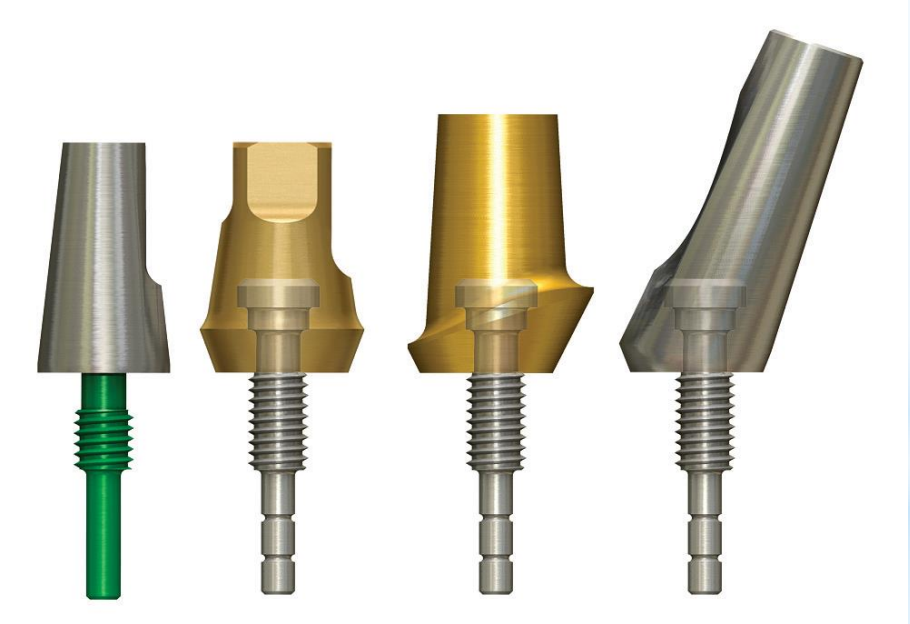
or the framework for a fixed prosthesis.



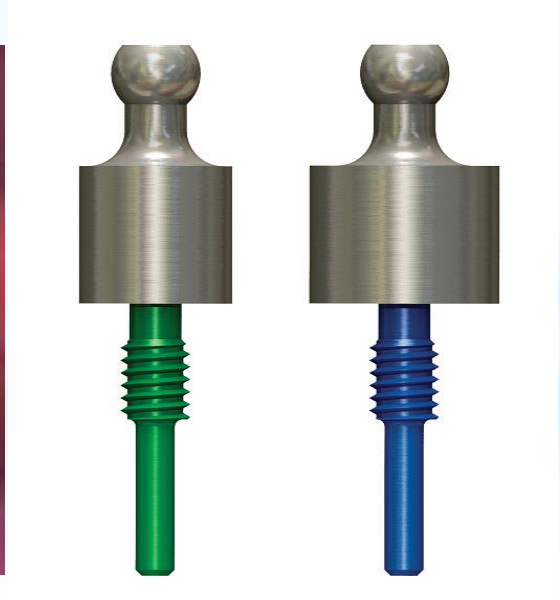
* **Three main categories of implant abutments are described, according to the method by which the prosthesis or superstructure is retained to the abutment:**
* **(1) an abutment for screw retention uses a screw to retain the prosthesis or superstructure**



(2) an abutment for cement retention uses dental cement to retain the prosthesis or superstructure



* (3) an abutment for attachment uses an attachment device to retain a removable prosthesis (e.g., an O-ring attachment)



Prosthesis screw

Coping

Analog
- A. Implant body
- B. Abutment

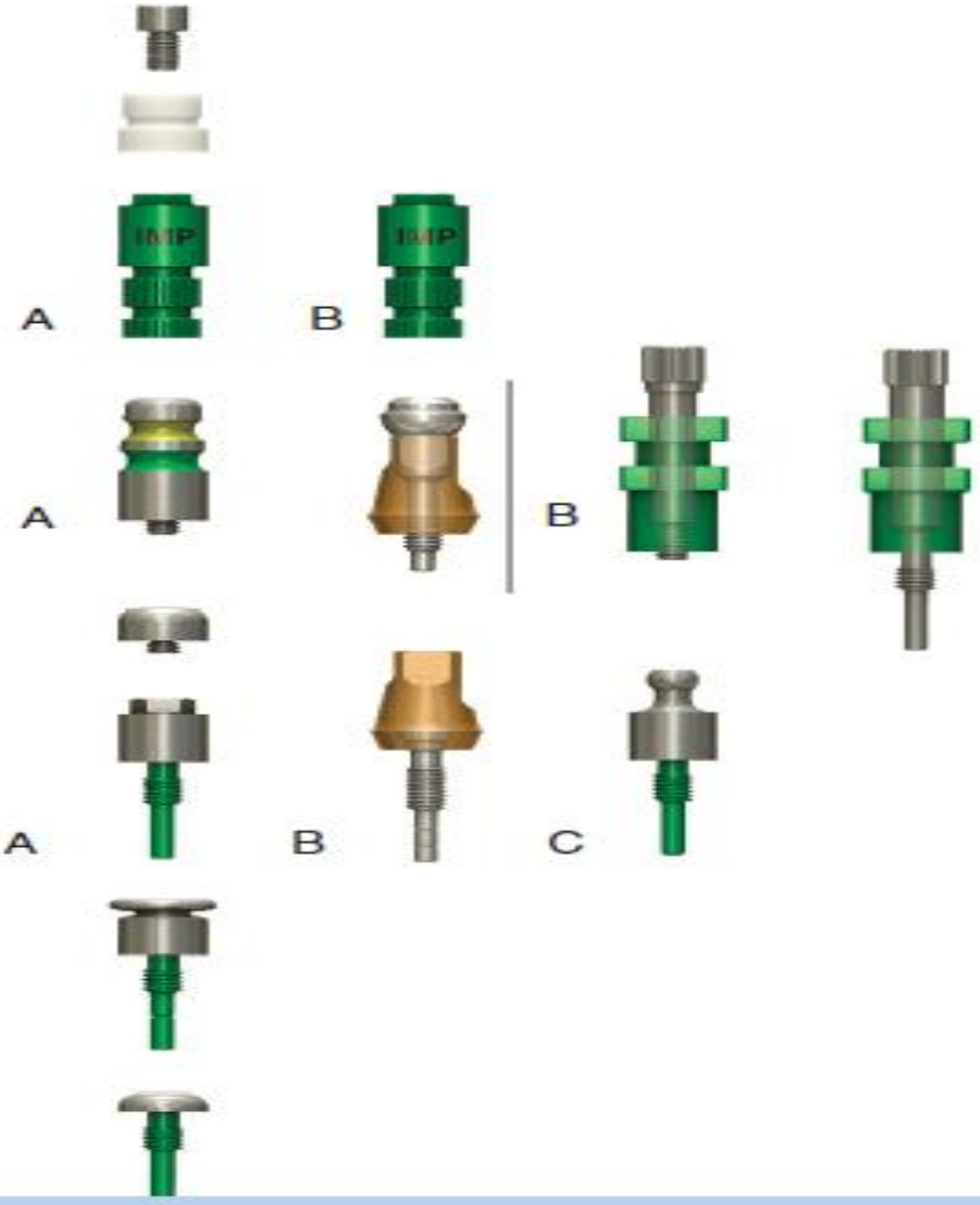
Transfer coping (abutment or implant body)
- A. Indirect
- B. Direct

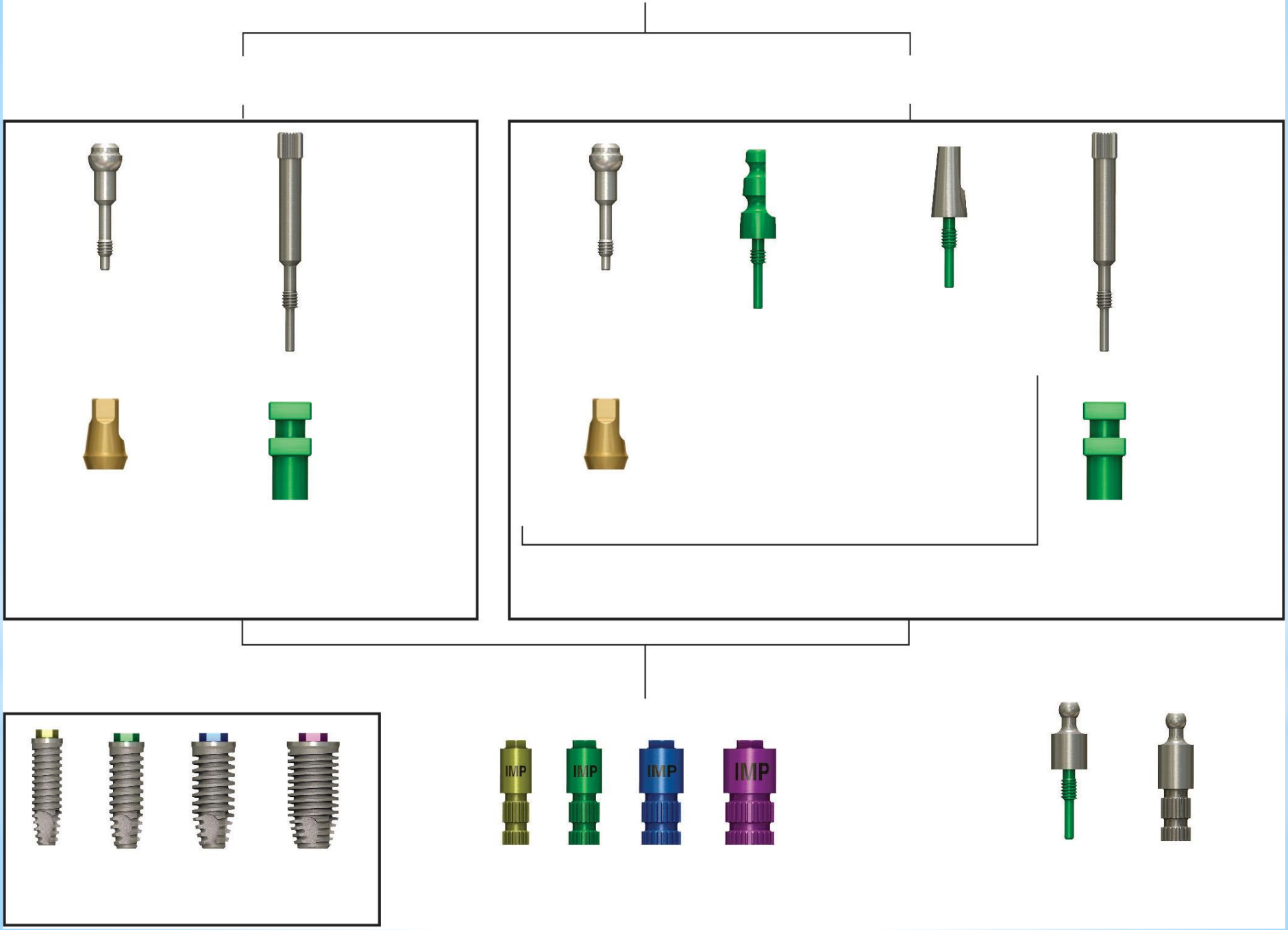
Hygiene screw

Abutment
- A. For screw retention
- B. For cement retention
- C. For attachment

Second-stage permucosal extension or healing abutment

First-stage cover screw




IMP
IMP
IMP
IMP

* ***Impressions can be taken at two levels either:***

* **1-At abutment-level (involve the placement of an abutment analog, a device that mimics the abutment)**

* **2-At implant-level (involve placing an implant analog, a device that mimics the implant on the stone model).**

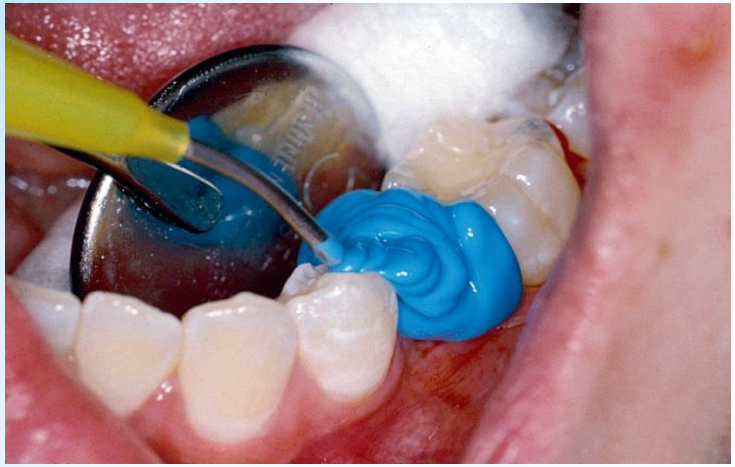
* ***At abutment level***

* **This technique used in single-stage implants, such as blade, sub periosteal, and root form implants the abutments are attached to obtain a working or master cast to fabricate a final prosthesis. This prosthetic approach may be called a direct prosthetic option**

* Acquire this cast by making an impression of the abutment using any comfortable technique.

*-Application of gingival retraction cord around teeth or implant

*-Elastomeric impression materials are recommended



* **The advantages of the direct prosthetic option are:**
* **(1) familiar to restoring dentists**
* **(2) no laboratory analog components are required,**
* **(3) splinting crowns together is less complicated because manufacturer precision for analogs is not required and transfer of components is not required**
* **and (4)reduced cost because analogs and laboratory fees for abutments are eliminated.**

*The disadvantages of the direct prosthetic option are that

(1)the abutments are prepared in the mouth

(2) retraction cord placement is required in esthetic zones or when additional abutment height is required for prosthesis retention,

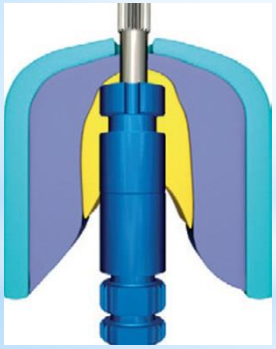
and (3) a different transitional restoration is often fabricated than the option during implant body healing because the abutment is inserted.

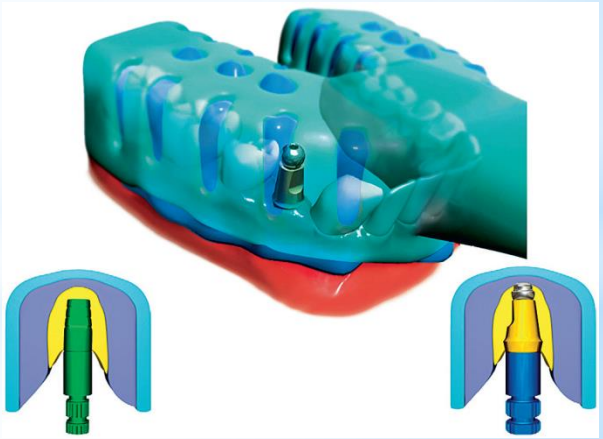
* *Implant Level Impression Techniques*

* **An Implant Level impression may be made at different stages during treatment and is dependent on operator preferences (also called Indirect Prosthetic Option)**

* **At time of initial surgery – for one stage techniques, or to enable the delivery of a provisional crown at second stage surgery**
* **At second stage surgery Following soft tissue healing after a second stage surgical procedure.**

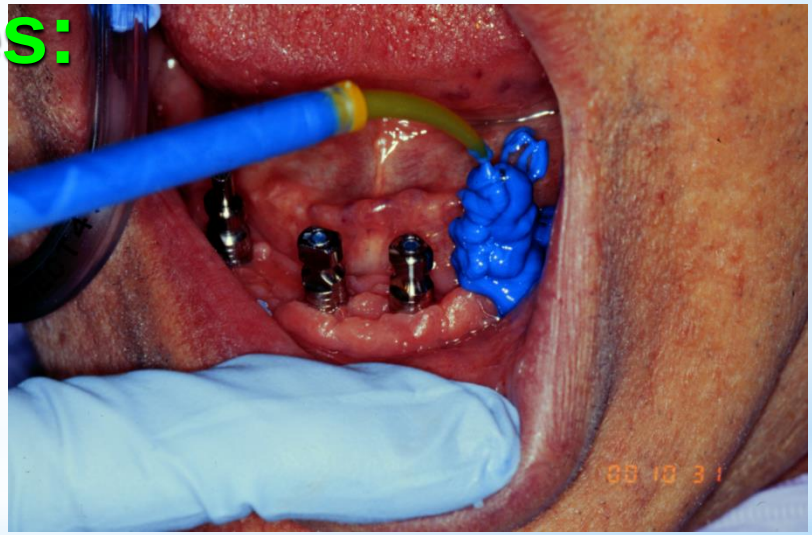
* **Two different types of impression posts are commonly available to transfer the relationship of the implants from the patient's mouth to a master cast. These posts differ in design based upon the impression tray technique utilized, i.e. *open or closed***





Impression Taking

3 Common Techniques:



1) Closed Tray Technique (Indirect)

2) Open Tray Technique (Direct)

3) Conventional Technique

(for Cement Retained C&B)

*Impression Taking

Impression Options and Guidelines

Three common impression techniques:

1. **Closed tray (indirect)**

Closed Tray Technique (Indirect)

* Impression coping making with classic impression tray. Analog attached to impression post and sea back into the impression

Closed Tray Technique (indirect)

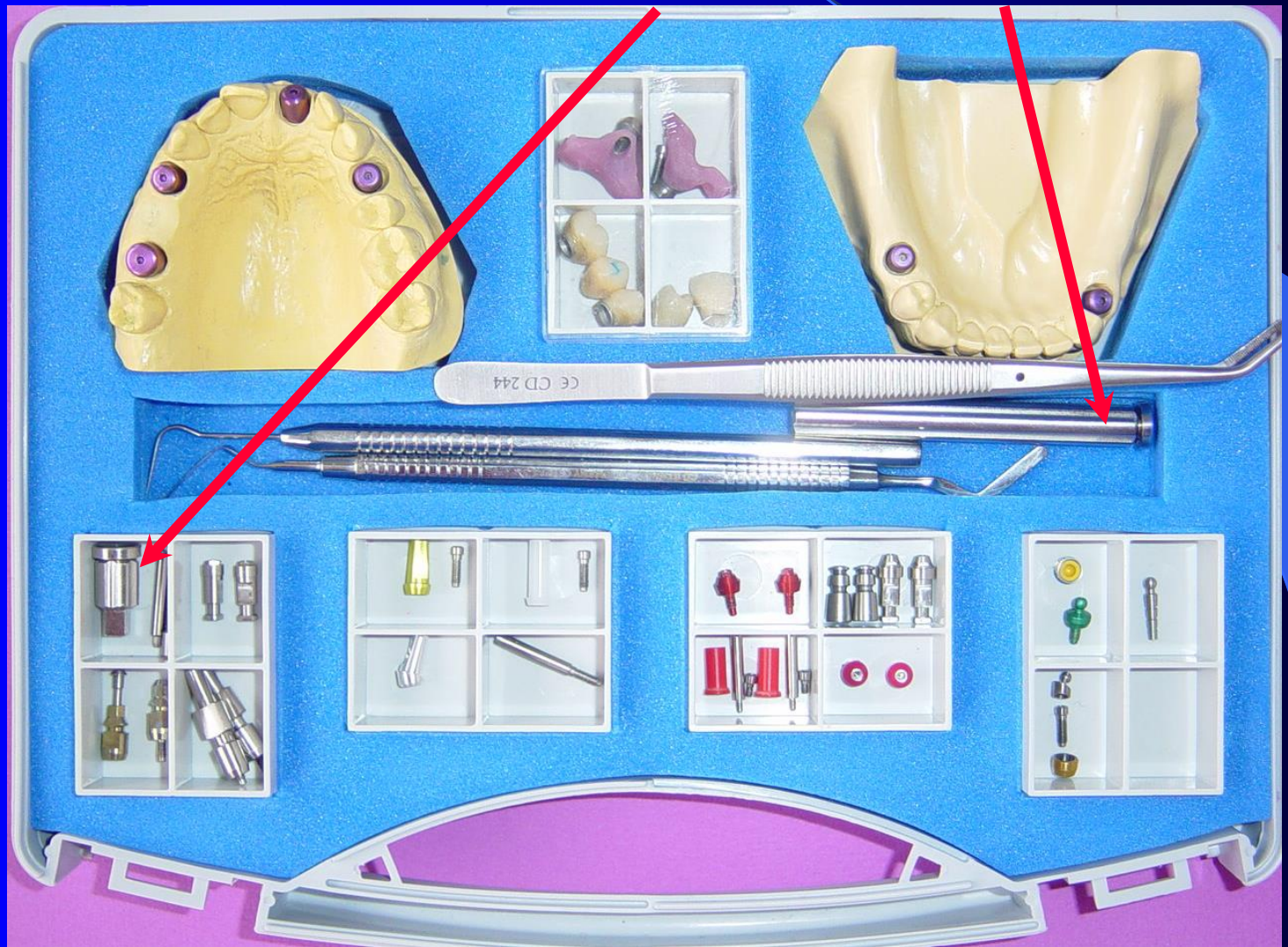
Advantages

- Patient does not need as much of a vertical opening as with an Open Tray technique.
- Handling is simple
- Price→ Impression tray does not need to be modified.
- Speed

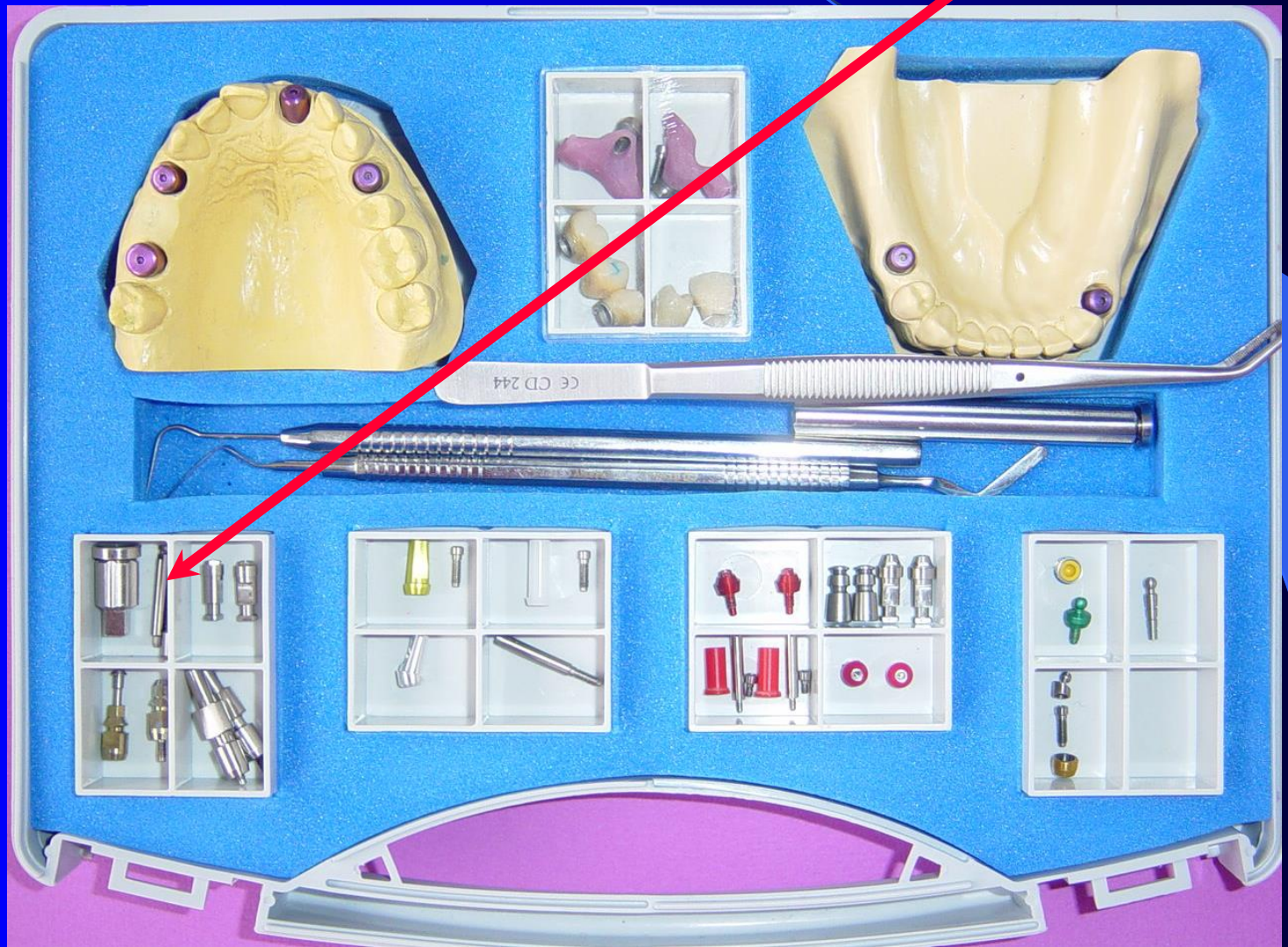
Disadvantages:

- Considered to be less accurate (especially for multiple restorations).
- Implants are deeper
- If impression posts are > than 10° divergent, impression material can be distorted upon removal.
- Wax in the screw head

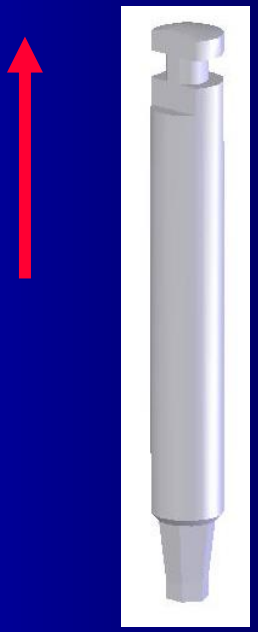
Choose short or long Hand driver



Use appropriate hex driver.



Use appropriate hex driver. Most common hex driver size is 1.20 mm”.



Closed Tray Impression Technique

Step 1: Remove Healing Abutment

Closed Tray Impression Technique

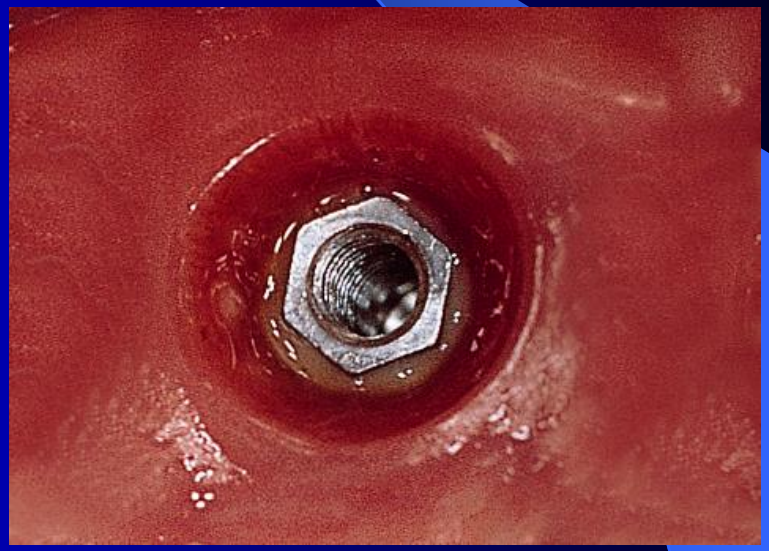
Step 2 Check for Tissue Invagination

Gently and slowly retighten the healing abutment.

- **No discomfort …..Go to Step 3**
- **Discomfort ……..See below**

Remove the excess tissue from the prosthetic table of the implant.

CAUTION: A blade can scratch the implant. Do not use an electrosurgery.



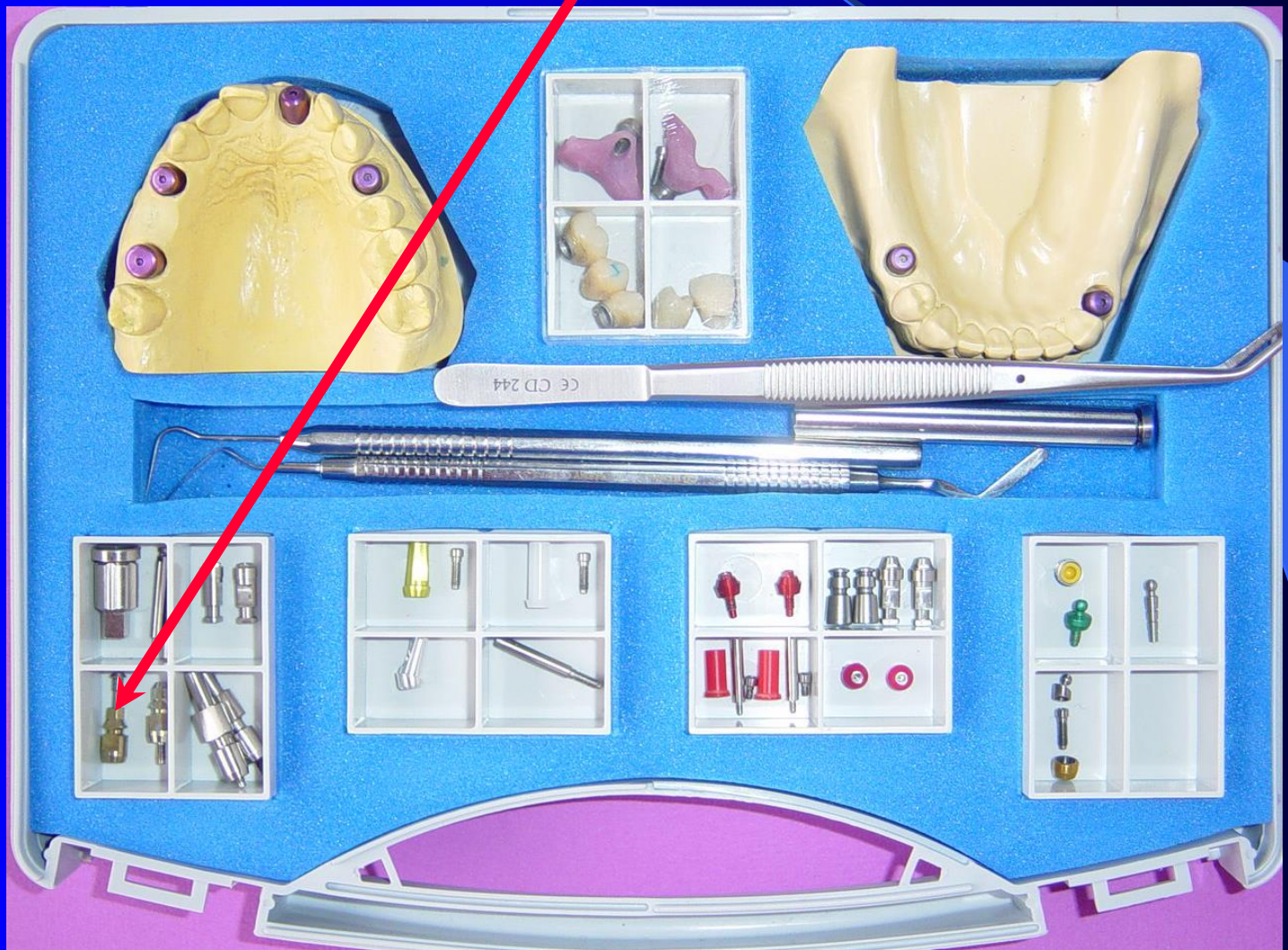
NOTE: Tissue on implant platform.

Closed Tray Impression Technique

Step 3: Impression Post Placement

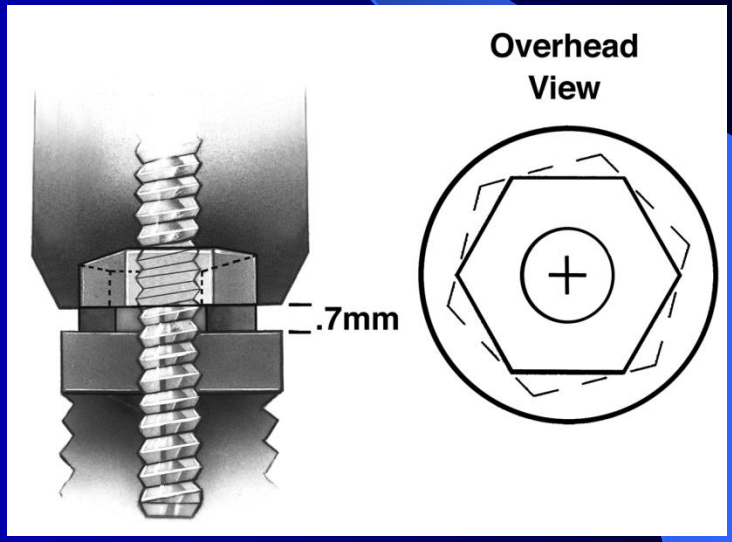
Step 3-A) Select the proper impression post.

Select the proper impression post



Closed Tray Impression Technique

Step 3-B cont.) Seat impression post



Impression post is misaligned.

CAUTION: Do not over tighten. Impression post may not be completely seated. Take an x-ray to confirm.

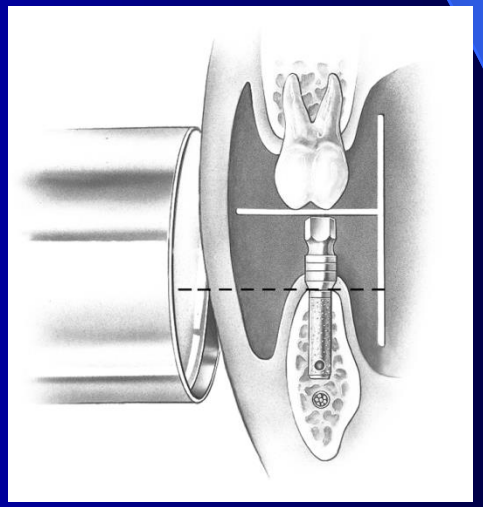
Refer to **Step 3: Take an X-ray**

Closed Tray Impression Technique

Step 4: Take an X-Ray

Step 4-A) This is mandatory when seating of the impression post can not be visually confirmed.

Position the x-ray tube to be perpendicular to the interface of the impression post and implant.



Closed Tray Impression Technique

Step 4-B) Seat impression post

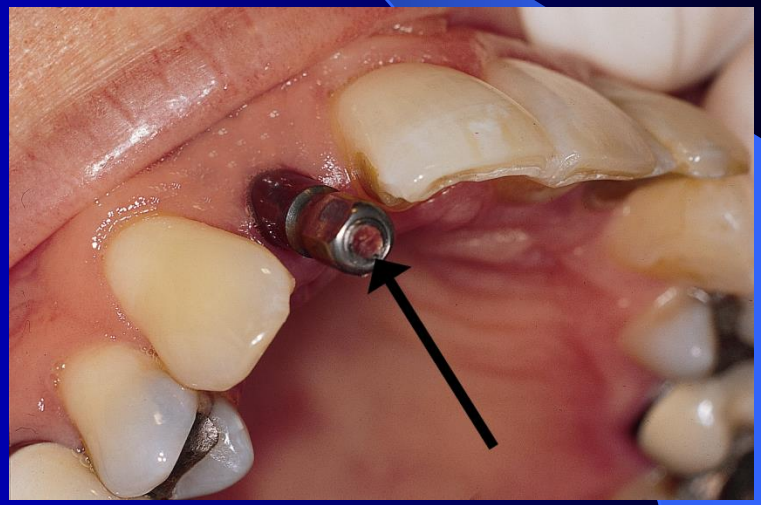
Hexed impression post.

Impression post completely seated.

Closed Tray Impression Technique

Step 5: Take the Impression

Step 5-A) Always take a full arch impression.



Place a small piece of wax.

IMPORTANT: Block out hex screw hole on impression post to prevent impression material from entering the hex screw hole.

Closed Tray Impression Technique

Step 5: Take the Impression

Step 5-B) Use either polyvinyl or polyether impression material.

Completely cover the impression post with impression material, before seating the impression tray.

CAUTION: If putty impression material is used, create adequate space around the area of the impression post for the more accurate syringe material.

Closed Tray Impression Technique

Step 6: Remove the Impression Tray

Step 6-A) Inspect impression for accuracy.

Evaluate for accuracy.

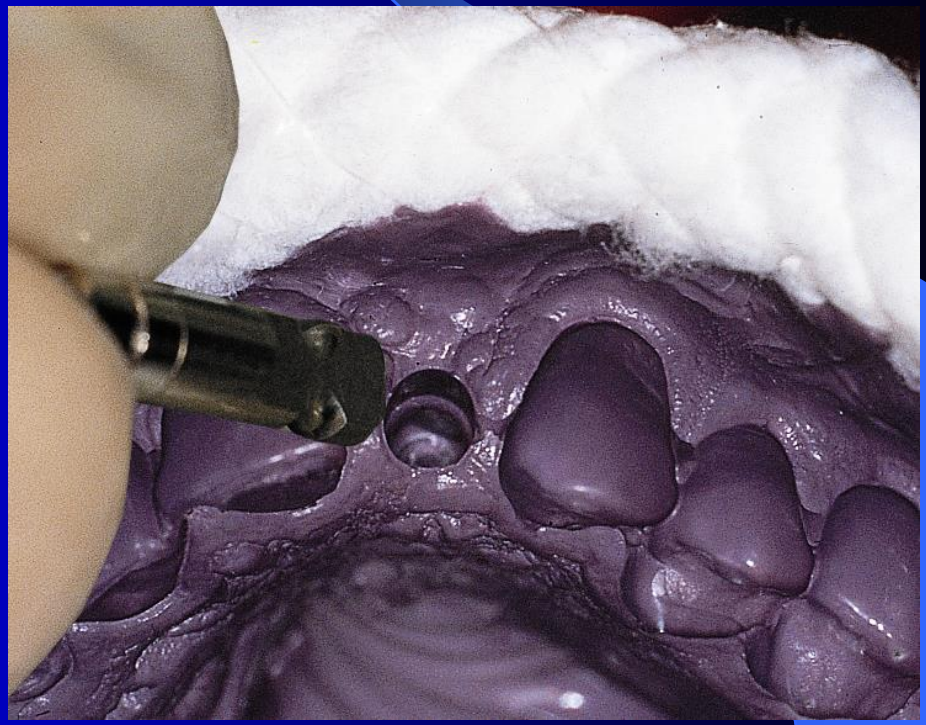
Closed Tray Impression Technique

Step 6: Remove the Impression Tray

Step 6-B) Remove impression post from the mouth.

Step 6-C) Reseat impression post into the impression, by attaching analog to the impression post.

IMPORTANT: Remove impression material from entering the hex screw hole.

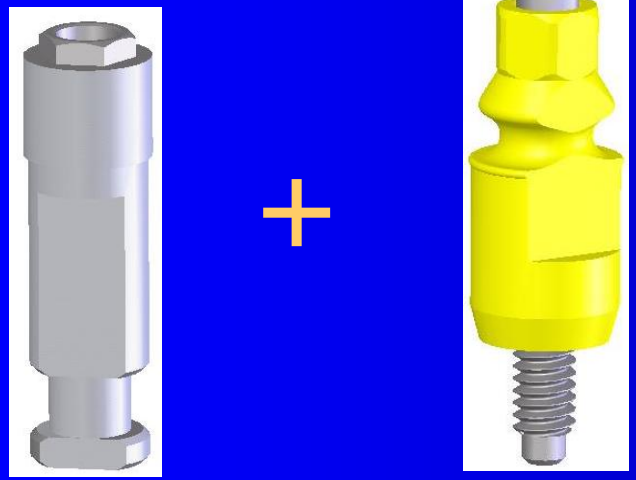


Impression post attached to analog.

Closed Tray Impression Technique

Step 6: Remove the Impression Tray

Step 6-C) Reseat impression post into the impression, by attaching analog to the impression post.



Impression post attached to analog.

Closed Tray Impression Technique

Step 7: Replace Healing Abutment

Secure healing abutment tightly into place. (Tighten by hand or with a 20 Ncm torque wrench).

Step 8: Send Impression to Laboratory

Include all impression components along with the appropriate models, bite registration, shade selection, etc.

Chairside Procedures & Guidelines

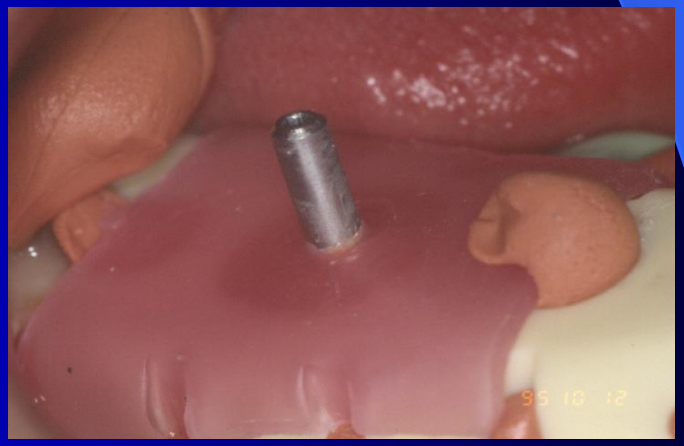
Impression Options and Guidelines

Three common impression techniques:

2. **Open tray (direct)**

Open Tray Impression Technique

- Impression coping making impression tray modified to allow screws to extend 2-3mm above the tray. Impression posts are locked into the impression.



Open Tray Impression Technique

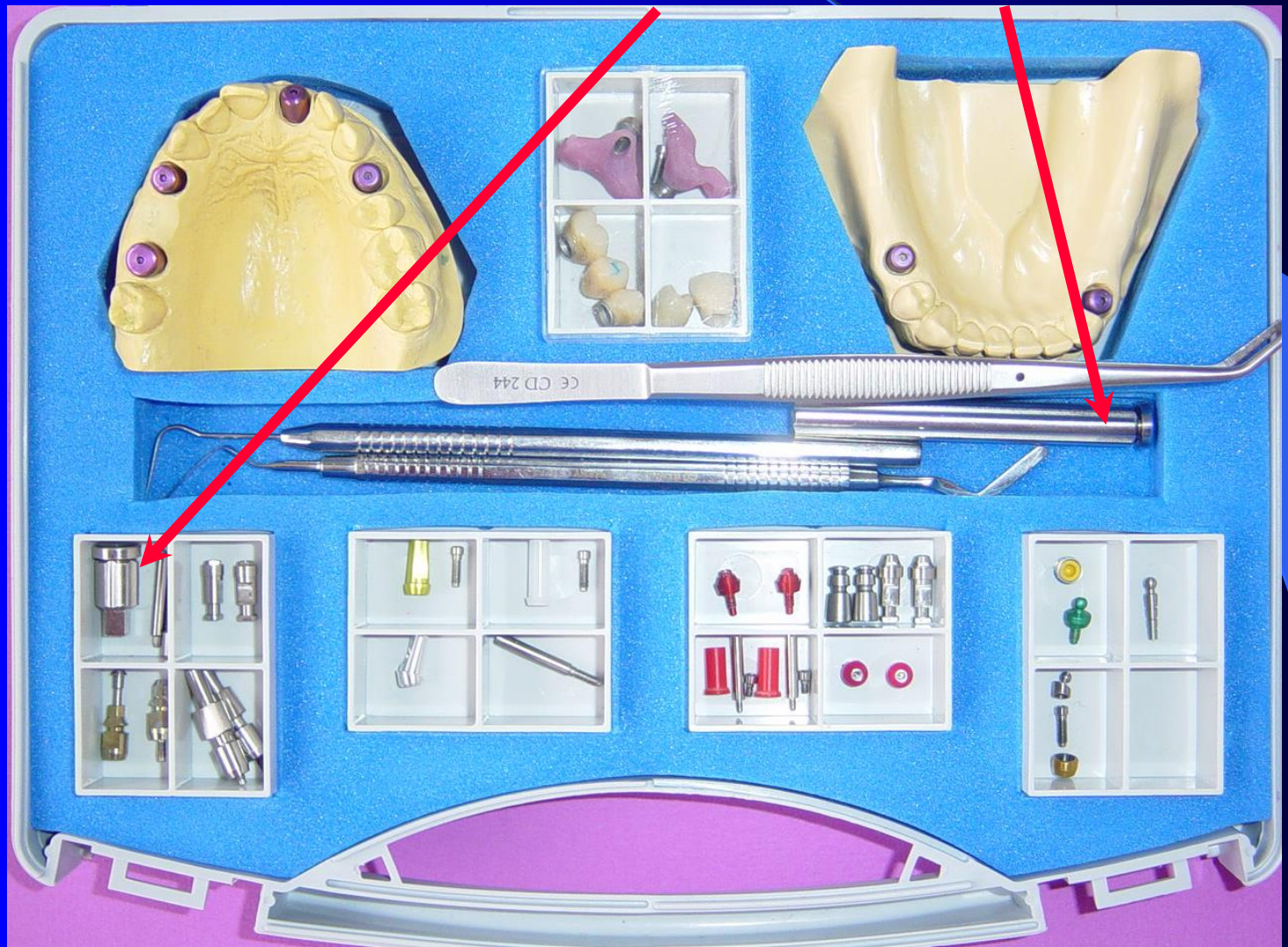
Advantages

- Less chance for error. Impression posts are not removed from the impression until the model is fabricated.
- Implants can be divergent from each other and/or adjacent teeth.
- Recommended when implants are > than 15° divergent.
- Implants are deeper

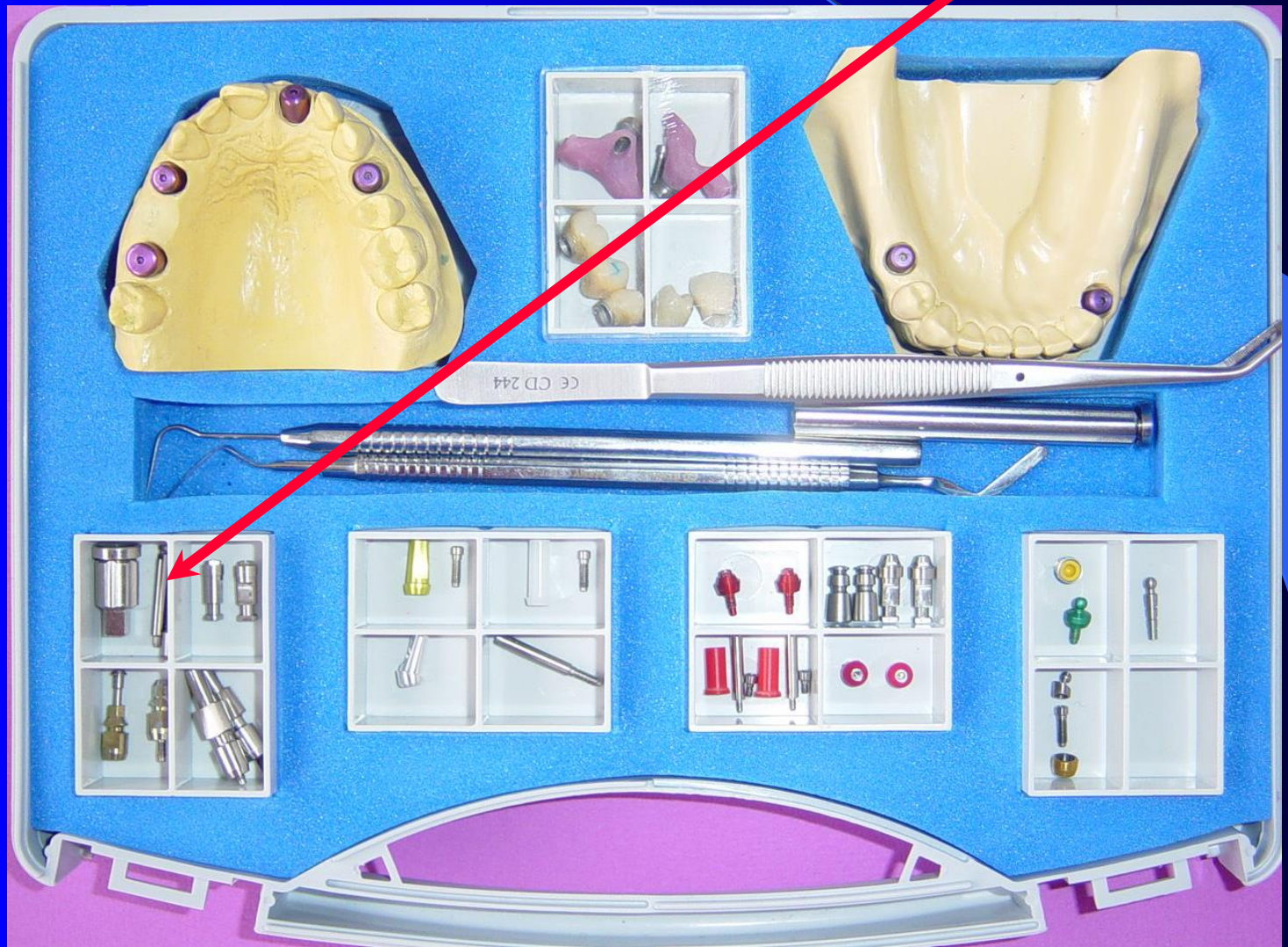
Disadvantages:

- Patient must have adequate vertical opening for the tall impression screws
- Necessity to use open impression tray or make it
- Once the impression material is “set,” it is difficult to quickly remove the tray if patient gags
- Impression coping time more importante

Choose short or long Hand driver



Use appropriate hex driver.

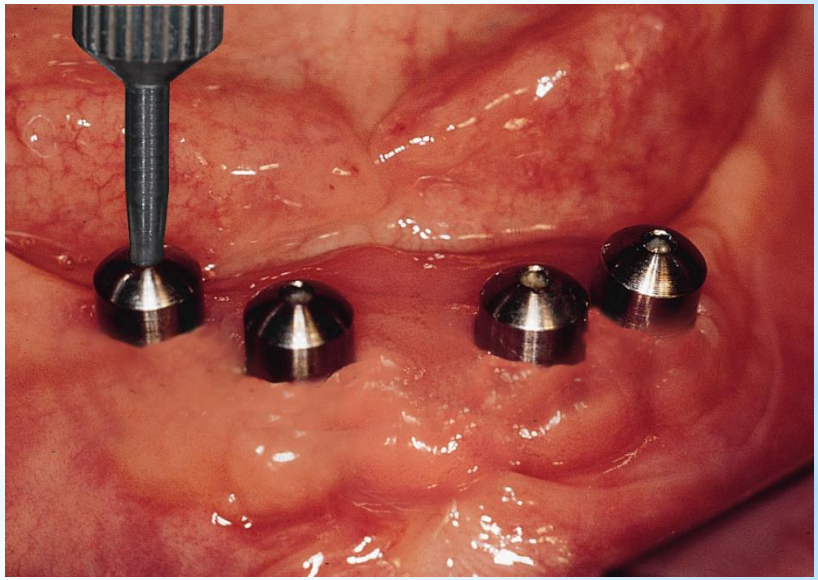


Use * appropriate hex driver. Most common hex driver size is 1.20 mm”.

Open Tray Impression Technique

Step 1: Remove Healing Abutment

Step 1-A) Use appropriate hex driver.



LIFECORE BIOMEDICAL

Closed Tray Impression Technique

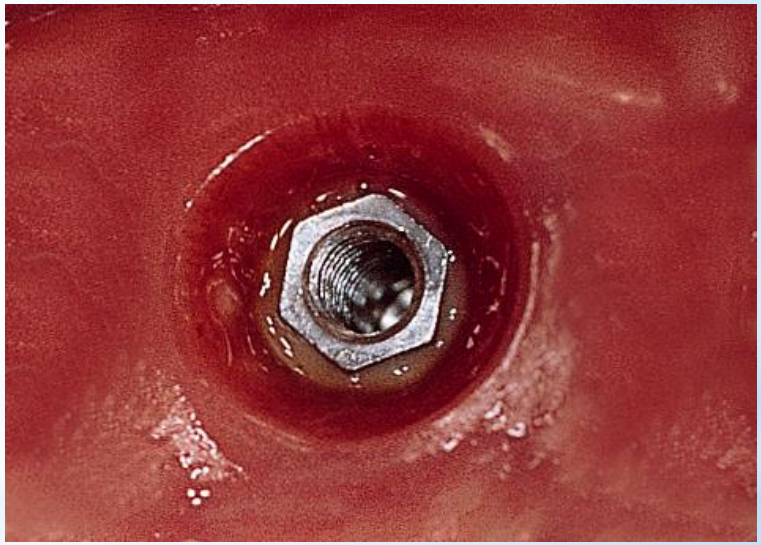
Step 2 Check for Tissue Invagination

Gently and slowly retighten the healing abutment.

- No discomfort …..Go to Step 3
- Discomfort ……..See below

Remove the excess tissue from the prosthetic table of the implant.

CAUTION: A blade can scratch the implant. Do not use an electrosurgery.



NOTE: Tissue on implant platform.

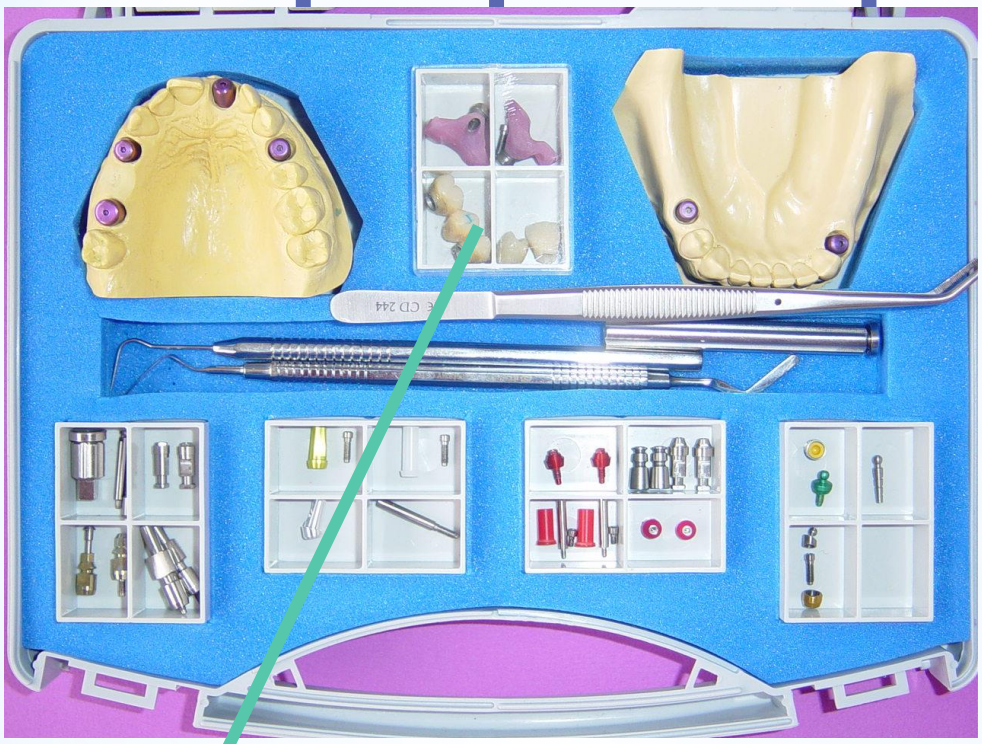
Open Tray Impression Technique

Step 3: Impression Post Placement

Step 3-A) Select the proper impression post.

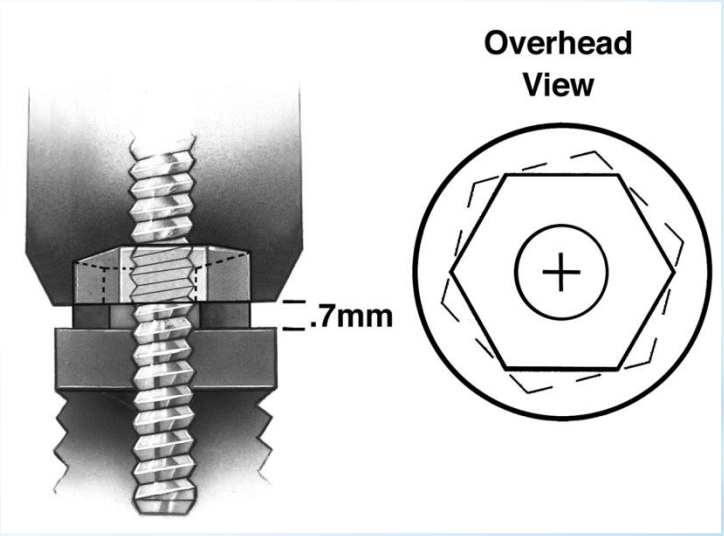
Two piece impression post.

Select the proper impression post



Open Tray Impression Technique

Step 3-B cont.) Seat impression post



Impression post is misaligned.

CAUTION: Do not over tighten. Impression post may not be completely seated. Take an x-ray to confirm.

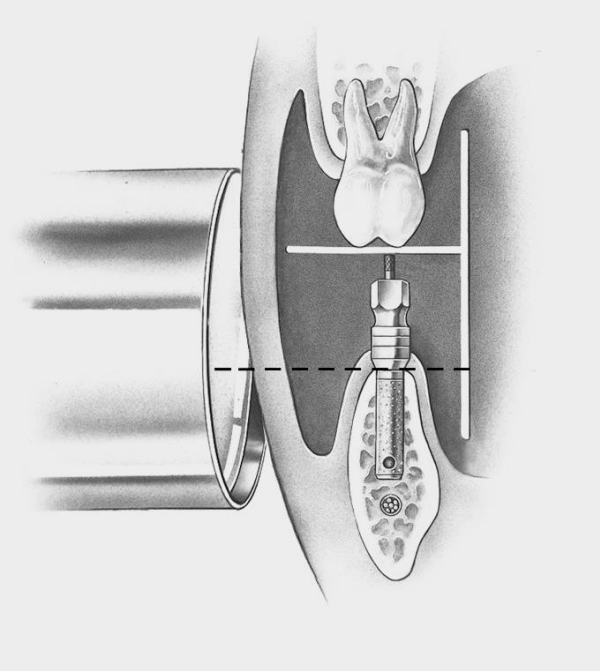
Refer to **Step 3: Take an X-ray**

Open Tray Impression Technique

Step 4: Take an X-Ray

Step 4-A) This is mandatory when seating of the impression post can not be visually confirmed.

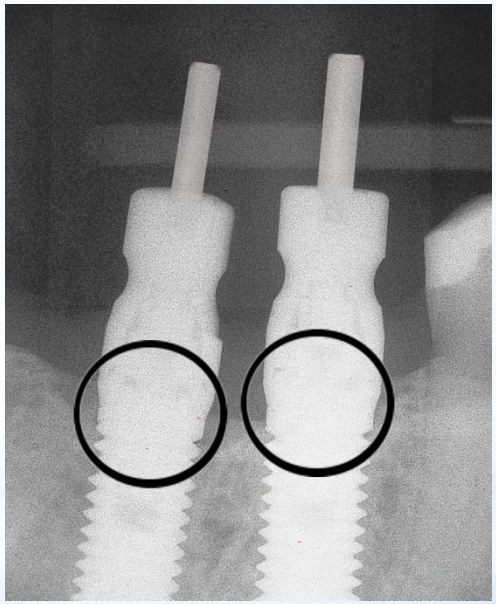
Position the x-ray tube to be perpendicular to the interface of the impression post and implant.



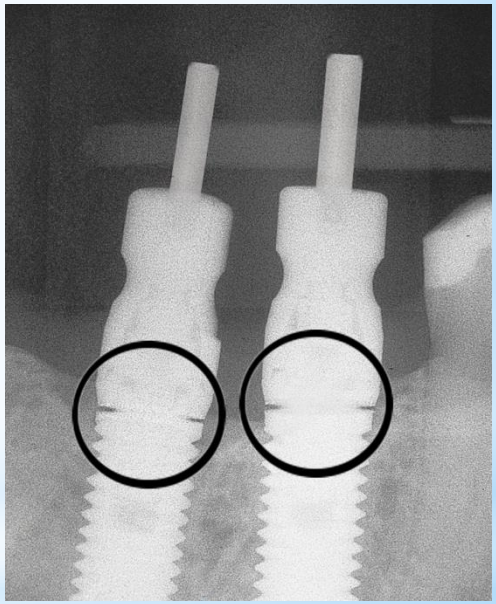
LIFECORE BIOMEDICAL

Open Tray Impression Technique

Step 4 cont.) X-Ray must confirm a complete seat.



Impression post completely seated.



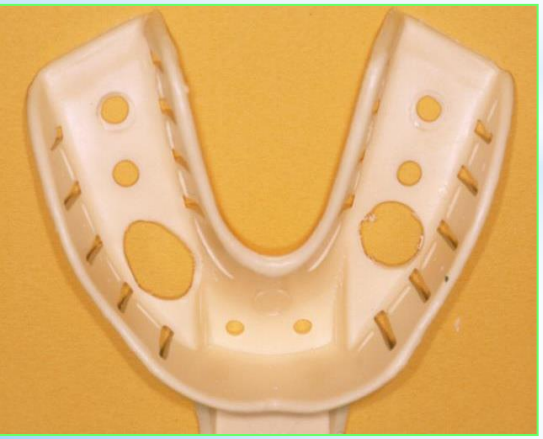
Impression post not completely seated.

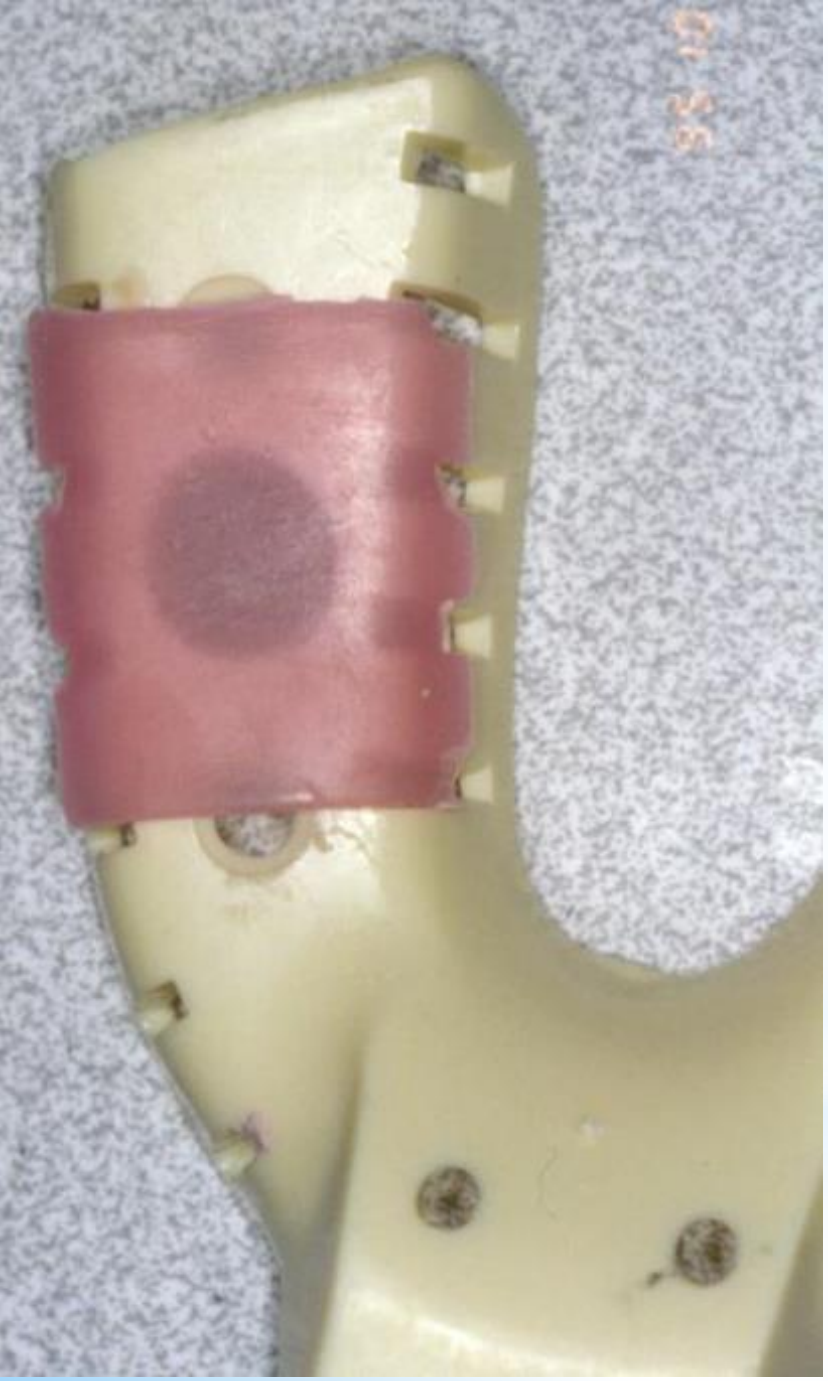
Open Tray Impression Technique

Step 5: Take the Impression

Step 5-A) Cut the tray.

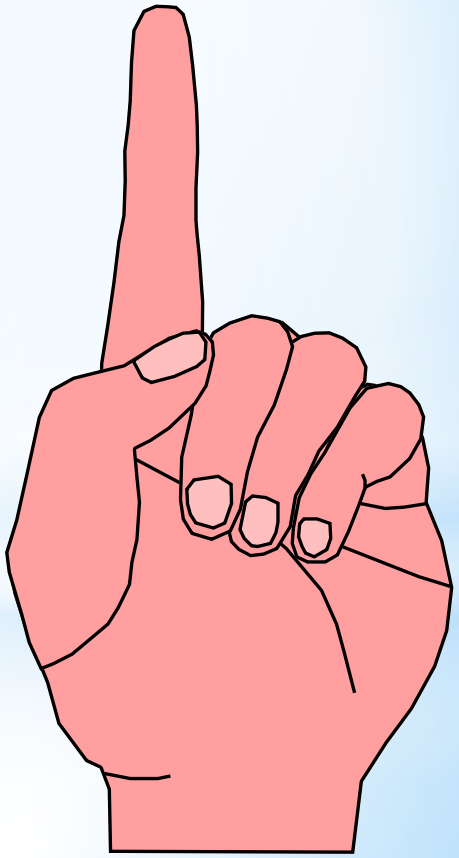
Step 5-B) Try the tray





Step 5 cont: Take the impression

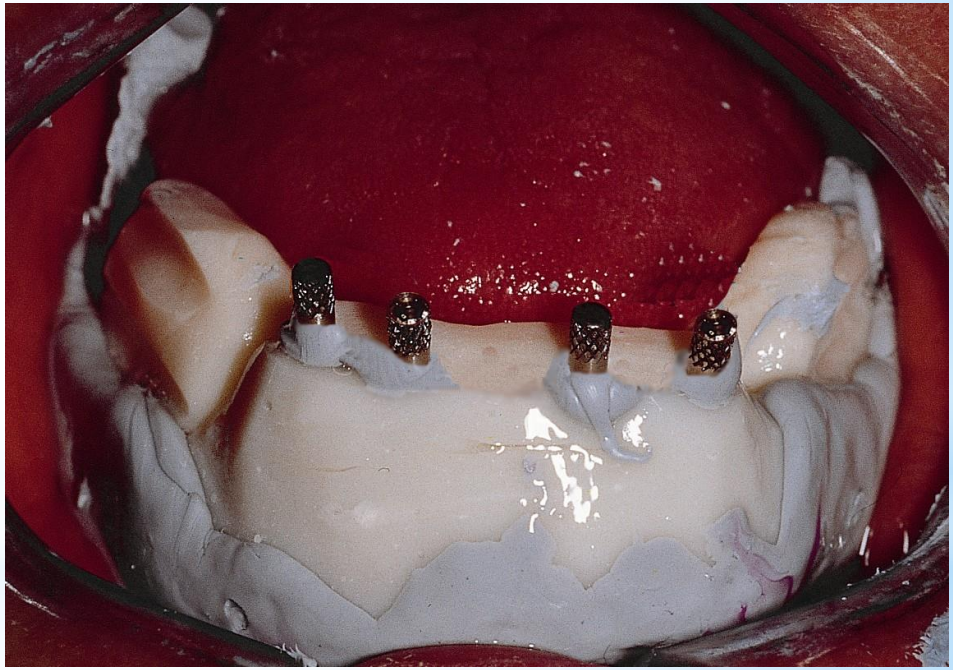
step 5-C) Close holes of tray



Open Tray Impression Technique

Step 5 cont: Take the Impression

Step 5-D) Syringe the material around the impression posts and seat the impression tray.

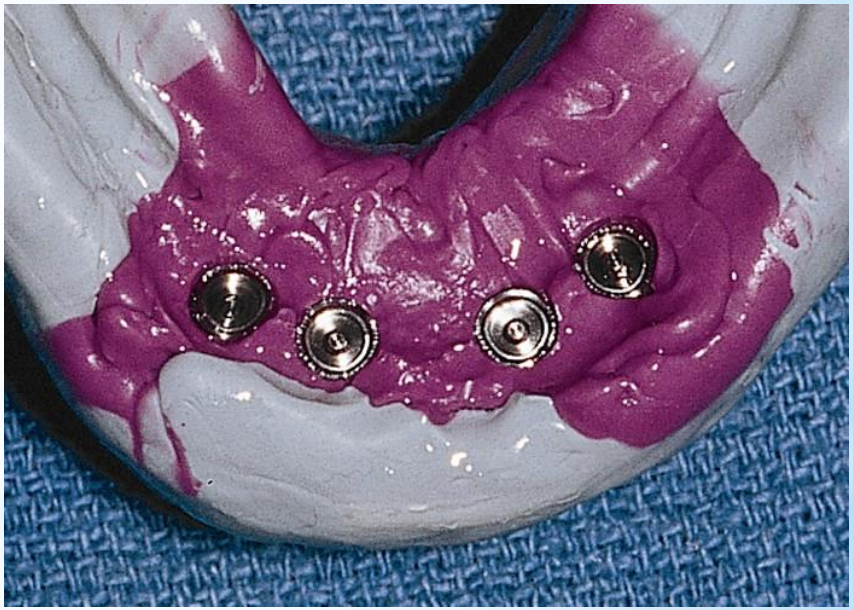


Open Tray Impression Technique

Step 6: Remove the Impression Tray

Step 6-A) Unscrew the impression post retaining screws and remove impression tray.

Step 6-B) Evaluate the impression for accuracy.

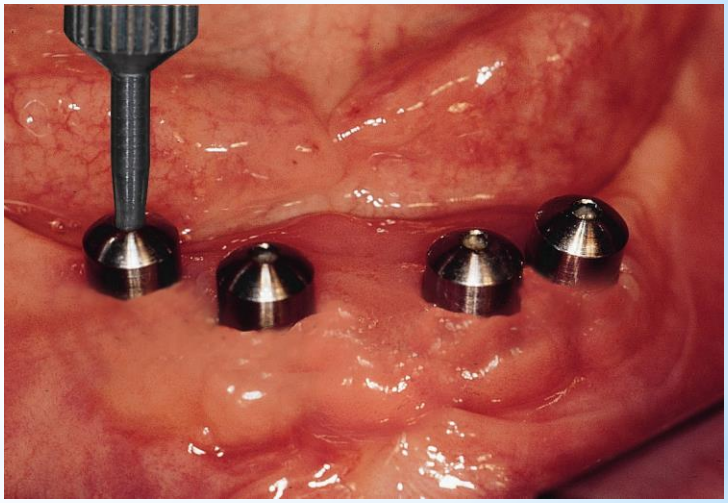


Evaluate for accuracy

Open Tray Impression Technique

Step 7: Replace Healing Abutment

Replace each healing abutment into the appropriate implant site. (Tighten by hand or with a 20 Ncm torque wrench).



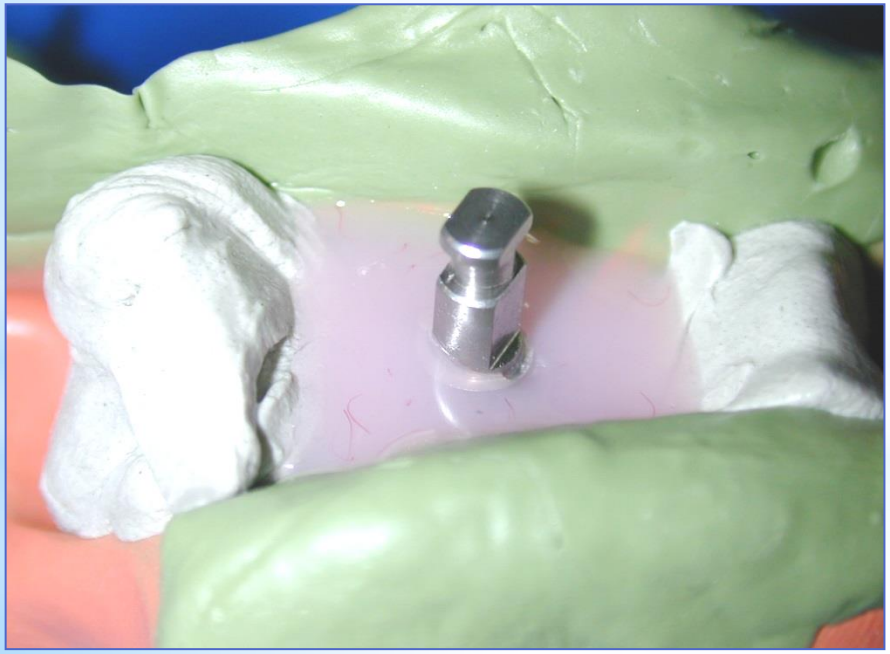
Step 8: Send Impression to Laboratory

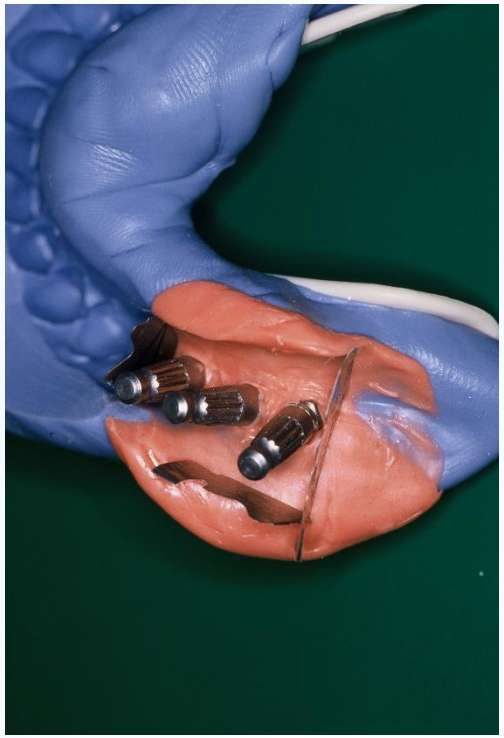
Include all impression components along with the appropriate models, bite registration, shade selection, etc.

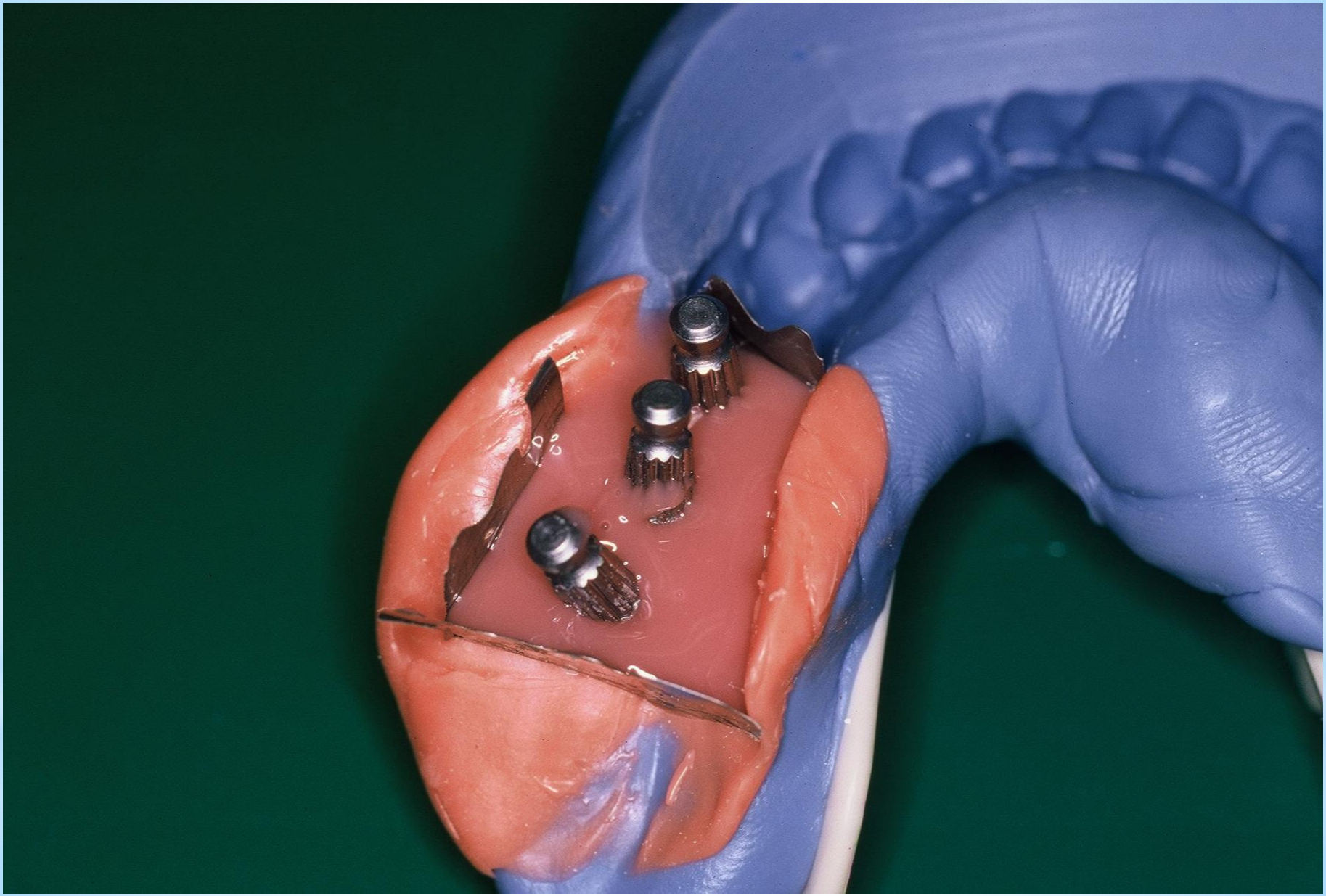
Laboratory specificities*

1 – Use soft gum*

TIP: **If this is a crown or bridge case where aesthetics are critical, request that a "soft-tissue" model be constructed.**

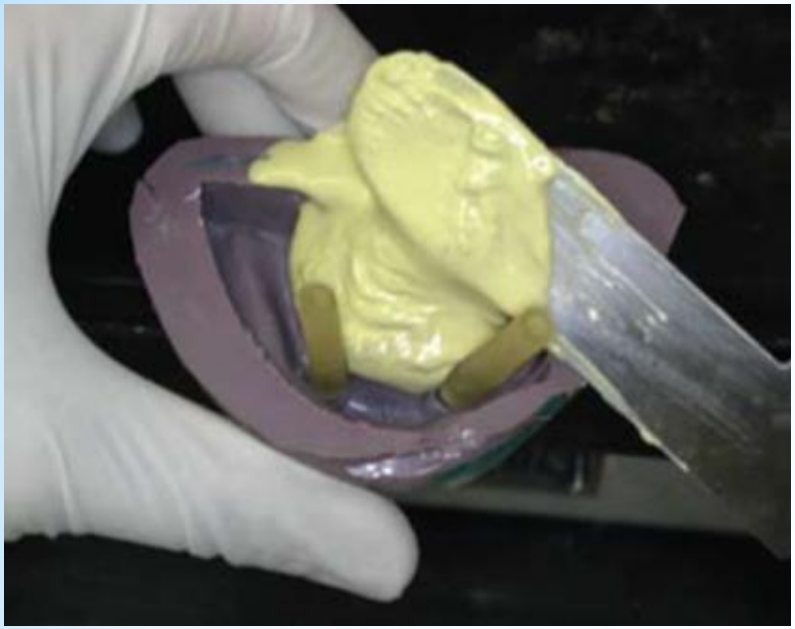


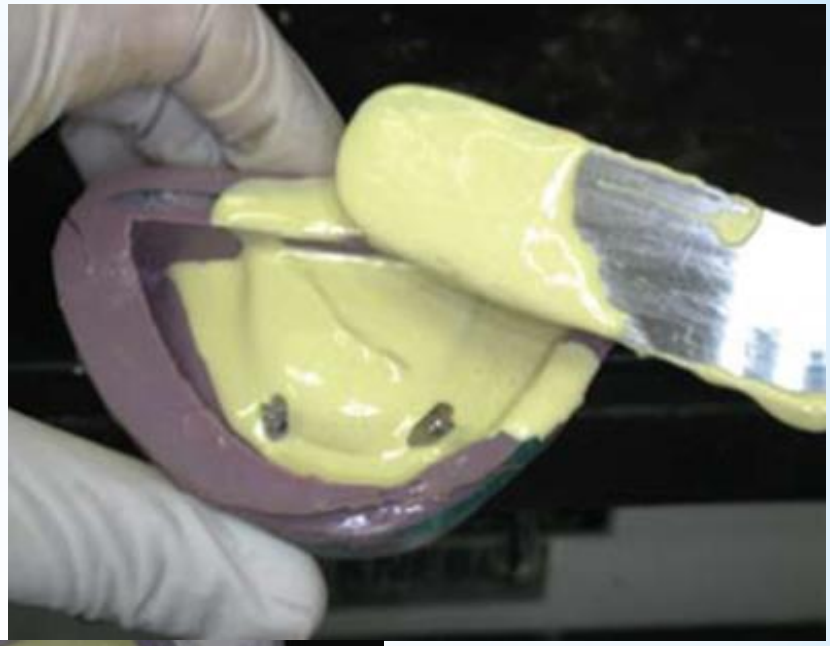


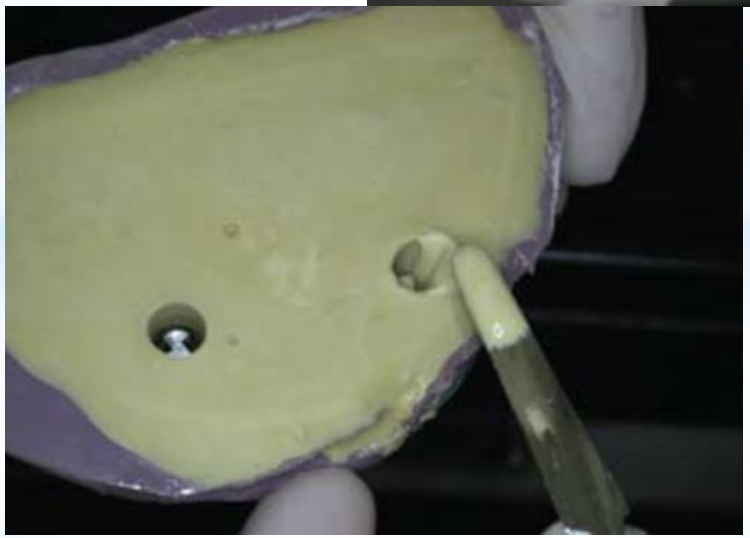


* Methods of pouring the dental implant

* There are two ways to pour the impression:-
* 1- The conventional way that always used
* 2- The second method by using latex tubes around the implant analog
* Then remove the latex tubes after initial setting of stone and fill the space created by the tubes.

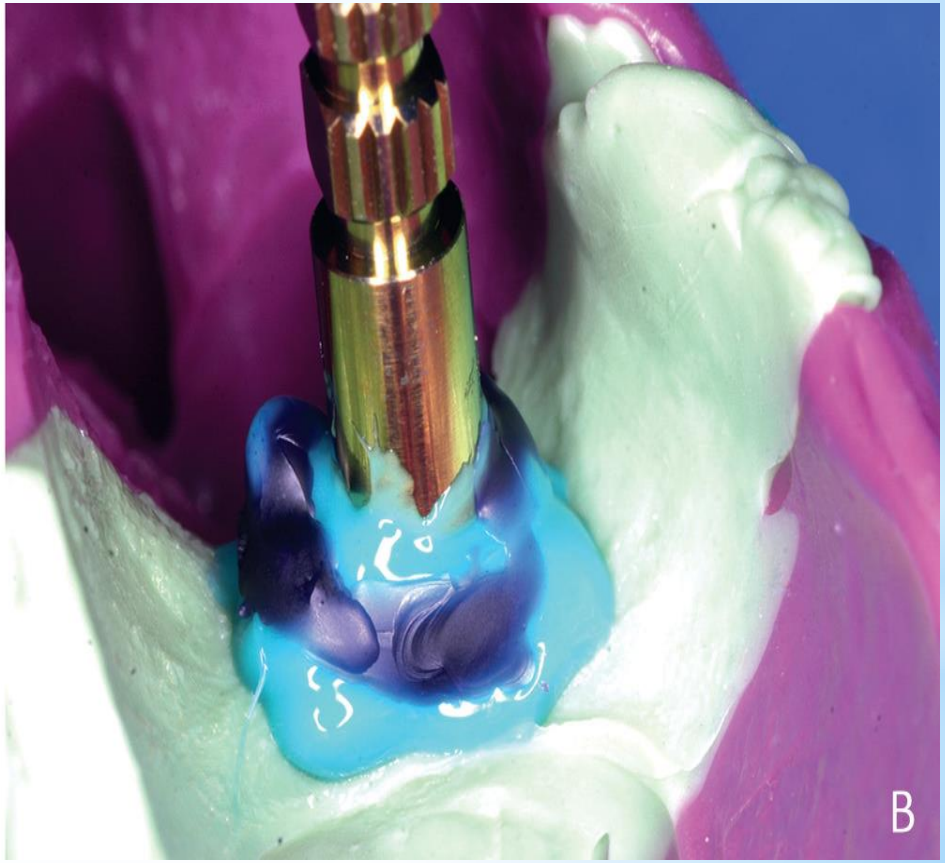




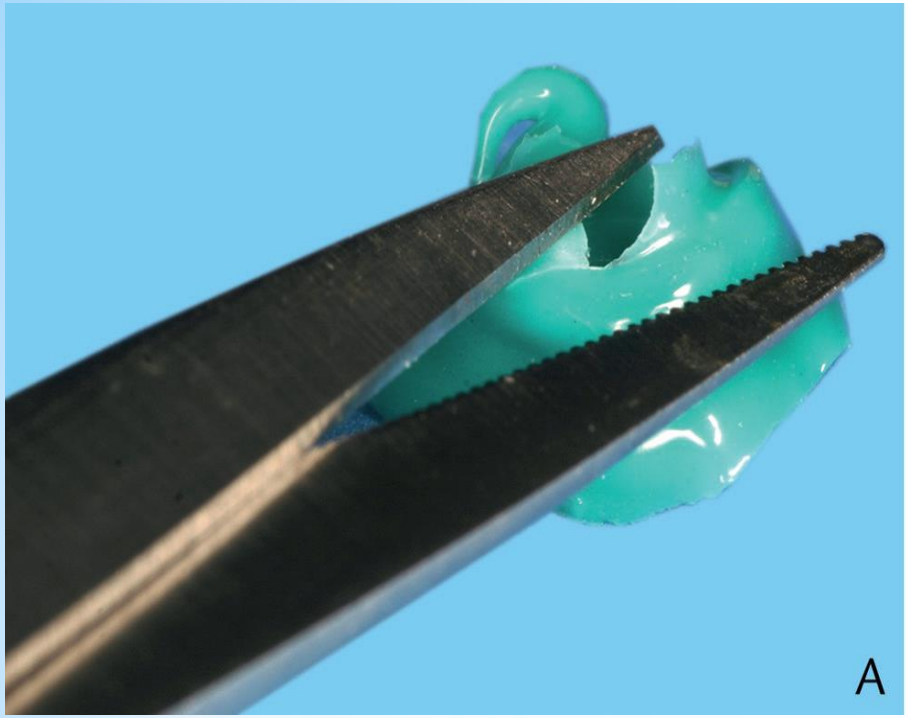


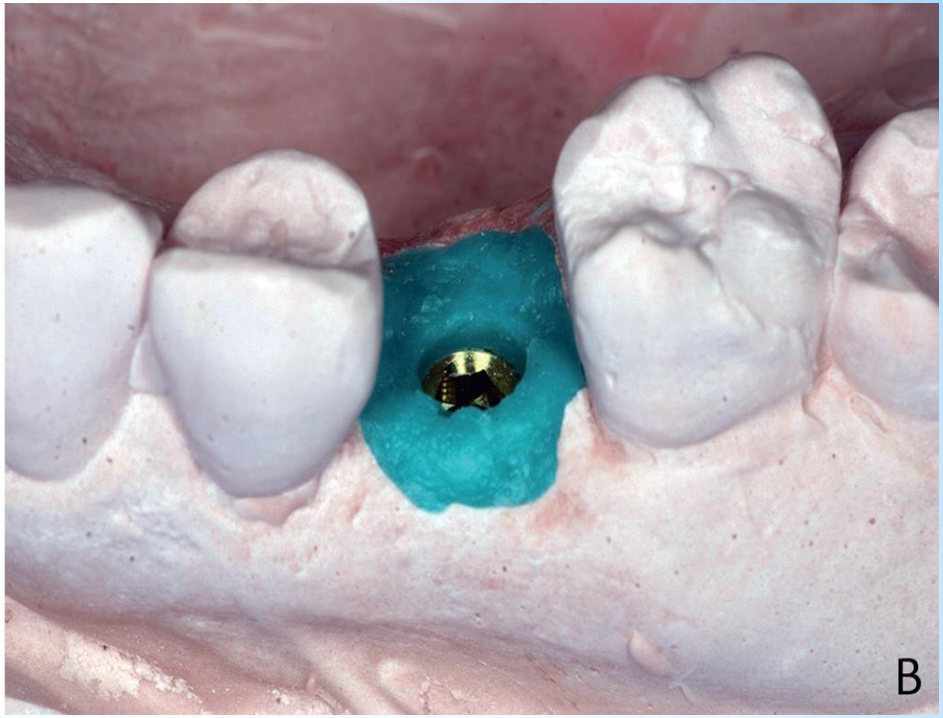
A technique to improve the fit of a soft tissue replica on a definitive cast *

It should be used when the implant is placed below the gingival level *



A, Low-viscosity PVS material injected around junction of analog and impression coping. B, Cover irregular area with wax. PVS, polyvinyl siloxane.





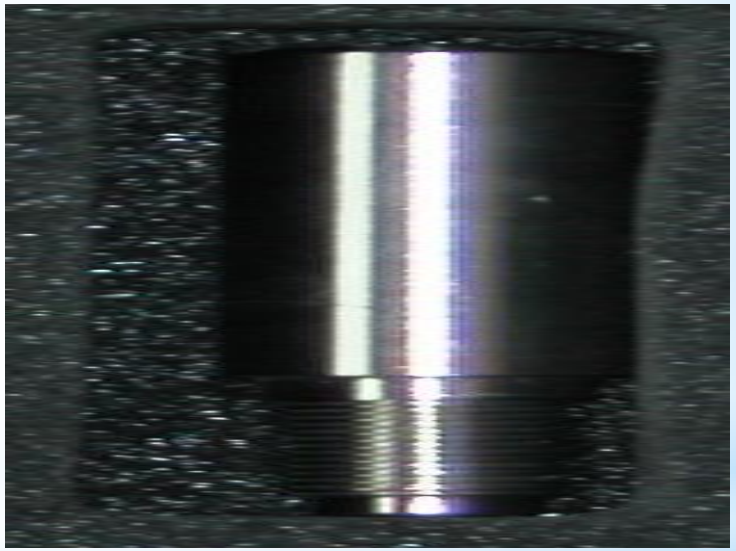
* A, Thin apical edge trimmed.
B, Soft tissue replica fitted on cast.

Laboratory specificities*

2 - Model **no** divide (perfec vity)*

Laboratory specificities*

*3 - **Give laboratory screw to your technician**



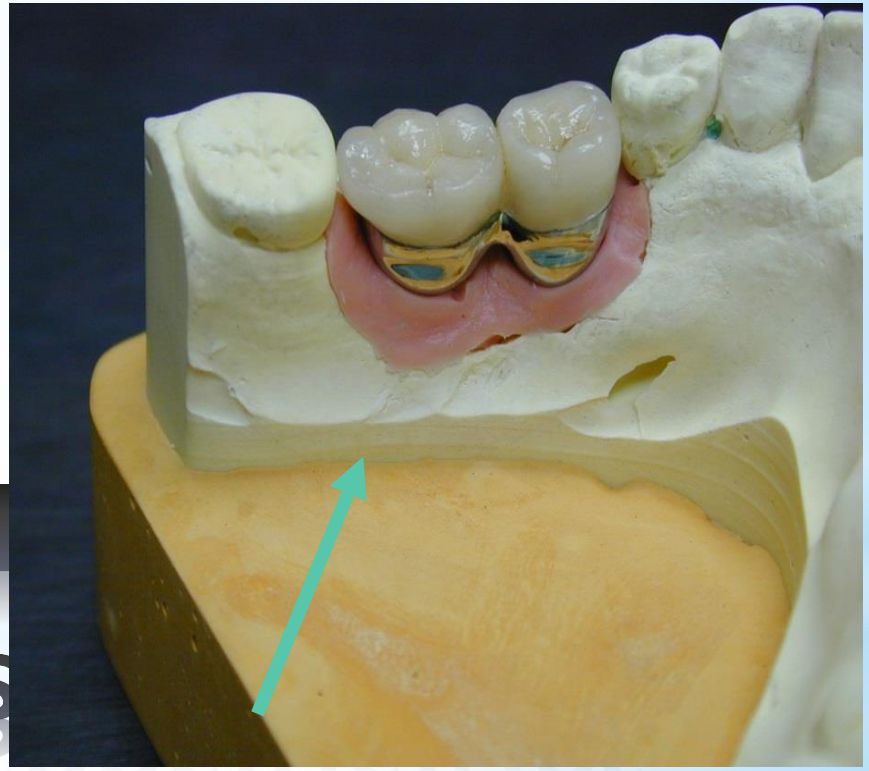
Laboratory specificities*

*4 – Mirror polishing of gingival part

*Laboratory specificities

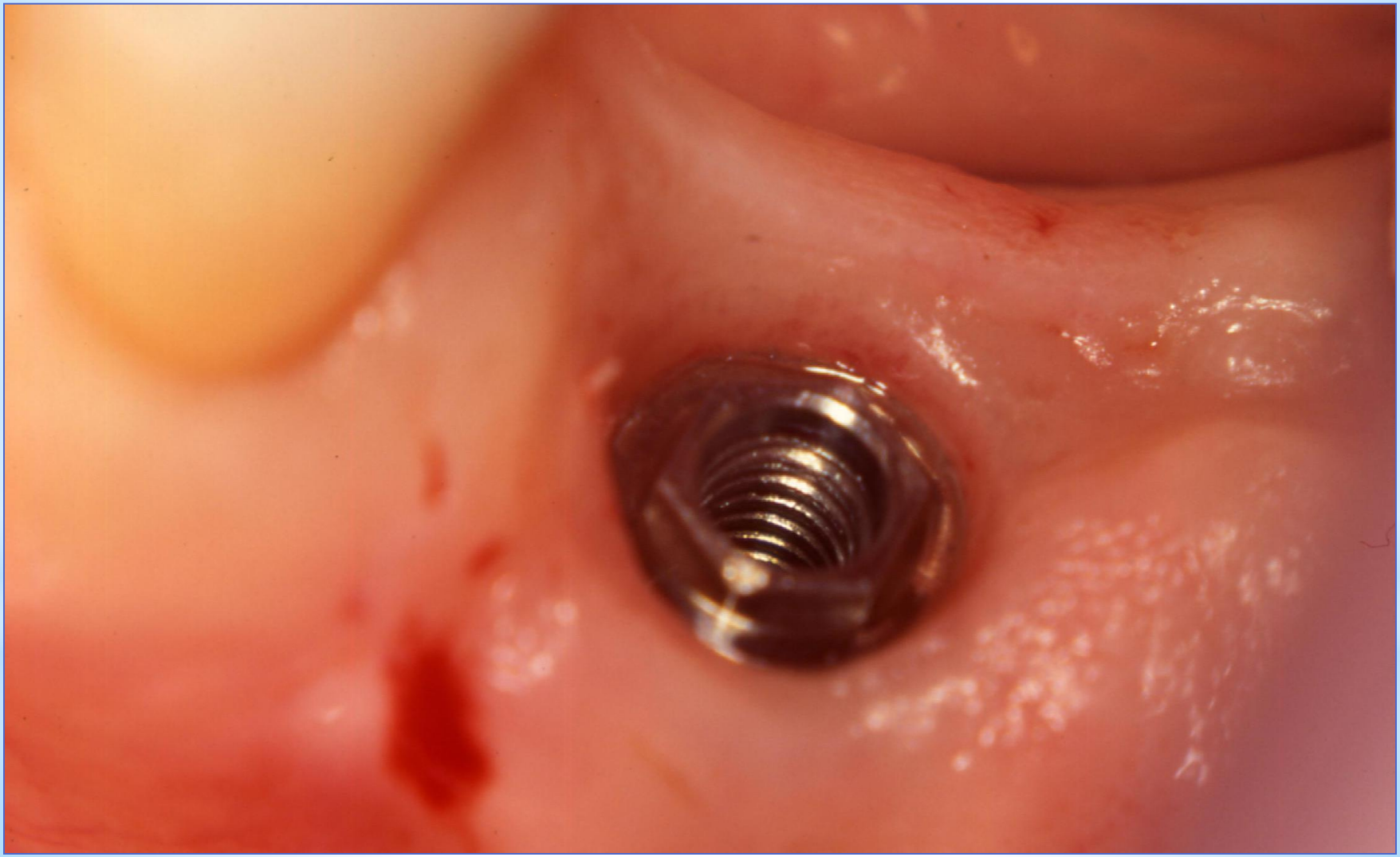
*5 – Make a repositioning key

*6 - Make a notch to work prostheses free

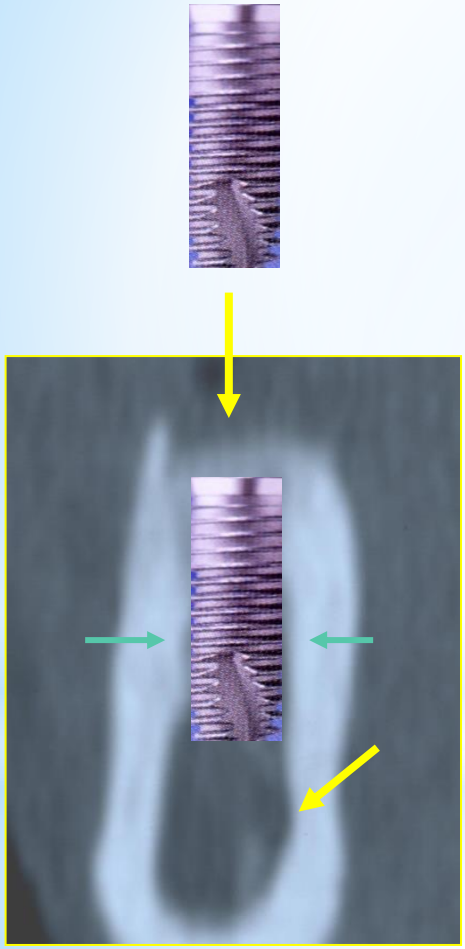


CLINIC CASES

Replacement of Mandibular Molar

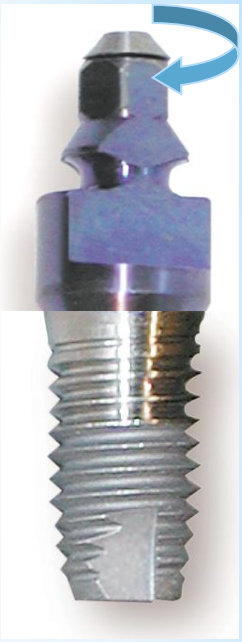


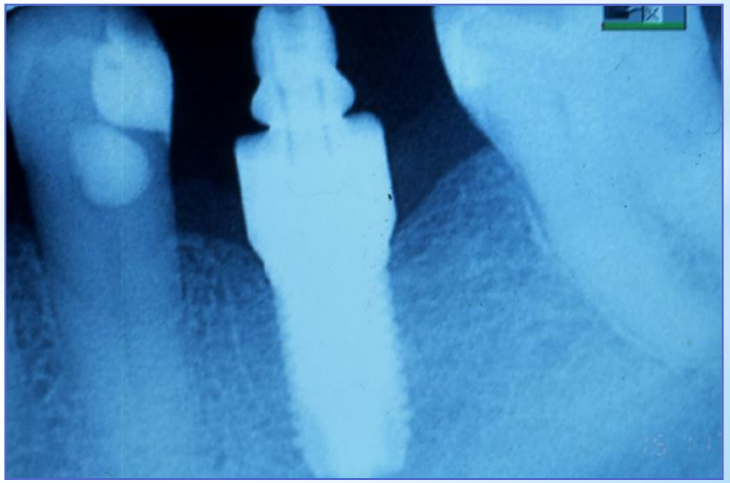
Vertical volume bone is in protheses axis



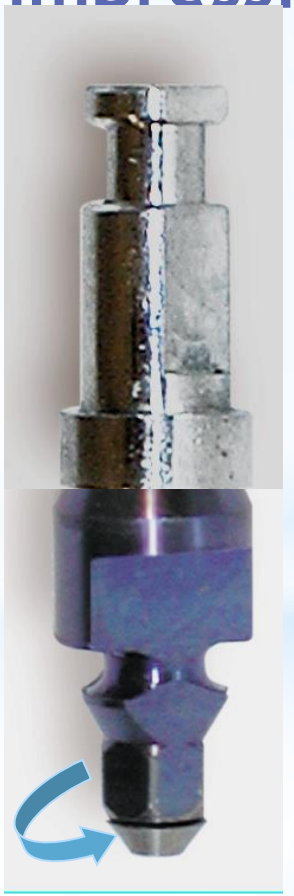
Bi-cortical cramping is possible possible

Put impression coping (closed tray) onto implant

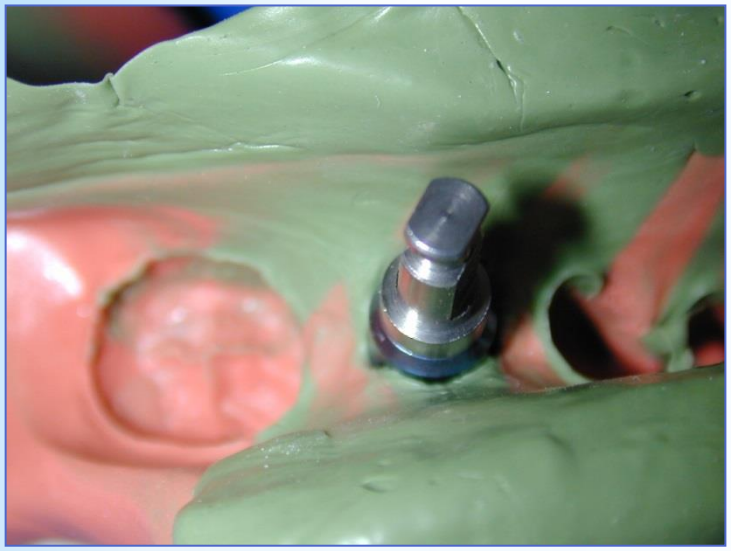


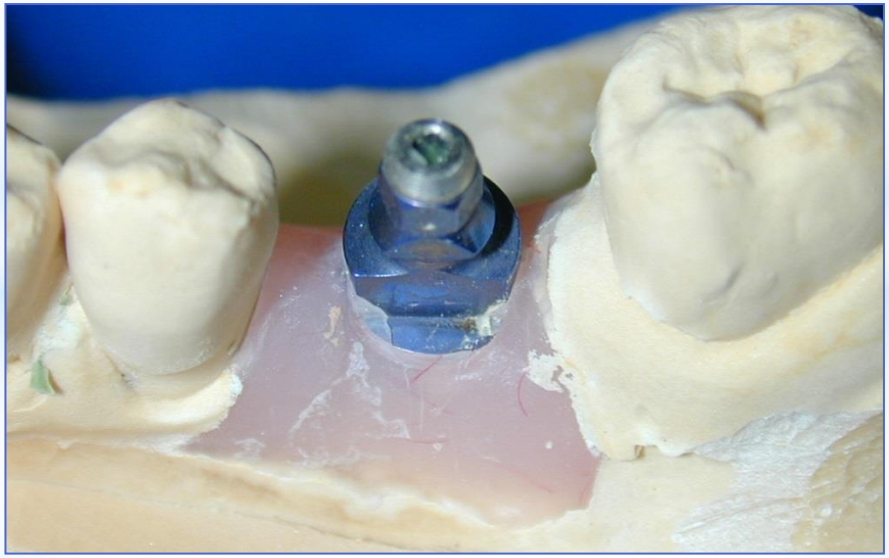


Impression coping making with classic impression tray. Analog attached to impression post and seated back into the impression



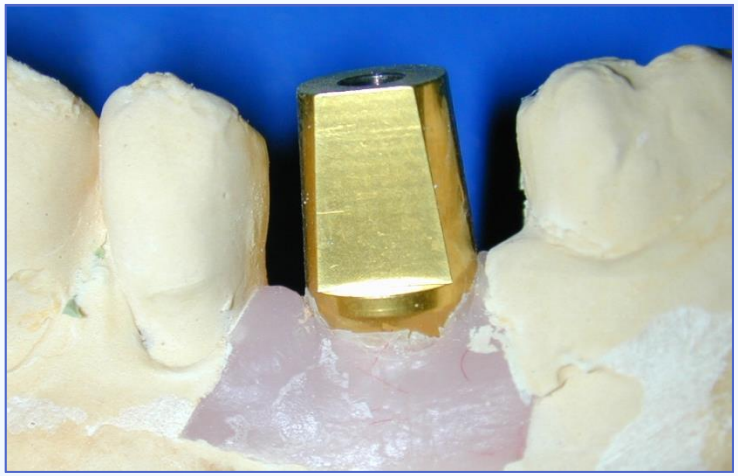
Casting of model

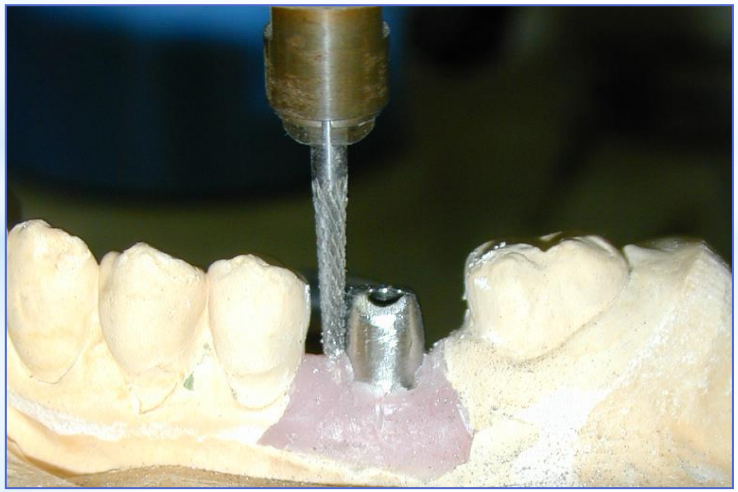




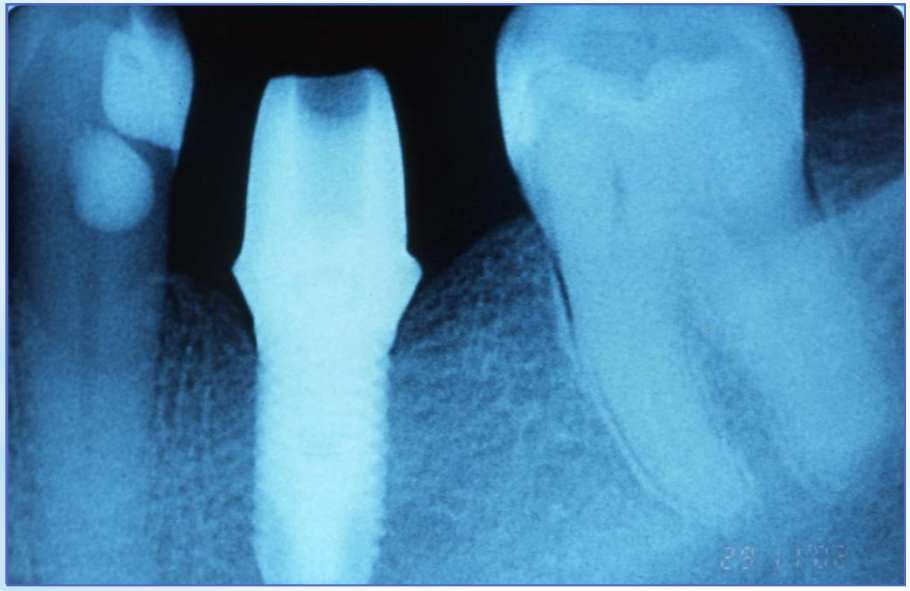
Implant is in prostheses axis

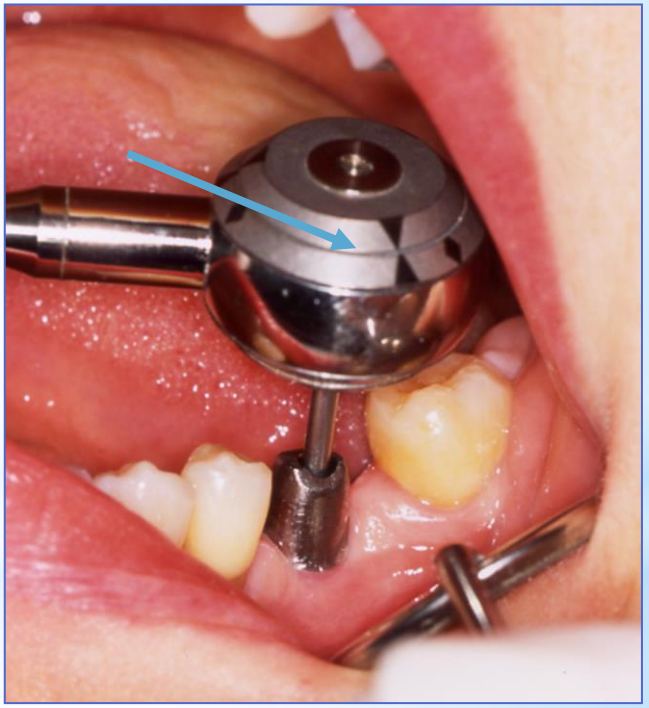
Used titanium aesthetics abutment



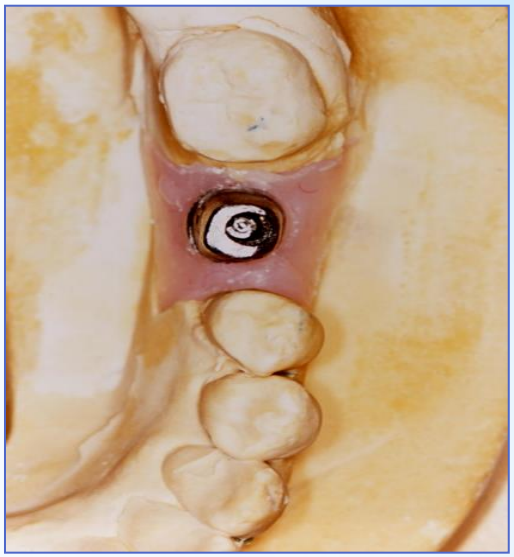


With Tin treatment

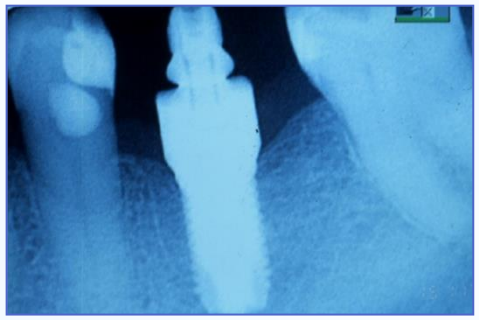


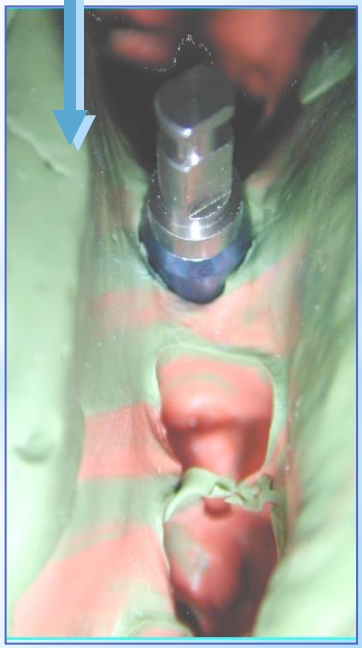


Used torque Wrench and tightening to 20 Newtons



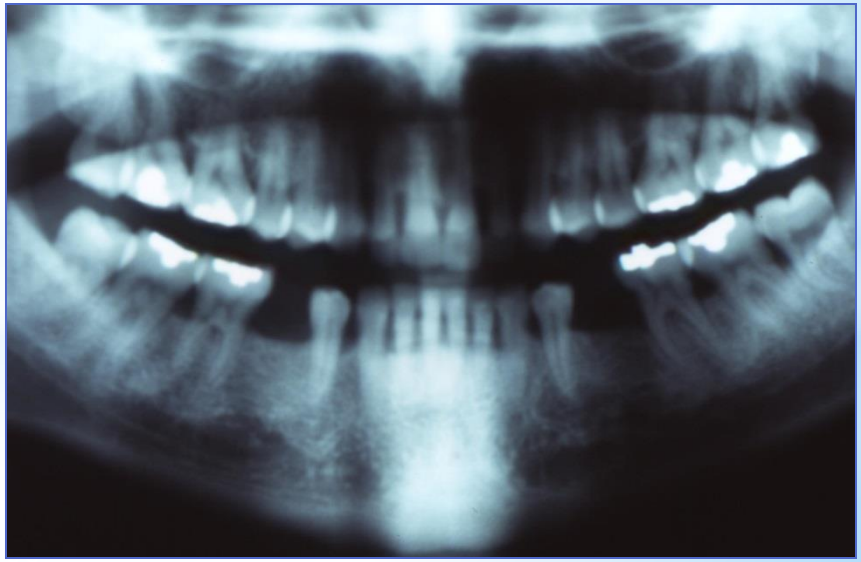
TO RESUME



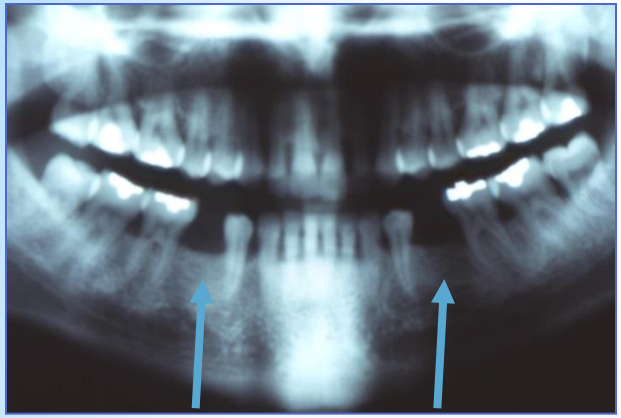


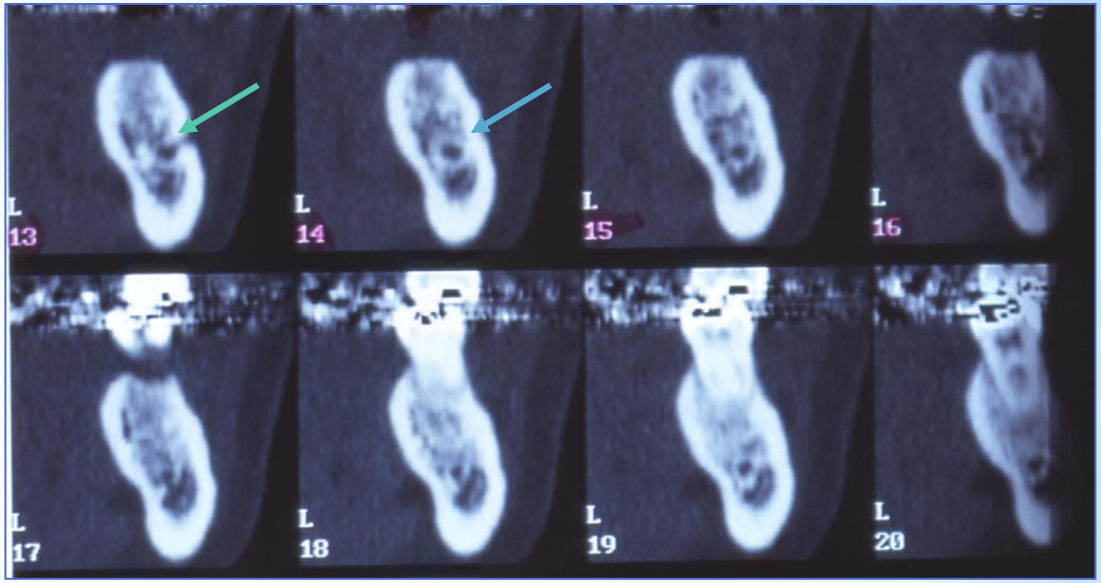
AGENESIES of 2 Mandibular premolars

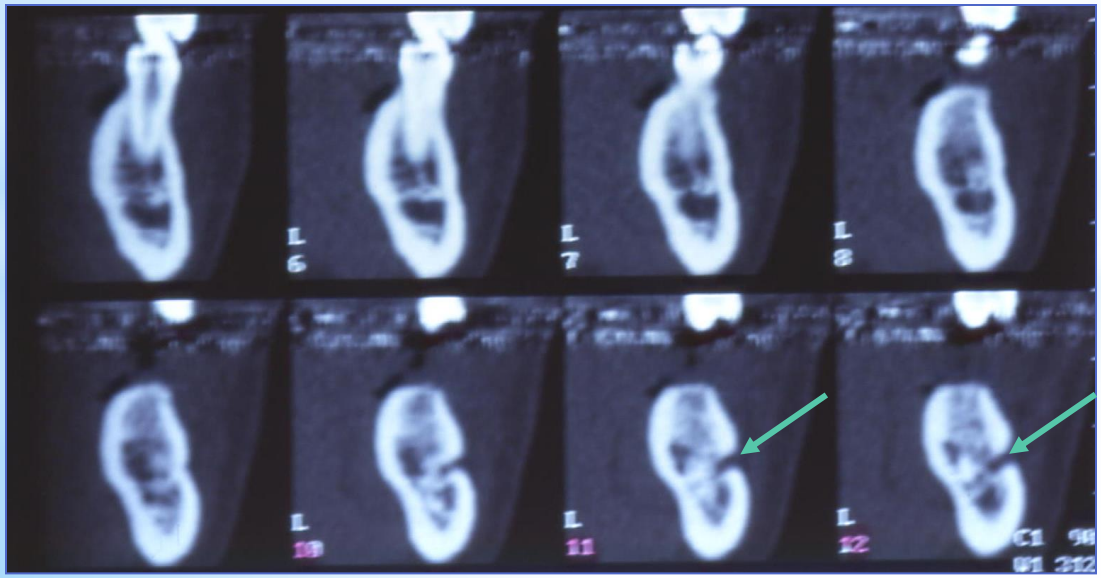
Women 25 ans



Implantation area near chin holes



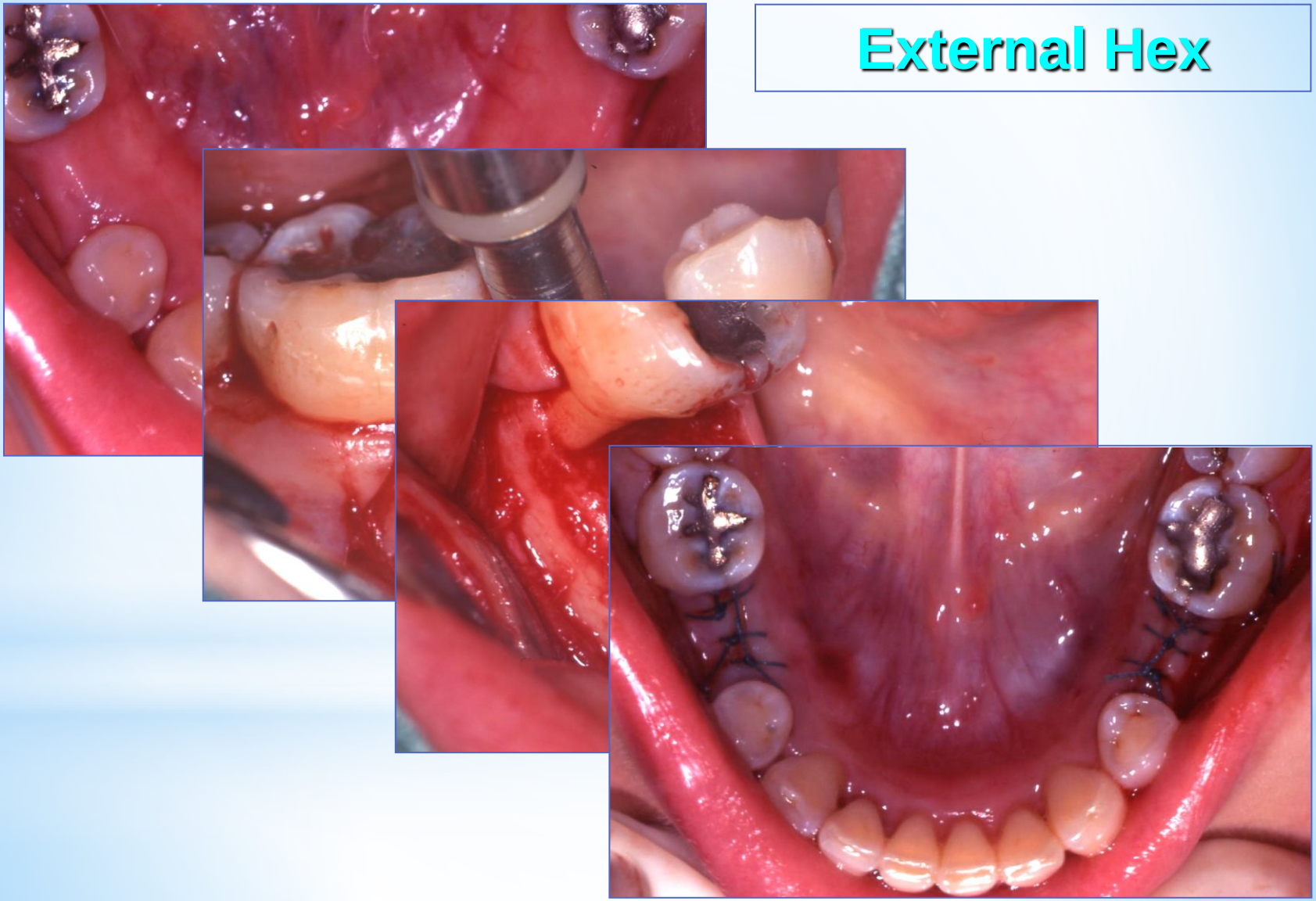


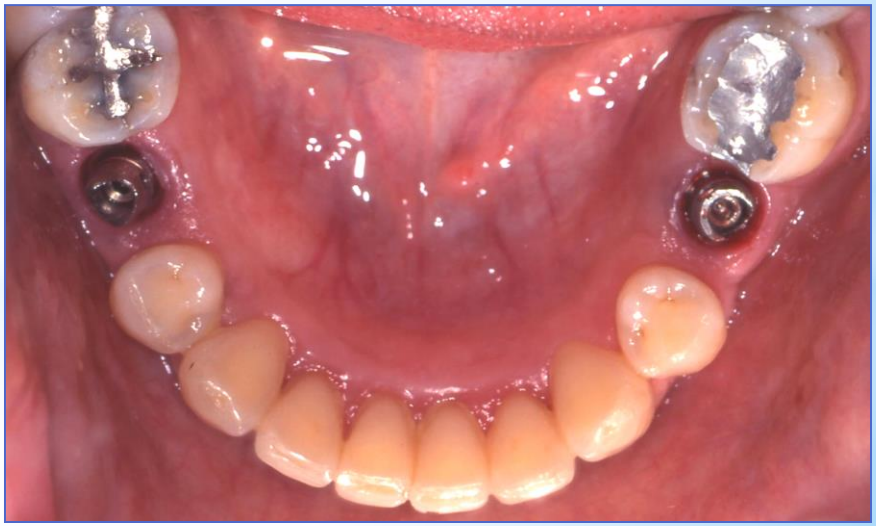


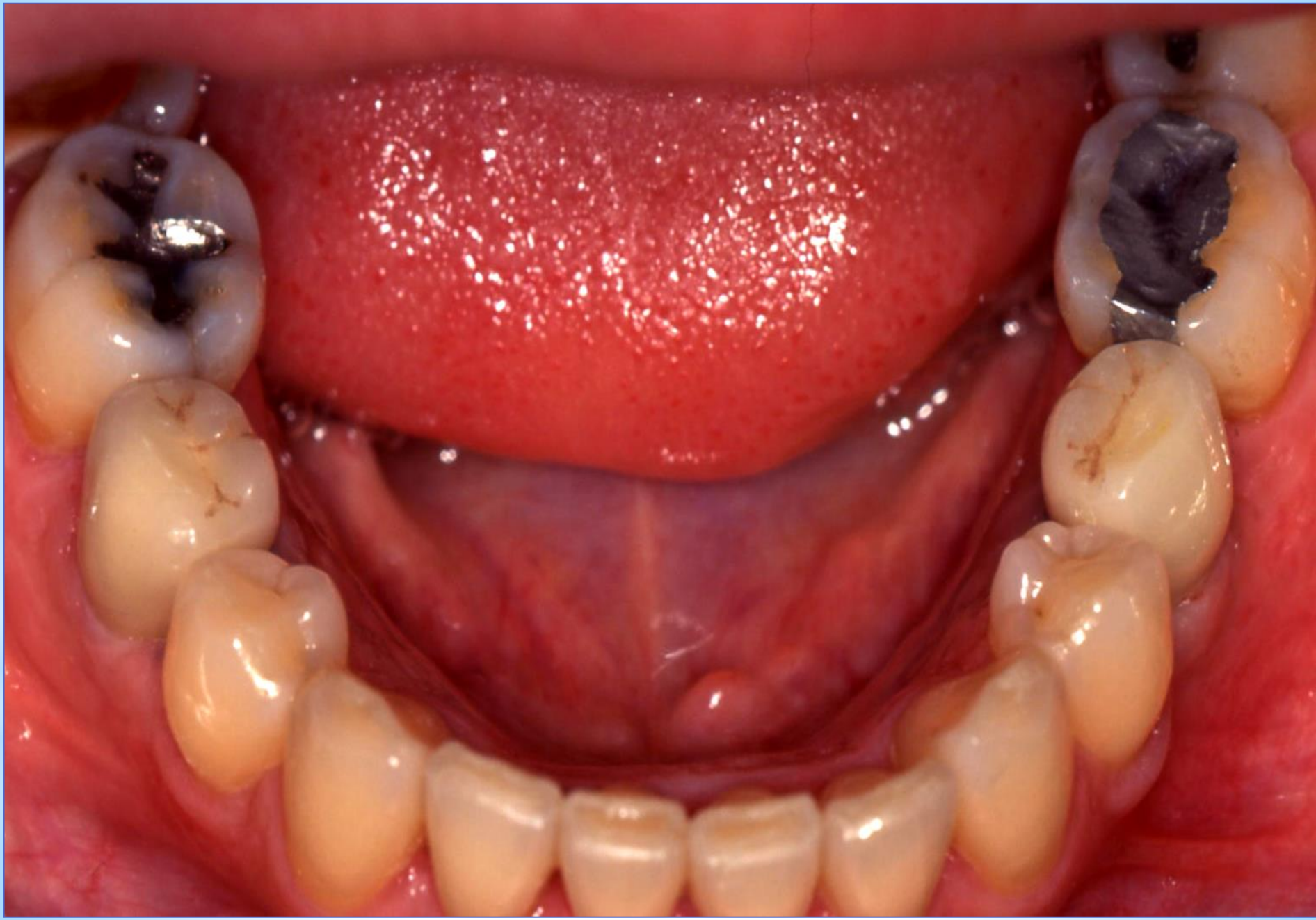
Possibilitiy to put implant 4,75 mm diameter and lenght 8,5 mm

2 implants RIME 4,75 mm diameter

External Hex







Some of modification

1-Splint and verify the accuracy of implant impression copings with light polymerizing acrylic resin

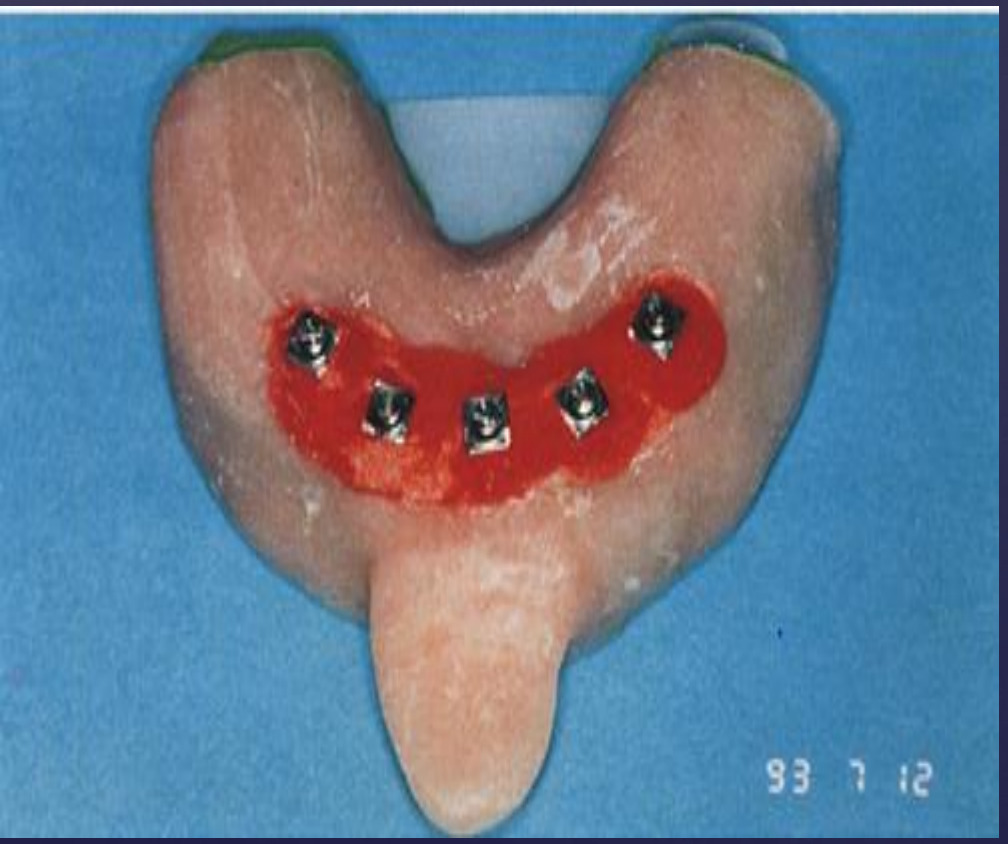
splint with light polymerizing acrylic resin

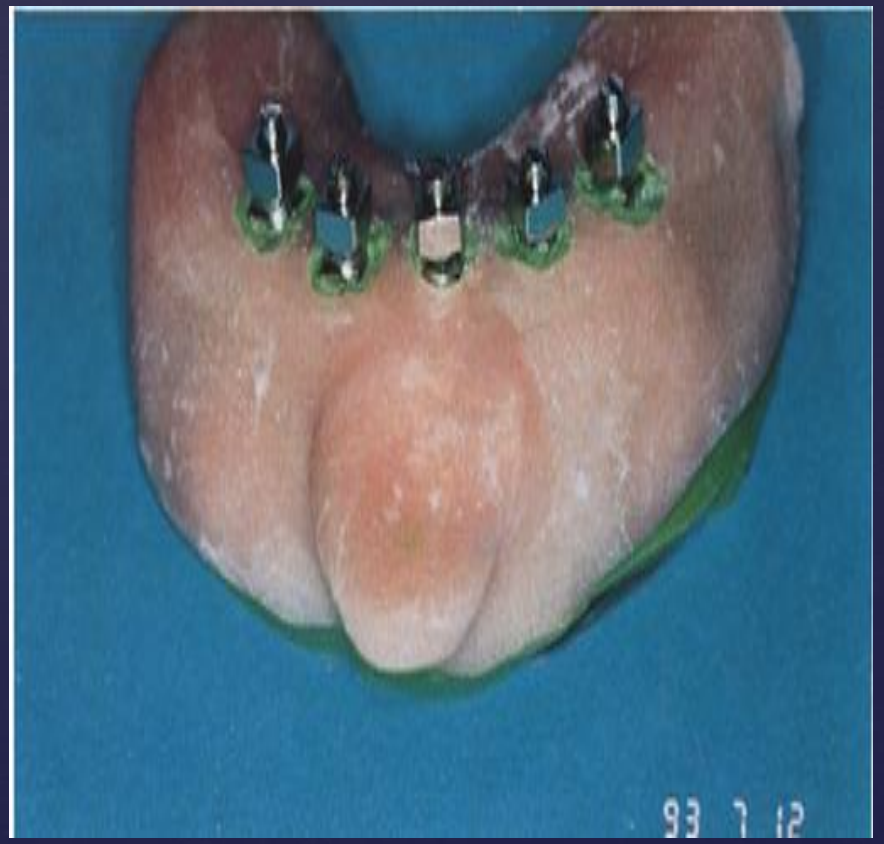
3 Light-polymerizing acrylic resin strip adapted to impression copings.

4 Polymerization of splint.

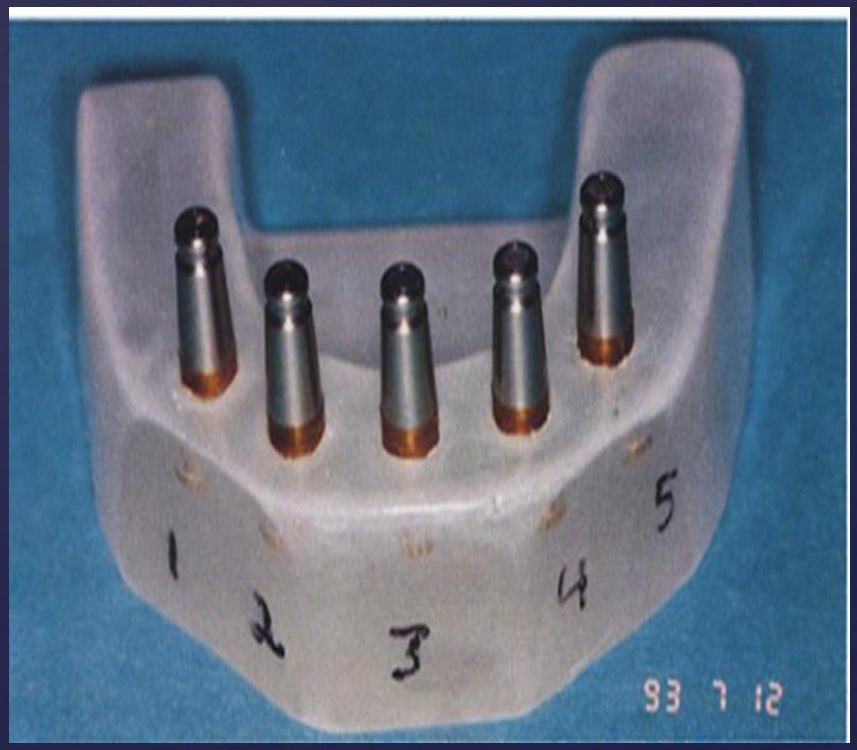
2-An impression technique is proposed for construction impression that uses a modified auto polymerizing resin custom tray to allow splinting

of the impression copings directly to the tray..





The splinted section containing the copings is separated from the tray with an acrylic bur, thus providing an index to verify the accuracy of the impression and the working model



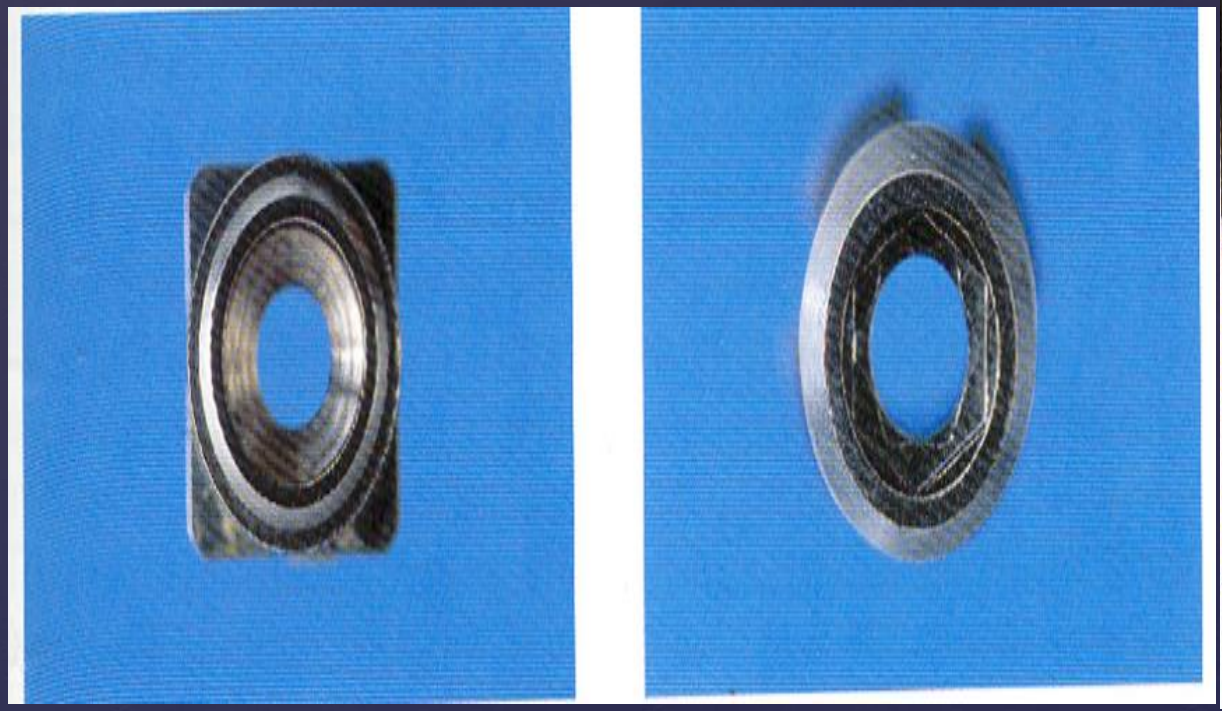
Impression Techniques For Implant Retained Overdenture

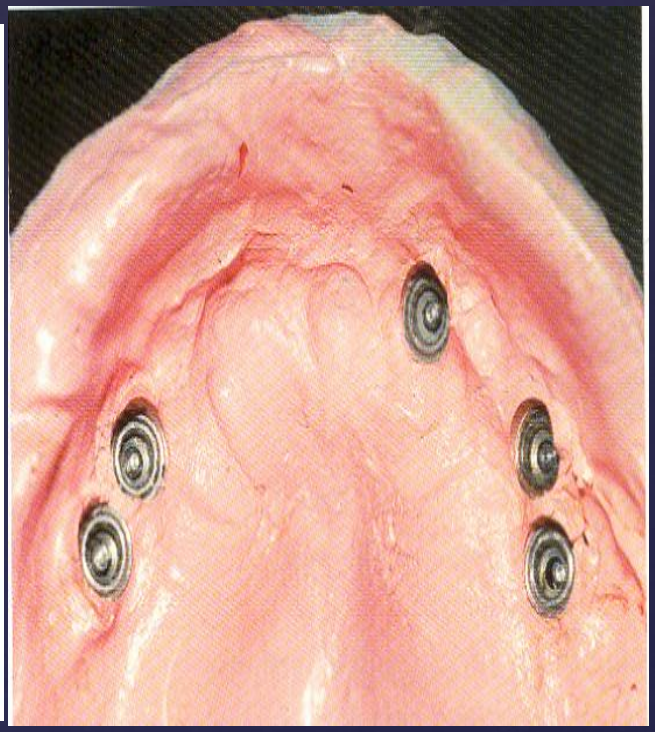
1-Impression for entire denture bearing area

2- Impression for implant or abutment

3-Correcct relationship between 1and 2

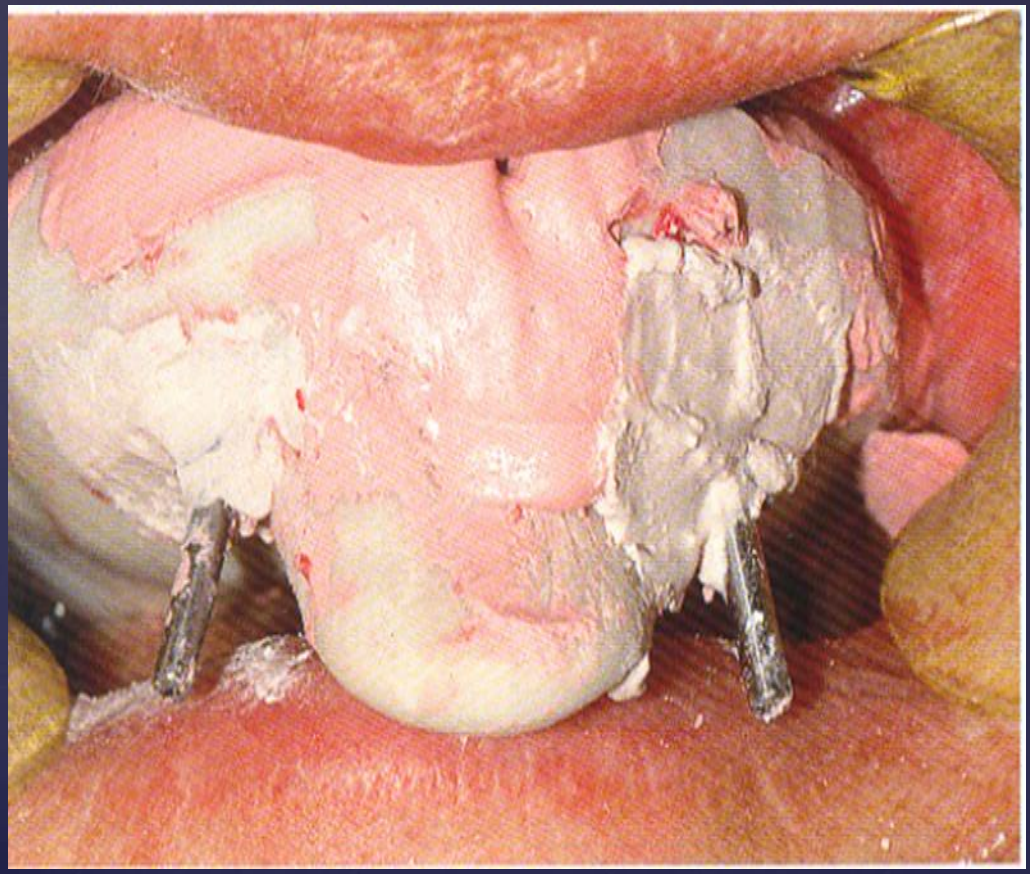
Impression Techniques For Implant Retained Overdenture

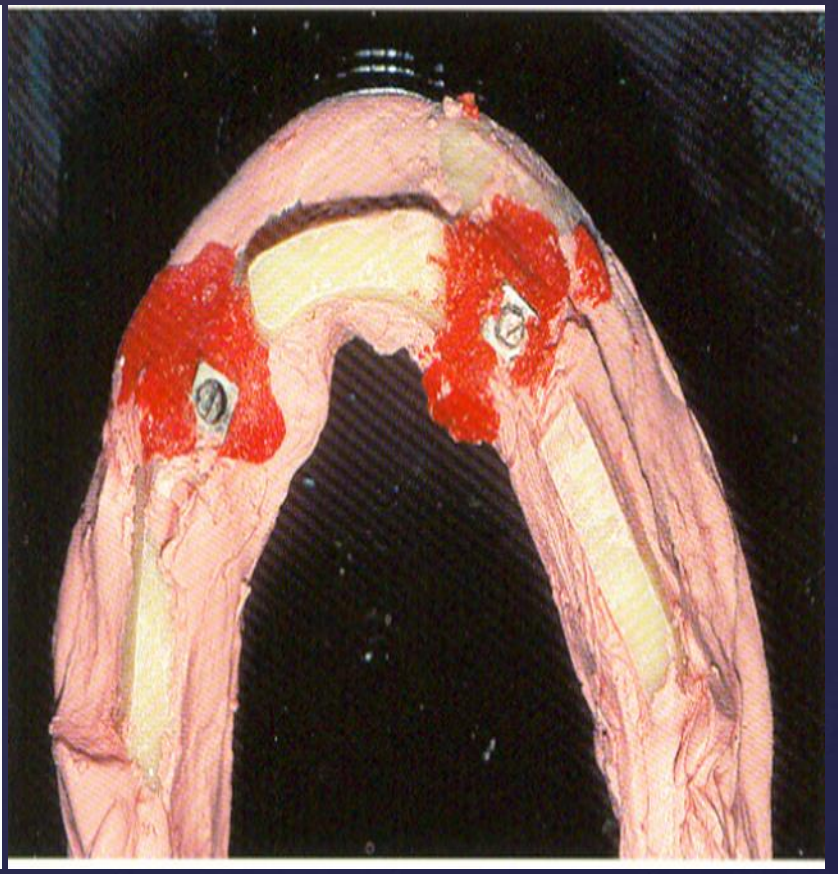




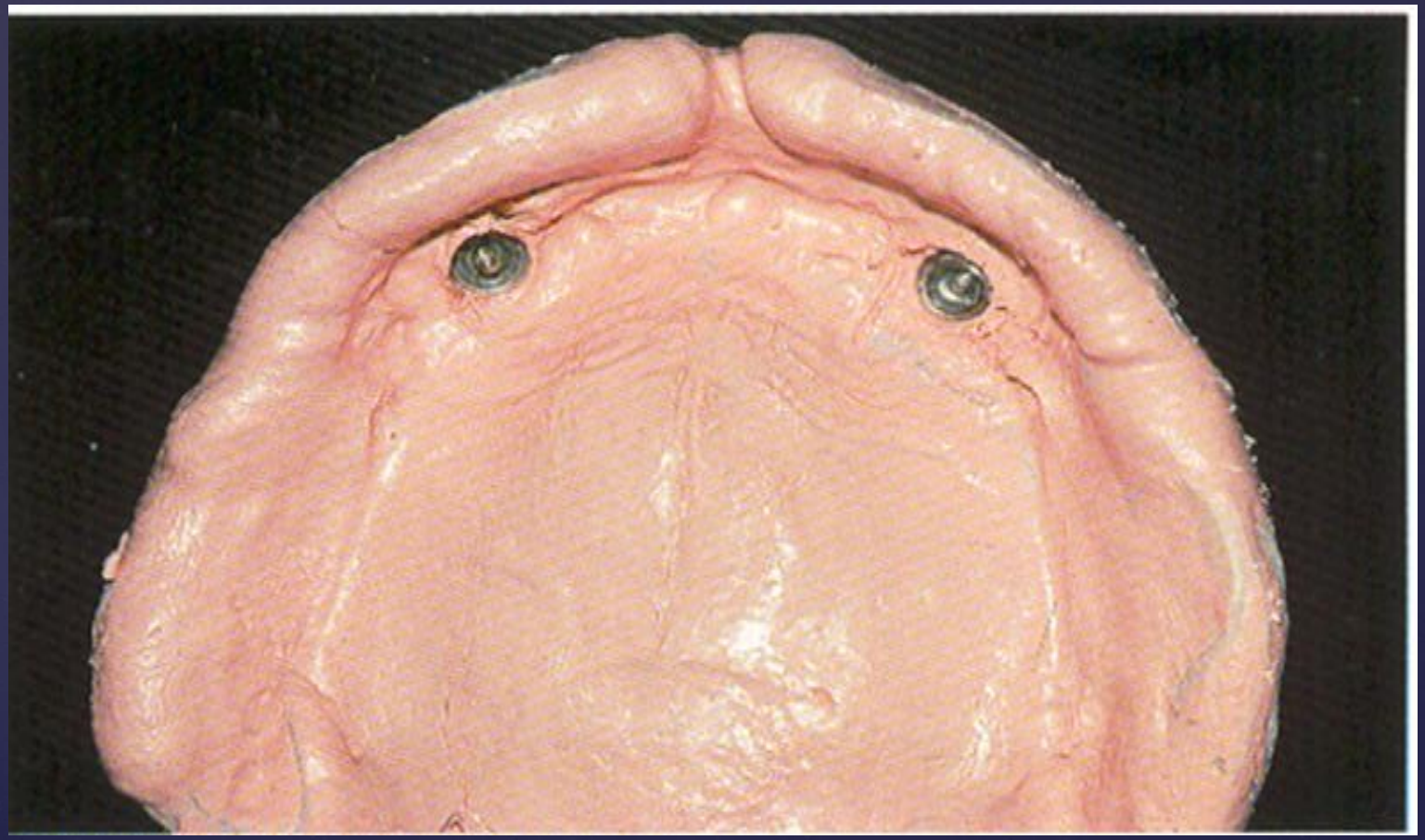
Custom tray is fabricate with sufficient window to accumudate transmucosal abutment and transfering coping

Impression Techniques For Implant Retained Overdenture



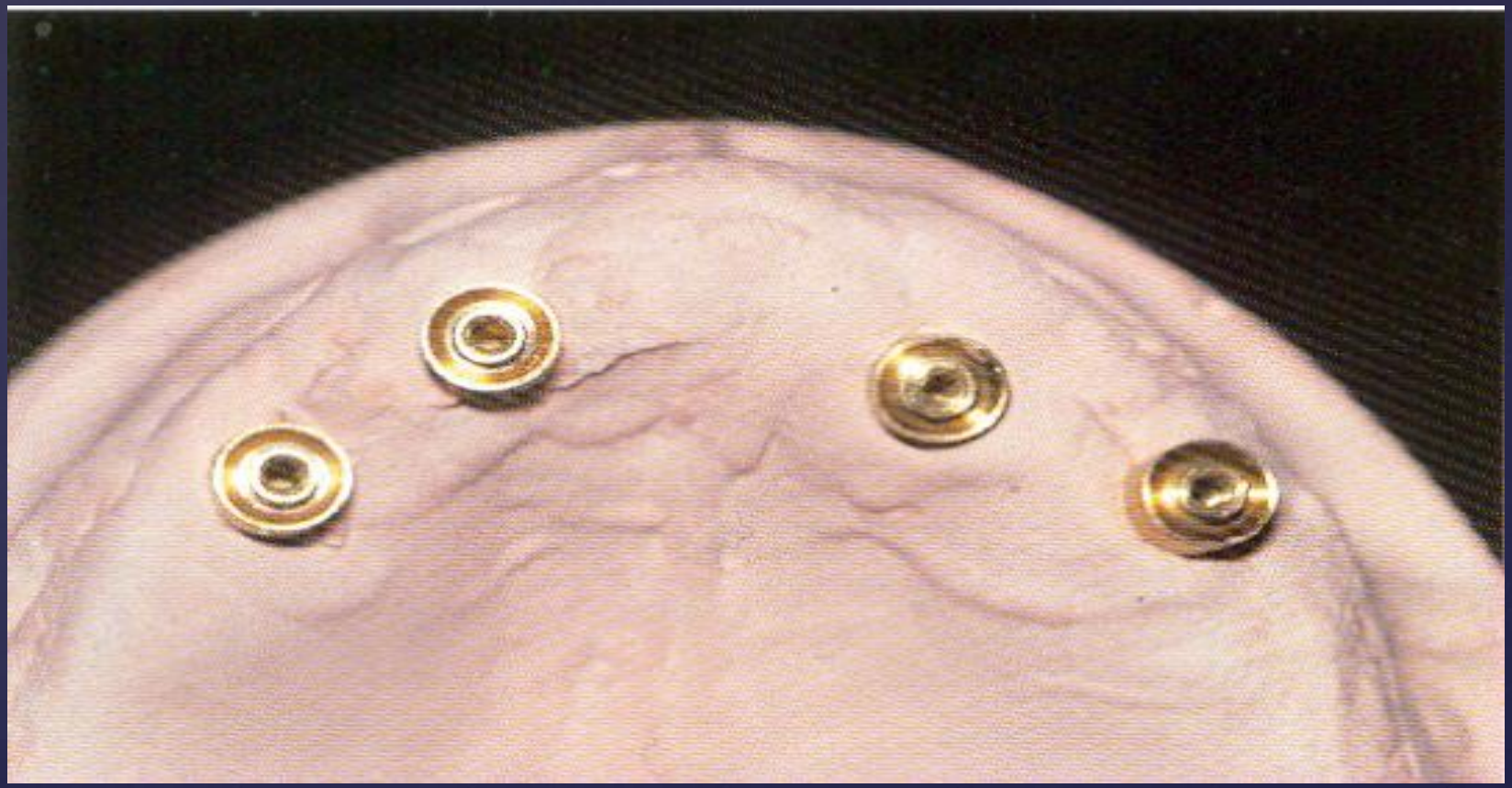


Impression Techniques For Implant Retained Overdenture



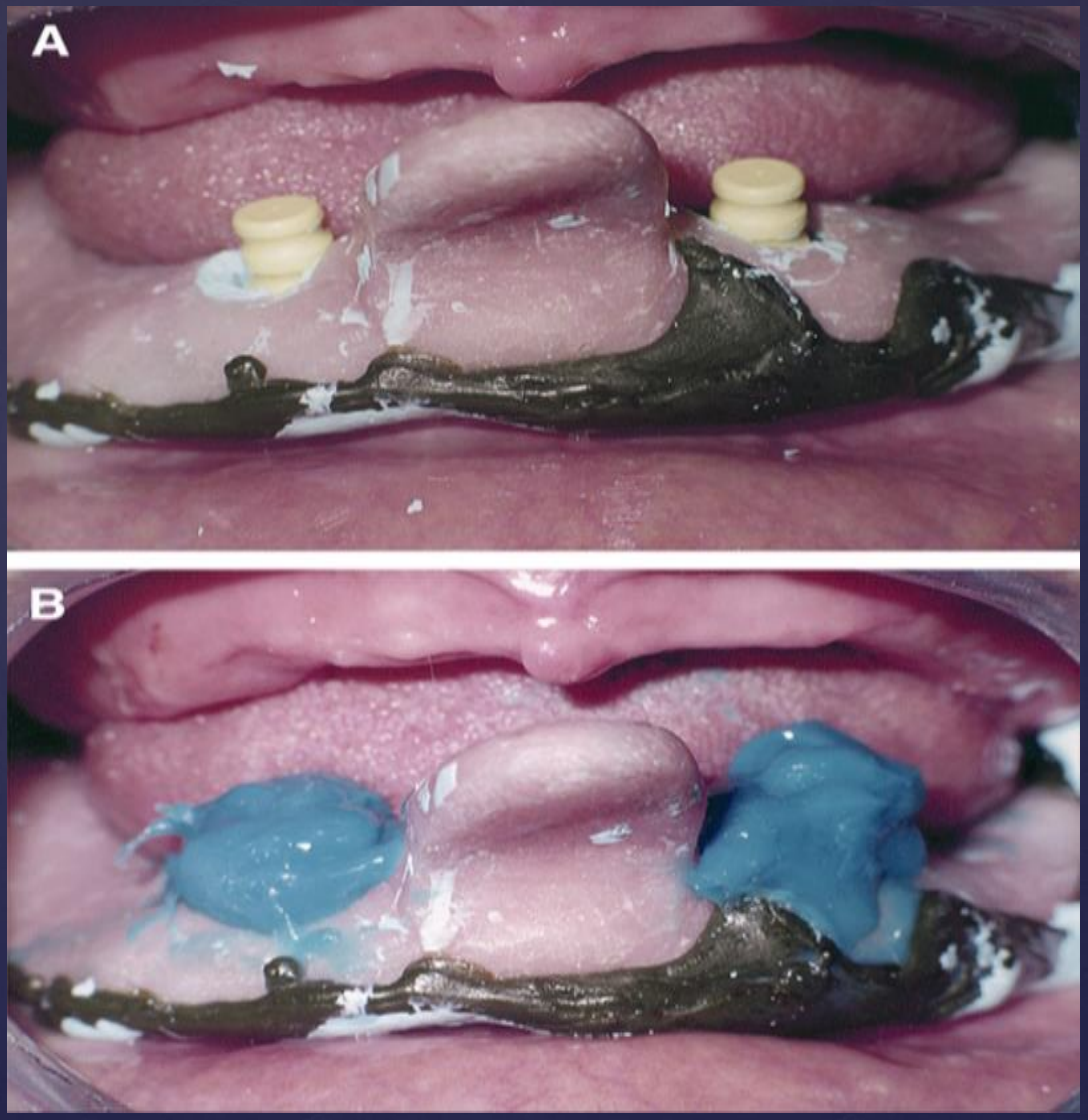
Definitive Impression

Impression Techniques For Implant Retained Overdenture



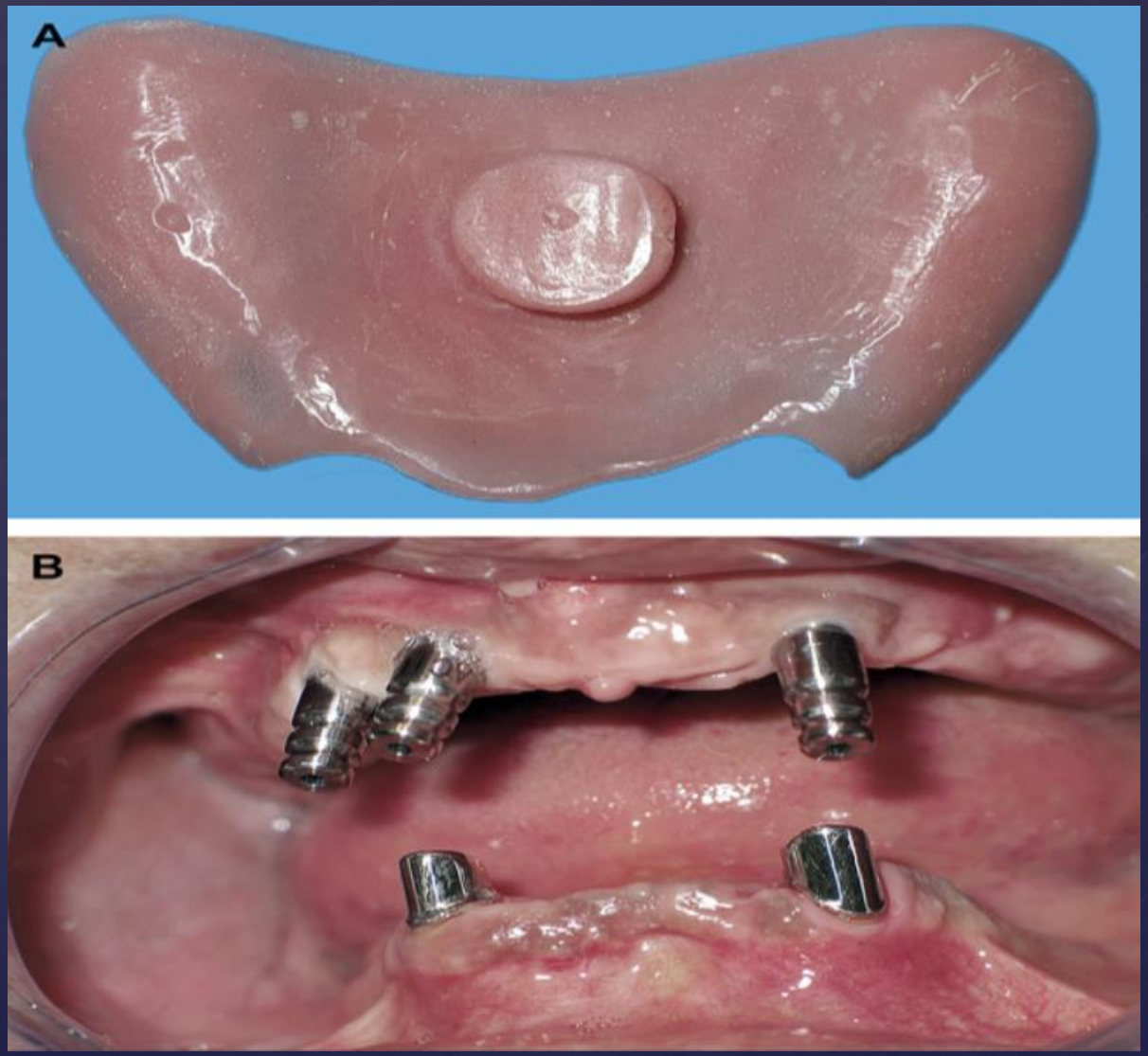
Master cast

An Alternative Impression Technique For Implant-retained Overdentures

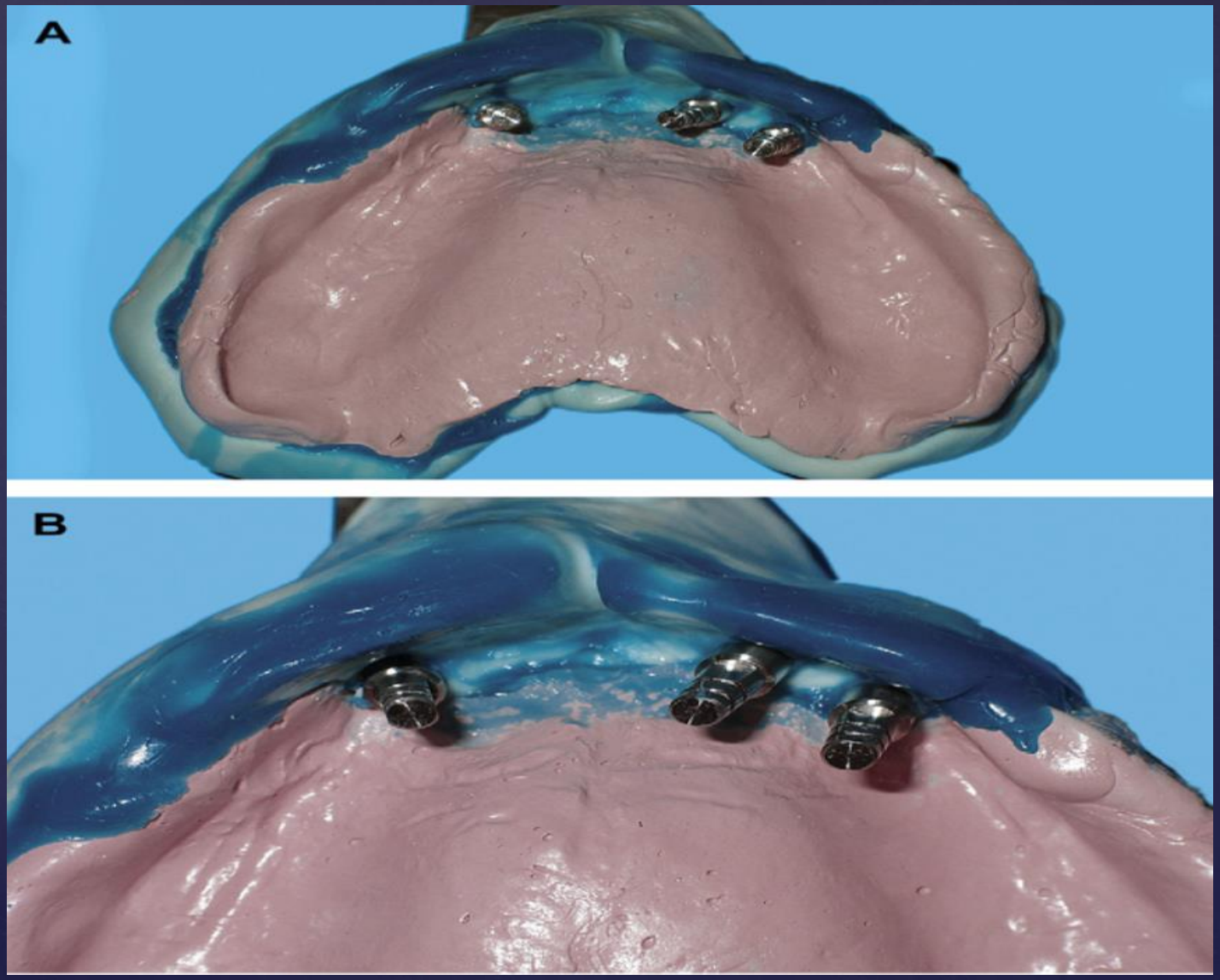


Definitive impression with implants analogs in place

An Alternative Impression Technique For Implant-retained Overdentures



An Alternative Impression Technique For Implant-retained Overdentures



Digital Impression
Types Of Scanners

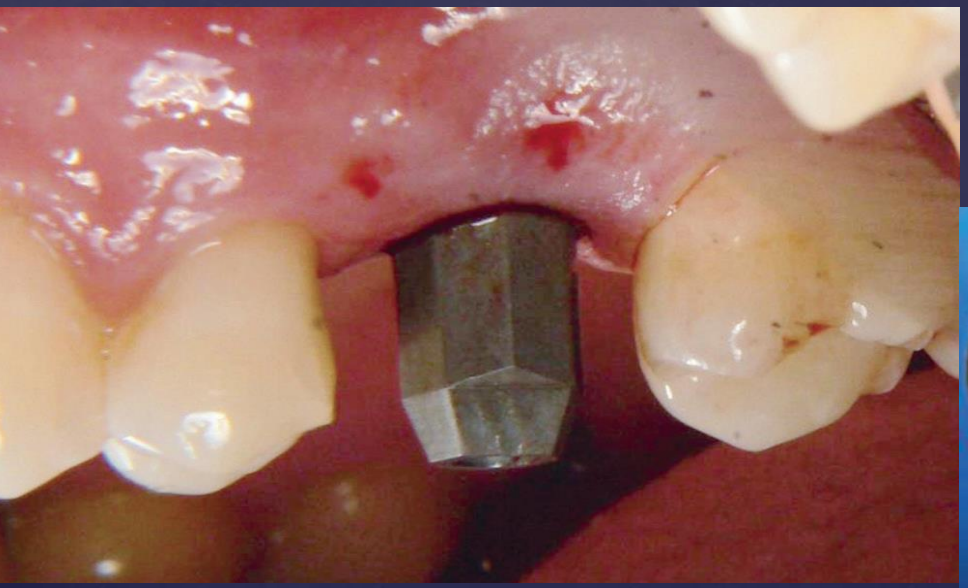
iTero

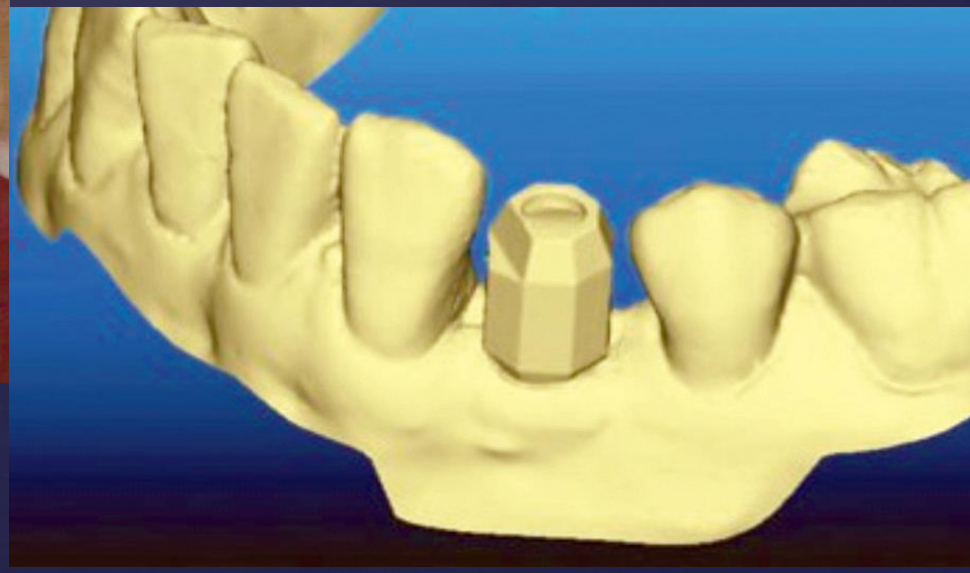
Planmeca

Lava C.O.S.

Digital Impression

Replaces the traditional fixture-level impression coping with an implant scanning abutment (ISA)

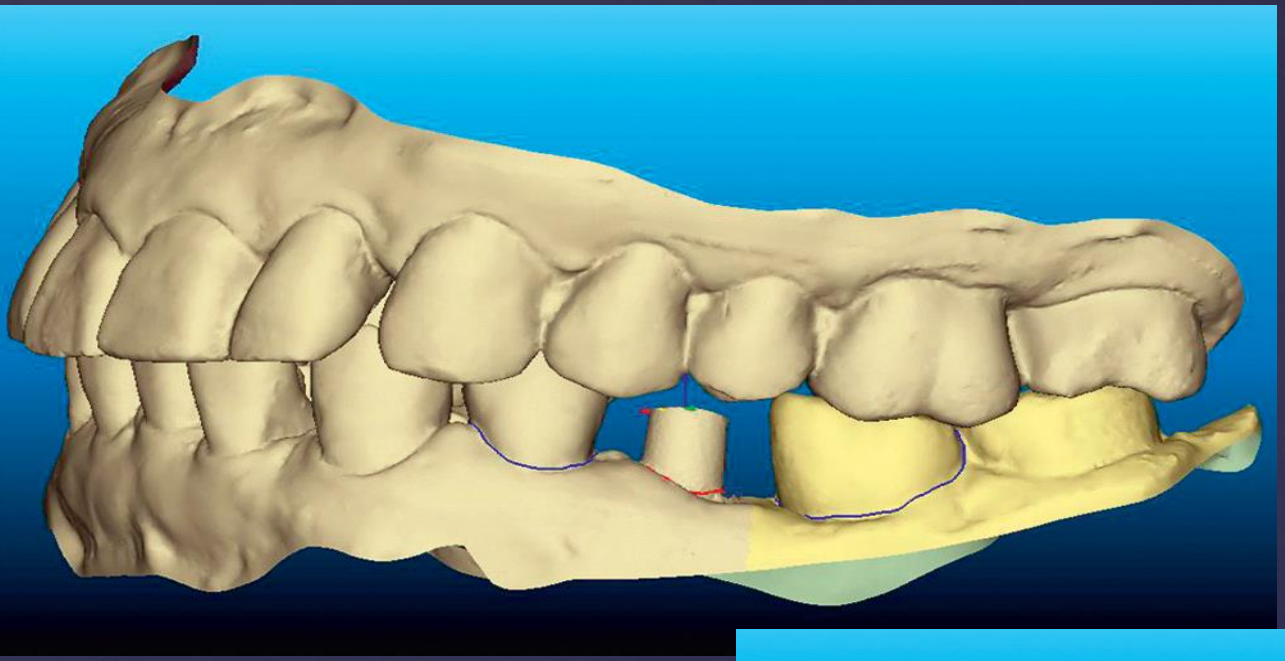


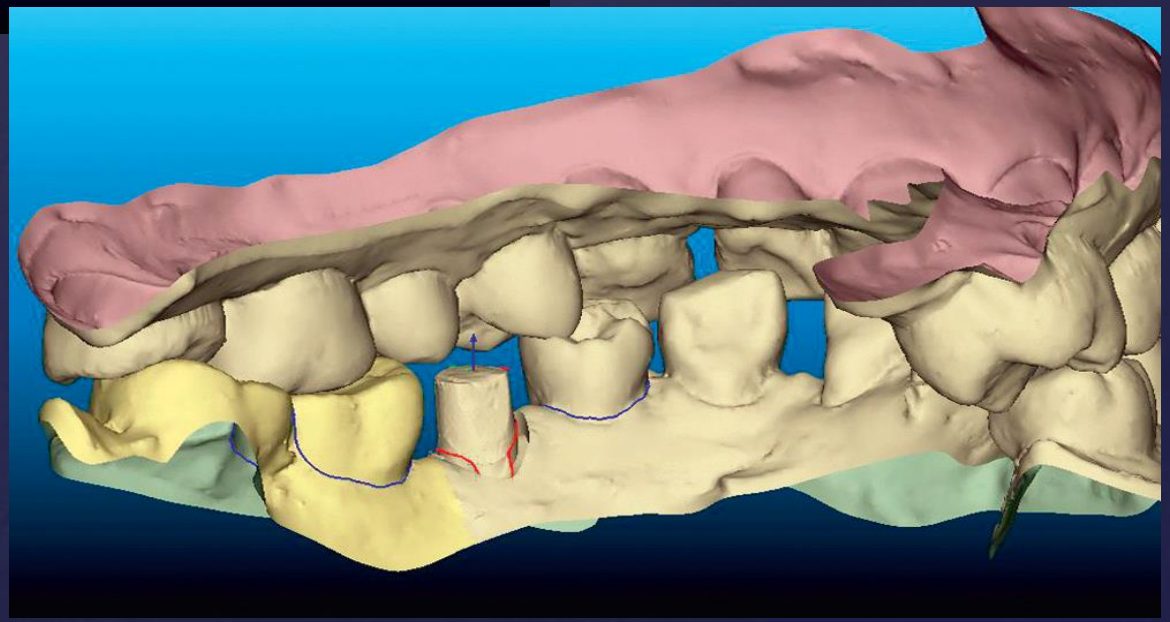


Digital Impression

The ISA transfers the intraoral 3D position of the implant within the virtual digital cast through a registration process of the specific shape geometry and anatomic surface facets

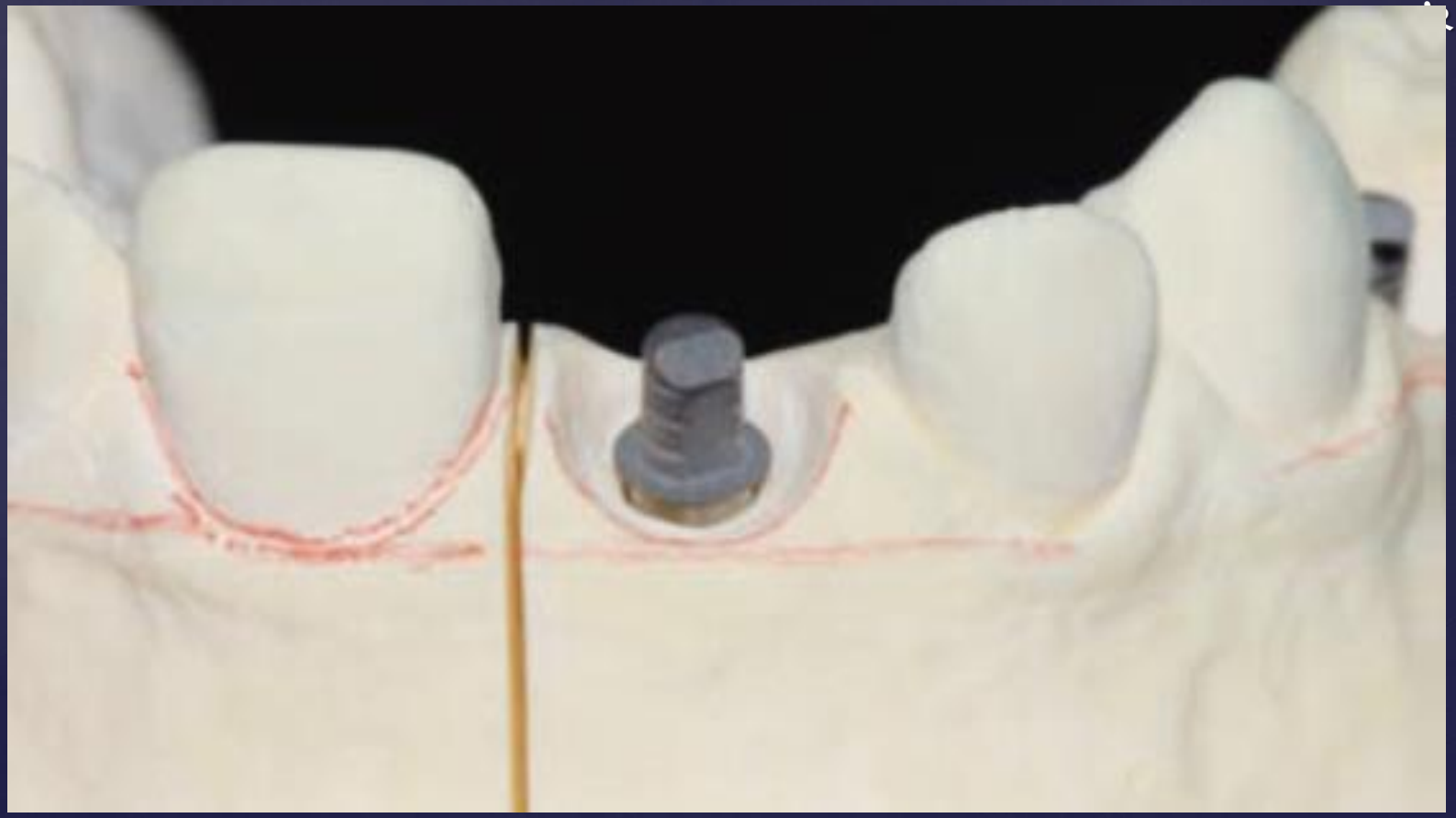
Digital Impression





Digital Impression

taking a scan of the seated abutment on the dental cast and modelling of the customized abutment portion with a specific software



Benefits of the digital impression

(1) improved patient acceptance

(2) reduced distortion of impression materials,

(3) pre-visualization of the preparation three-dimensionally,

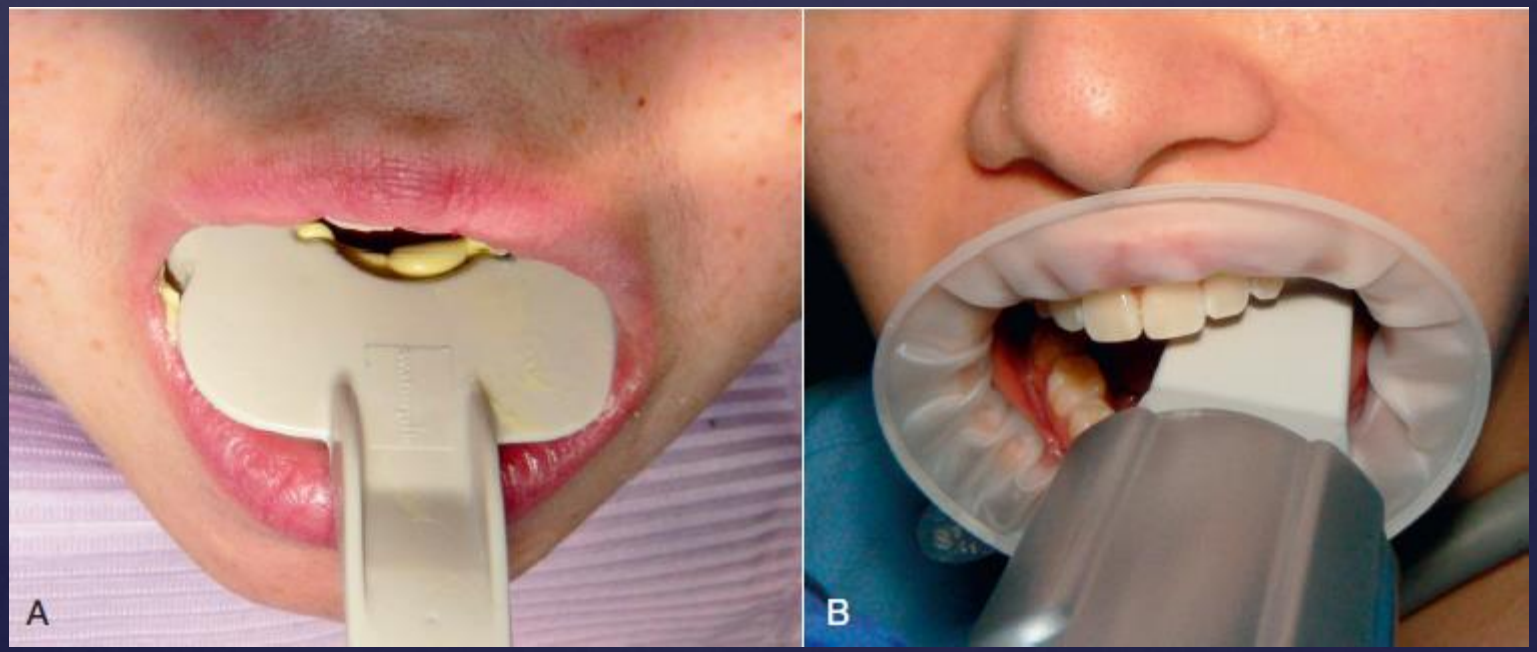
(4)potential cost and time effectiveness

Digital Impression

Comparison Between Digital And Conventional Impression:

(1). Digital impressions resulted in a more efficient

(2). Digital impressions allows for additional re-scans

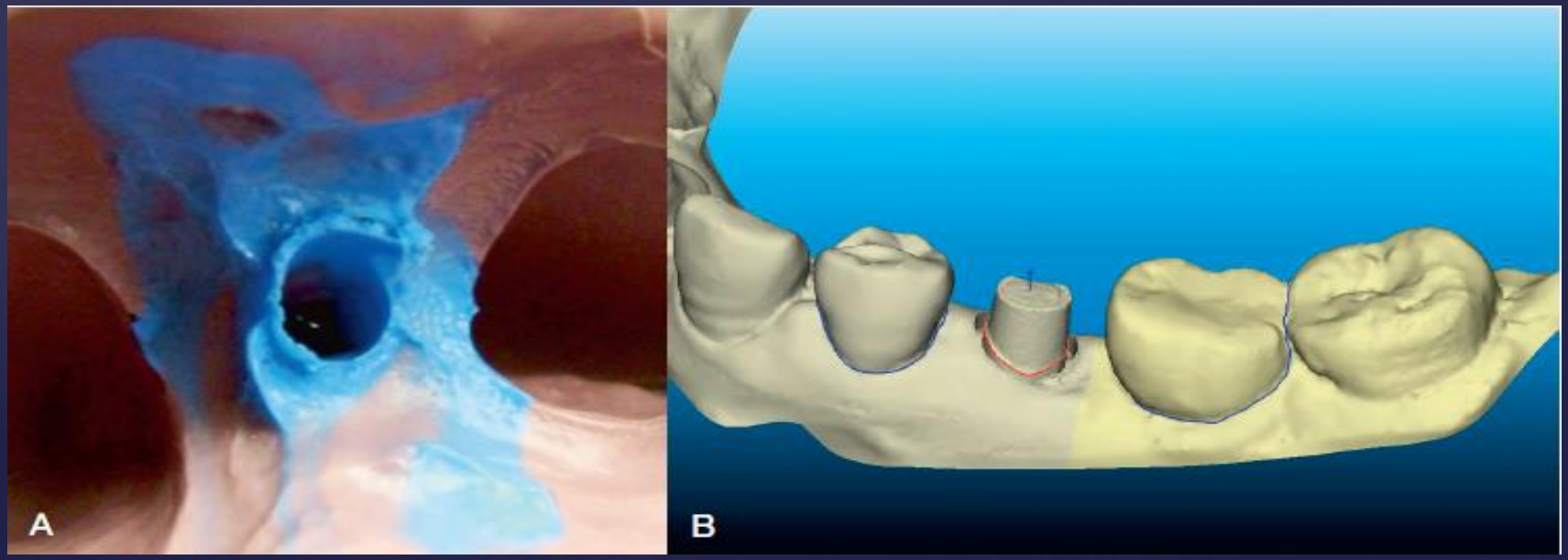


Digital Impression

(3). The level of difficulty was lower for the digital impression

(4). Digital impressions the most preferred and effective technique.

(5). Conventional impression would require more experience



Impression for Maxillofacial implant

A multiple tray technique for implant-retained orbital prosthesis

A method of making an accurate transfer impression for an implant orbital prosthesis was described.

Fig. 1. Patient with orbital defect and four implants exposed. Wax strip is used to make preliminary alginate impression.

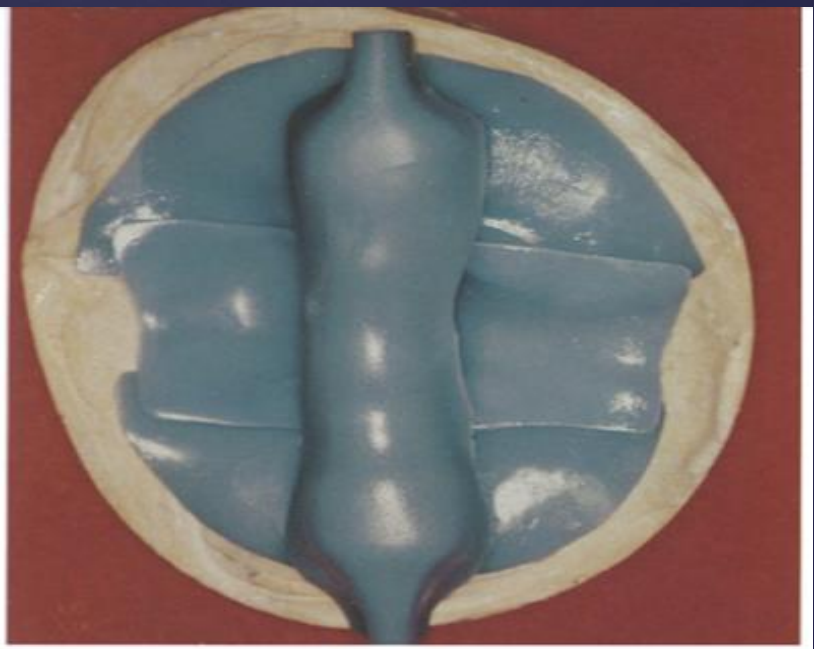


Fig. 2. Acrylic resin custom trays on preliminary model.

The advantages of this method are accuracy and removal of impressions on implants that are placed in opposing positions in a limited space, which precludes removal of a one-piece impression

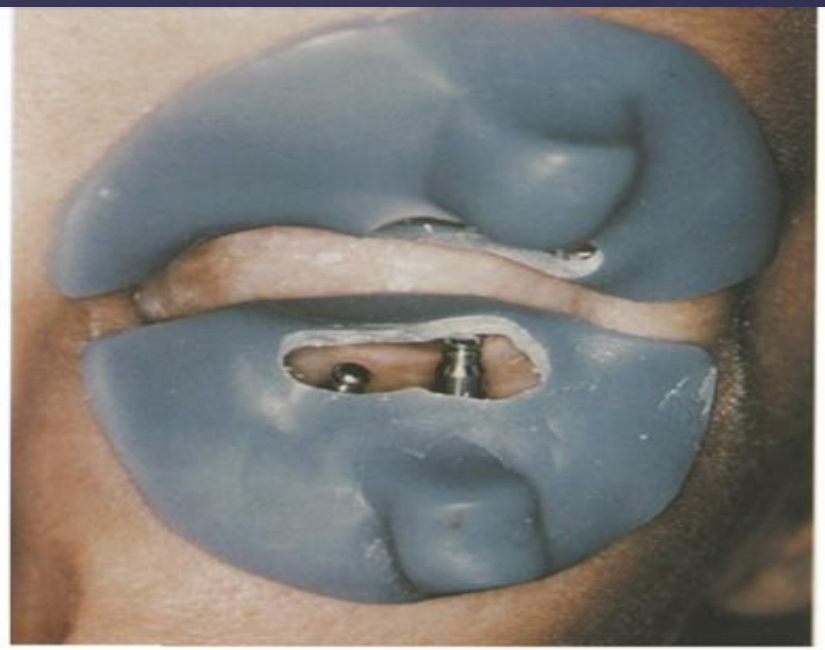


Fig. 3. Upper and lower trays in defect. Trays are perforated only to demonstrate space created for impression copings. Trays can be used open in "open tray" systems.

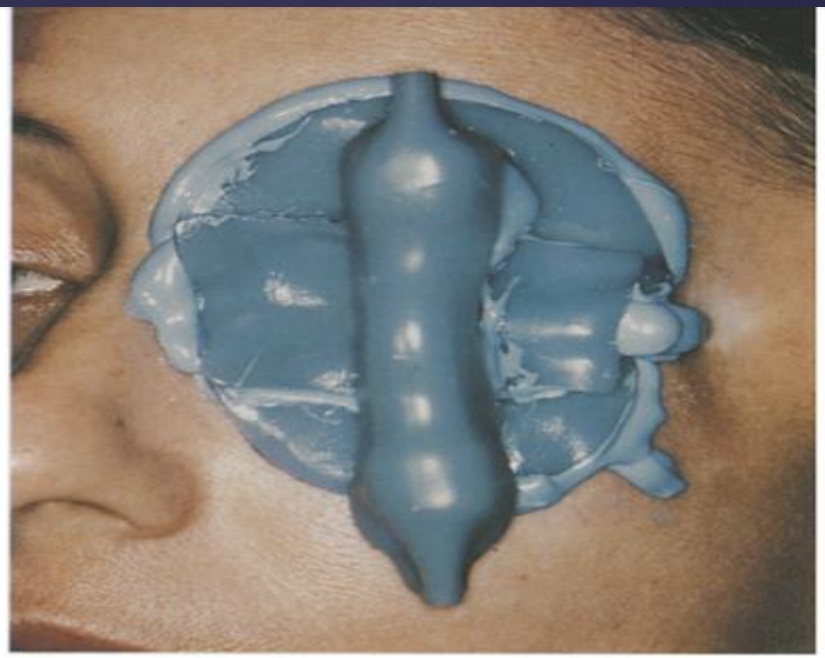


Fig. 4. External "positioning" tray is filled with impression material and seated over handles of all three trays. Impression is removed in reverse order.

Fig. 5. Disassembled parts with abutment analogs placed.

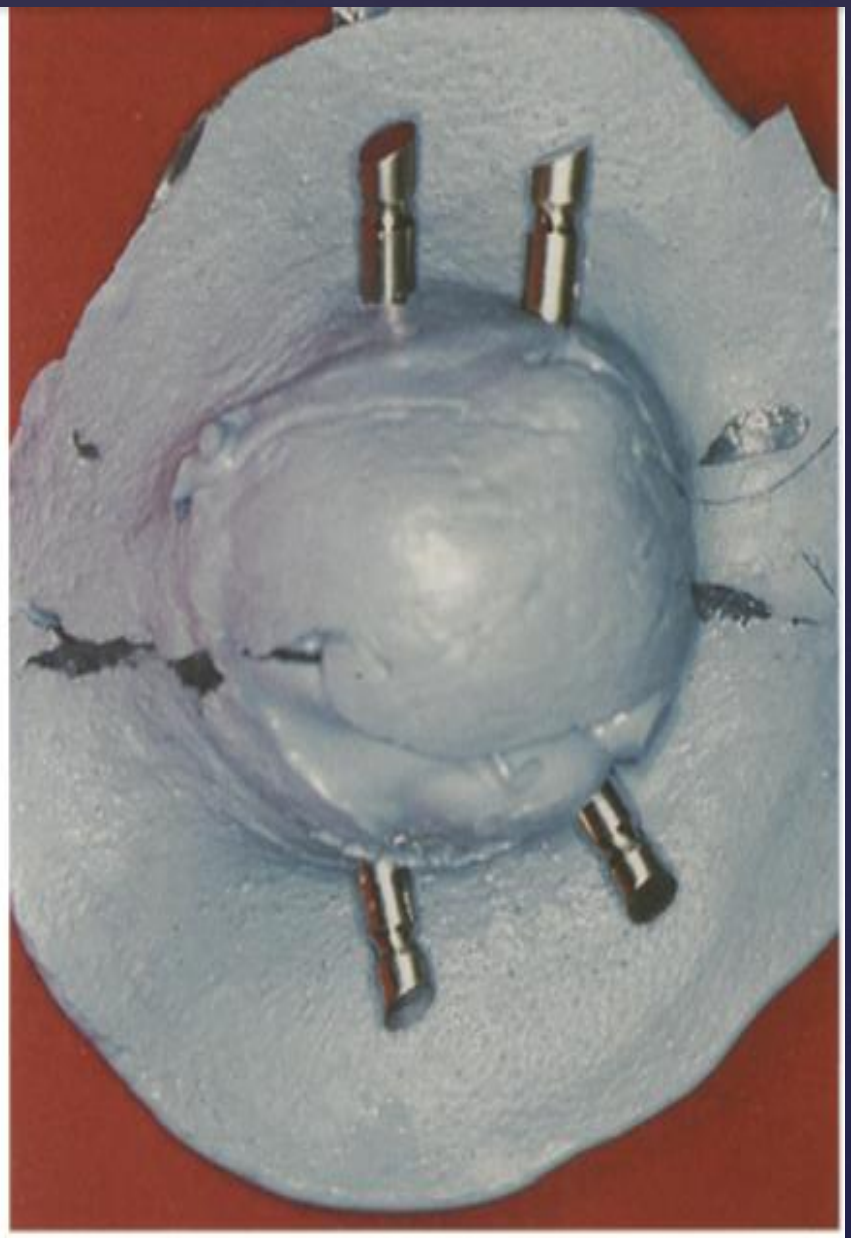


Fig. 6. Assembled impression.


Thank You!


THANK YOU