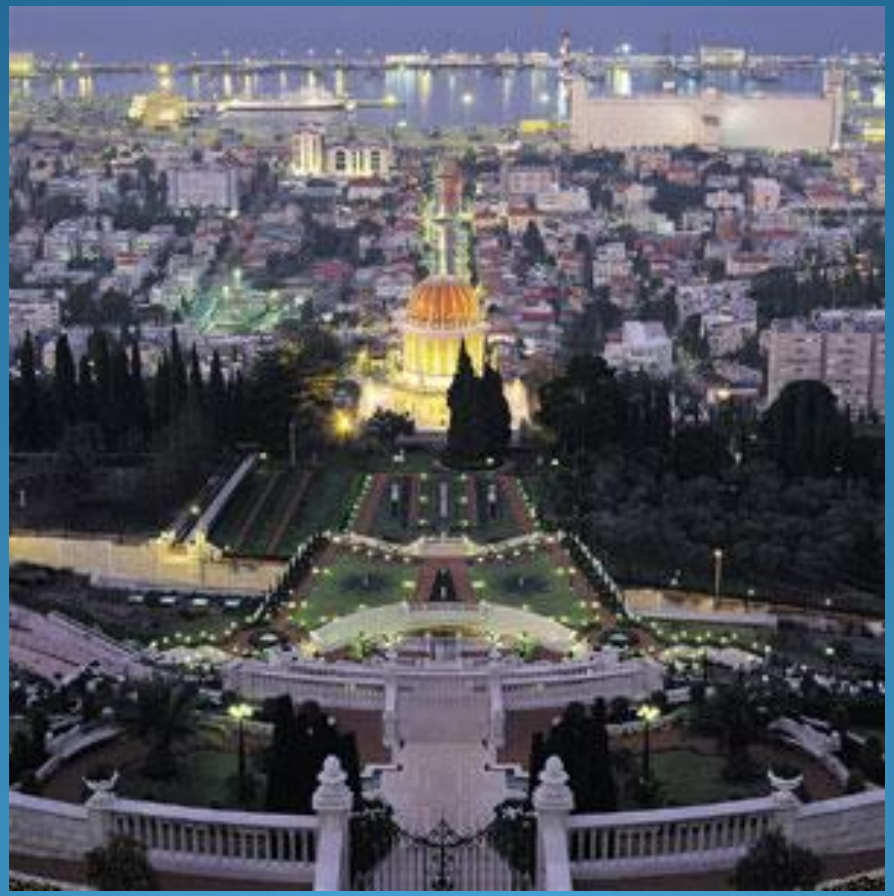
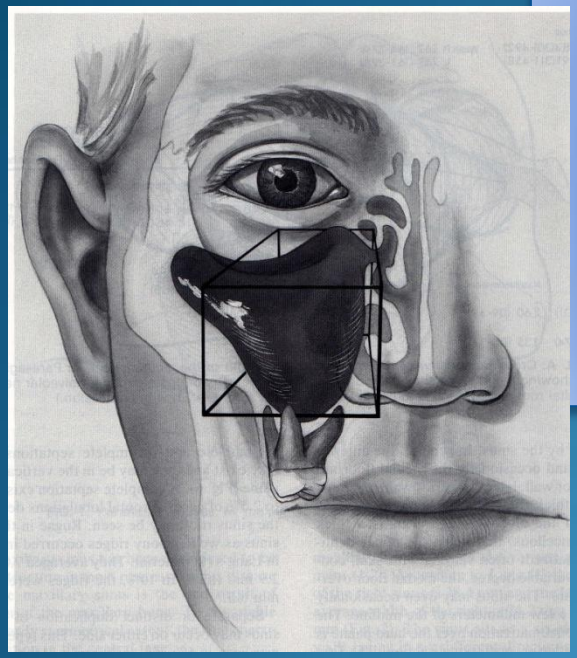
Welcome





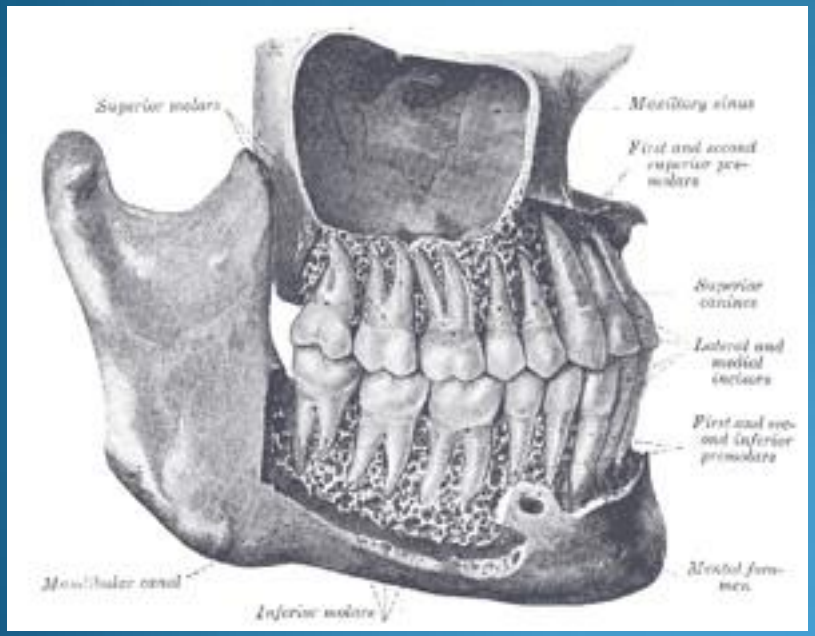
Complication of open sinus lifting

Dr. Rabinovich Iaron D.M.D

Specialist in Maxillofacial Surgery

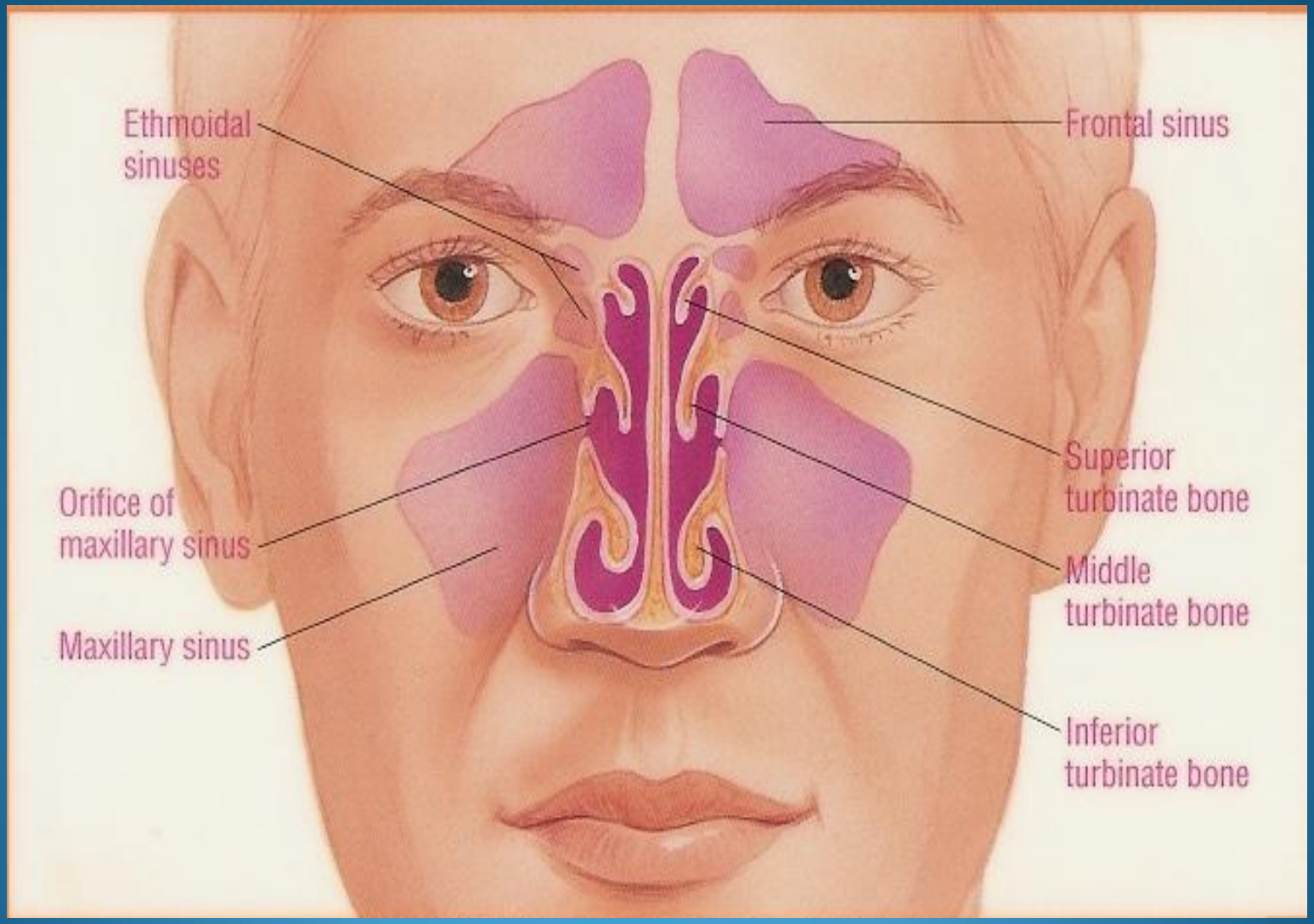
Haifa, Israel

Treatment of the edentulous posterior maxilla



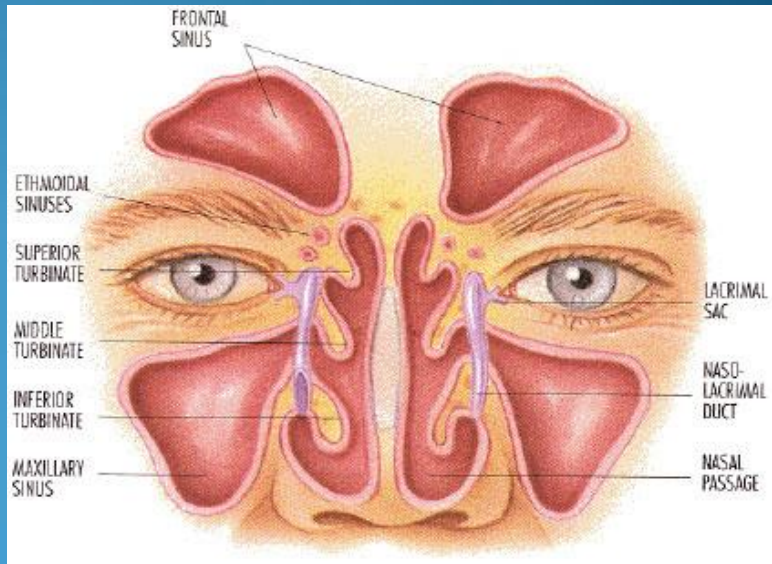
- Presents many unique and challenging condition in implant dentistry.
- Alveolar process
- Sinus pneomatization
- Predictable treatment.

Anatomy

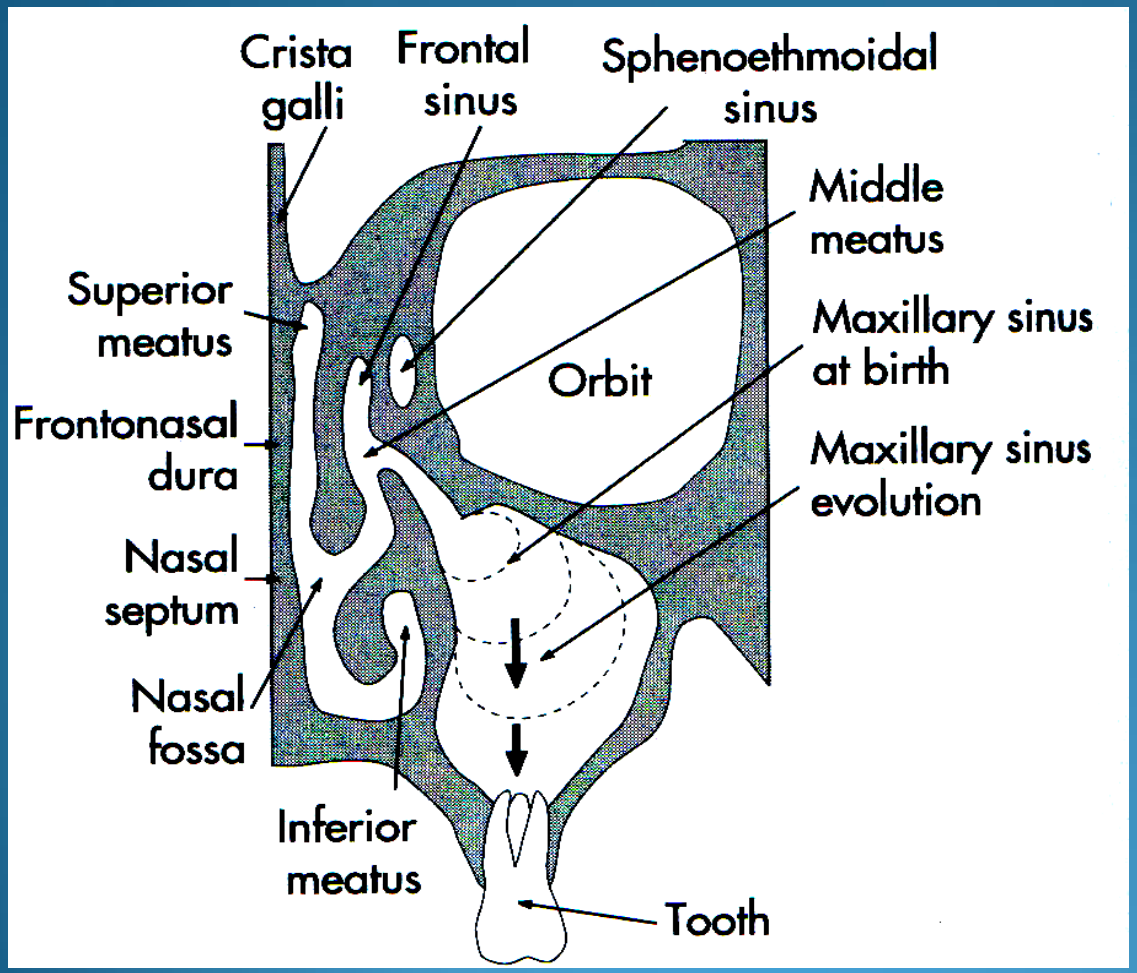

Ethmoidal sinuses
Frontal sinus
Superior turbinate bone
Middle turbinate bone
Inferior turbinate bone
Orifice of maxillary sinus
Maxillary sinus

functions of the maxillary sinus

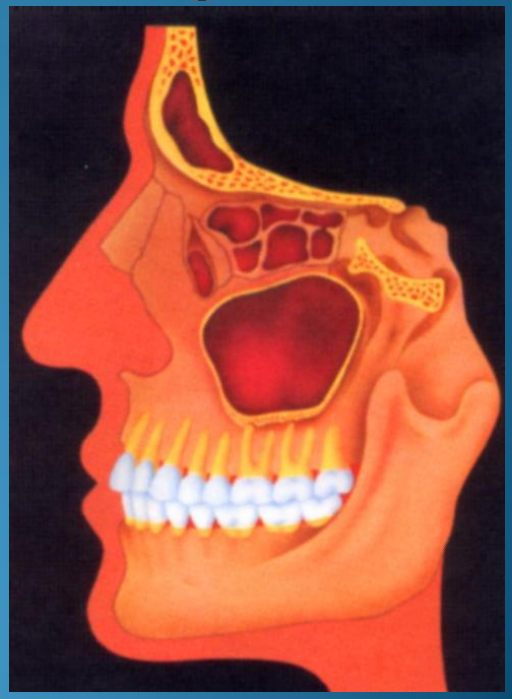
- Resonance to the voice
- Lighten the weight of the skull
- Warm and moisten inspired air
- Secrete and store mucus
- Characterize the contour of the face
- Preserve warmth from the nasal fossa.



Anatomy

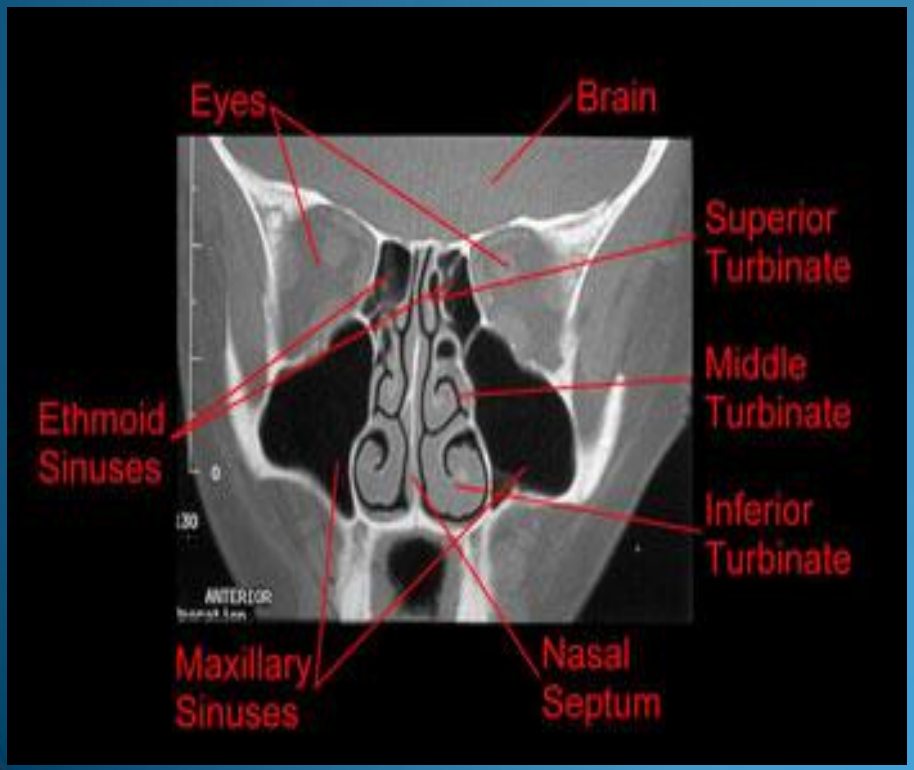

Crista galli
Frontal sinus
Sphenoethmoidal sinus
Middle meatus
Superior meatus
Maxillary sinus at birth
Orbit
Frontonasal dura
Maxillary sinus evolution
Nasal septum
Nasal fossa
Inferior meatus
Tooth


CAUTION



Anatomy

Is a pyramid shaped cavity with its base adjacent to the nasal wall and apex pointing to the zygoma



<u>The size of the sinus</u>

-3.5 cm wide

3.6 - 4.5 cm tall,

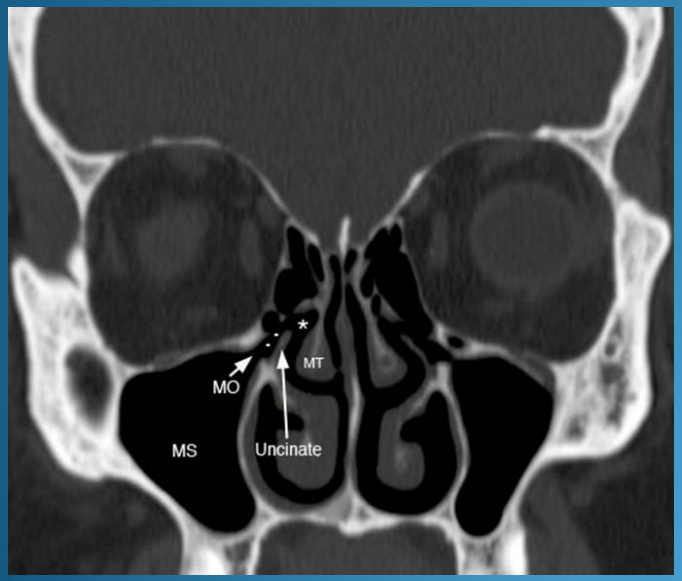
- 4.5 cm deep.

volume of 12 to 15

cm3.

Anatomy

The size of the sinus will increase with age if the area is edentulous. The extent of pneumatization varies from person to person and from side to side.

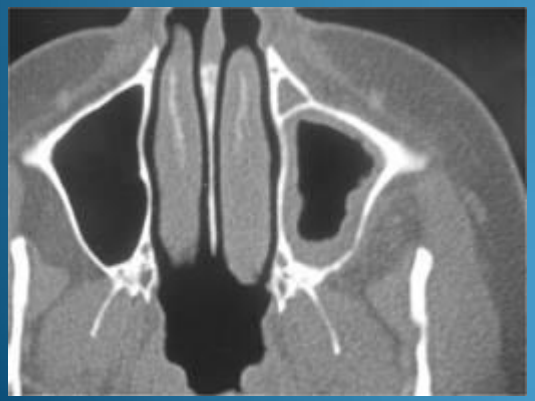


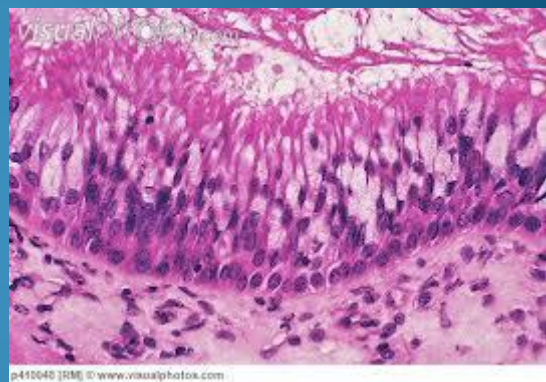
Anatomy

Schneiderian membrane.

This membrane consists of ciliated epithelium like the rest of the respiratory tract.

The membrane has a thickness of approximately 0.5-0.13mm.





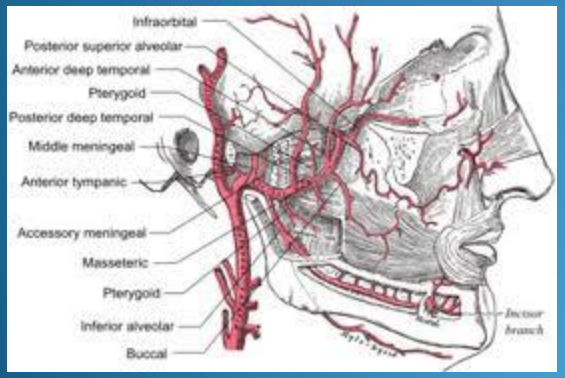
The blood supply to the maxillary sinus

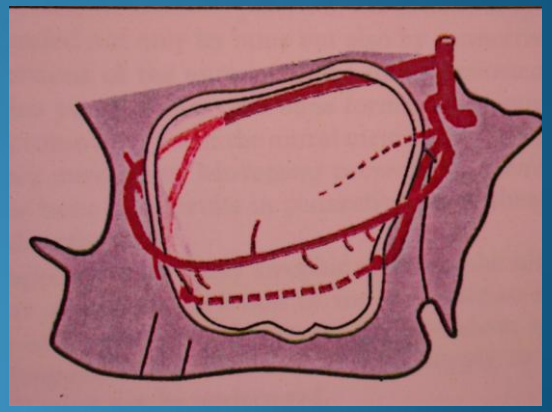
Branch from int. maxillary a.

Post. and Ant. alveolar artery from infraorbital artery.

Greater and Lesser palatine a.a from Descending palatine

Lat. and Post. Nasal br. Of sphenopalatine a.

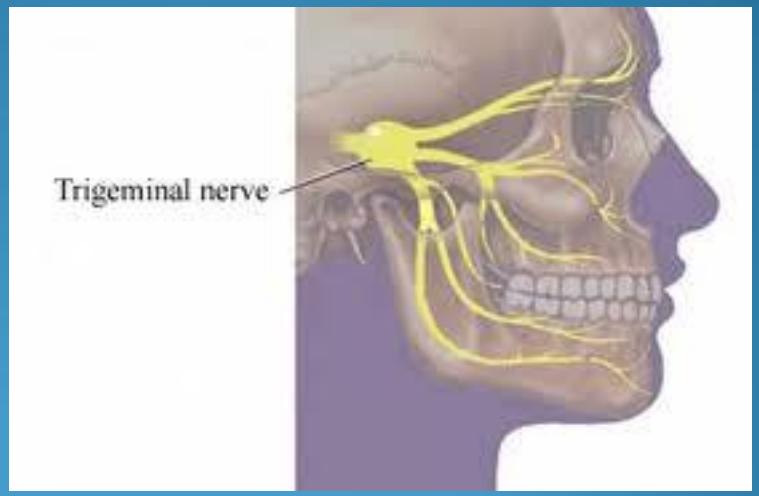




from terminal branches of peripheral vessels, significant hemorrhage during the sinus lift procedure is rare.

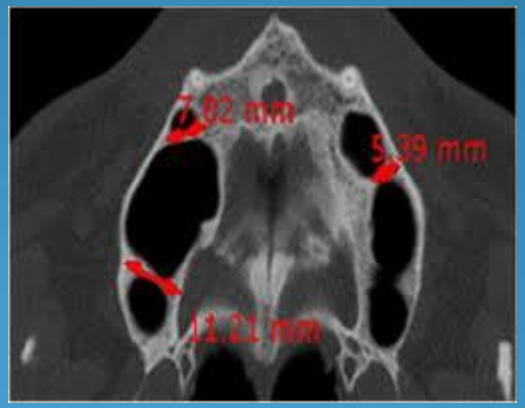
Nerve

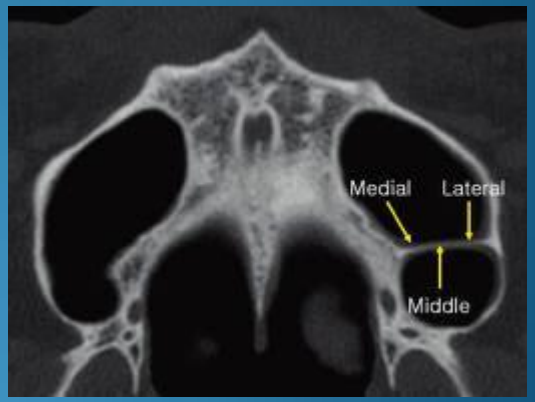
from the superior alveolar branch of the maxillary (V2) division of the trigeminal nerve.



Anatomy

Figure 3. Epidermoid carcinoma. Coronal view with osseous window. Expansive lesion (arrows) of maxillary sinus (T), with medial and anterolateral walls erosion, limited by: superiorly - orbit floor erosion and extension to the ethmoid sinus; inferiorly inferior - hard palate erosion; medially - extending to the ipsilateral fossa, up to the nasal septum.





Indication for sinus lifting

- Enough bone material onto the upper jaw to support the base of a dental implant.
- **OAF closure**
- **Cleft palate**
- **Post oncologic reconstruction**

Guidelines of bone grafting for dental implantation

- Alveolar height<6mm
- Alveolar width<4mm
- No pathology
- Good anatomy
- No history of sinus surgery

Treatment planning for edentulous post. maxilla

Patient age & general health

medically compromised patient
Bisphosphonates

Psychological ability

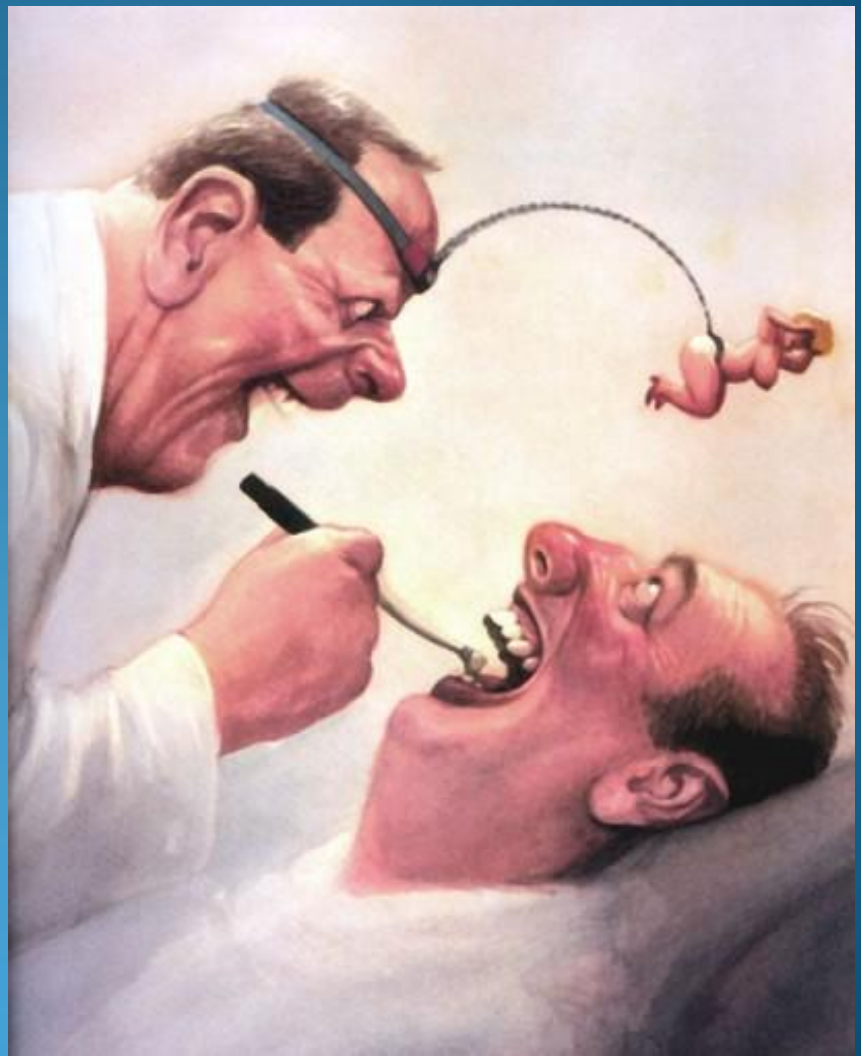
Allergy

Financial ability

Request

Treatment planning for edentulous post. maxilla

- Clinical examination
- Local health of the patient's sinuses.

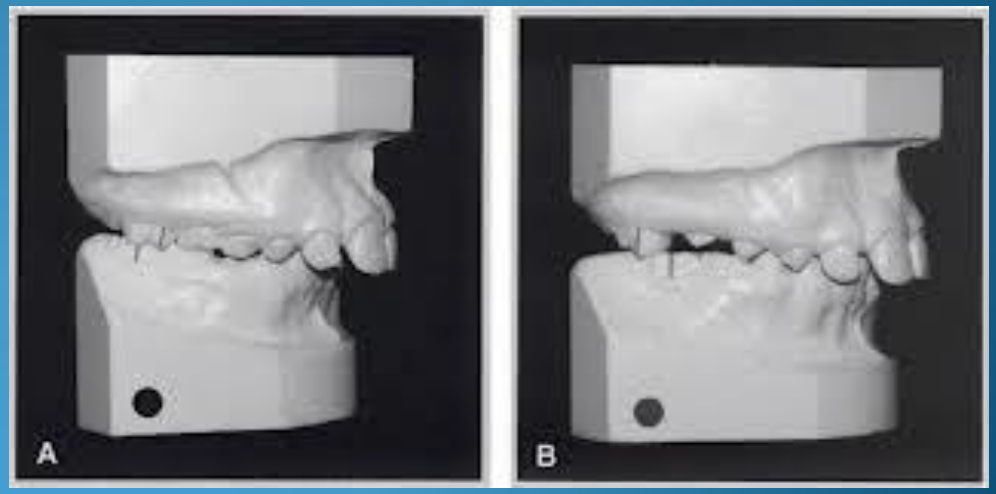


Treatment planning for edentulous post. maxilla

- Panoramic X-rays
- CT scan

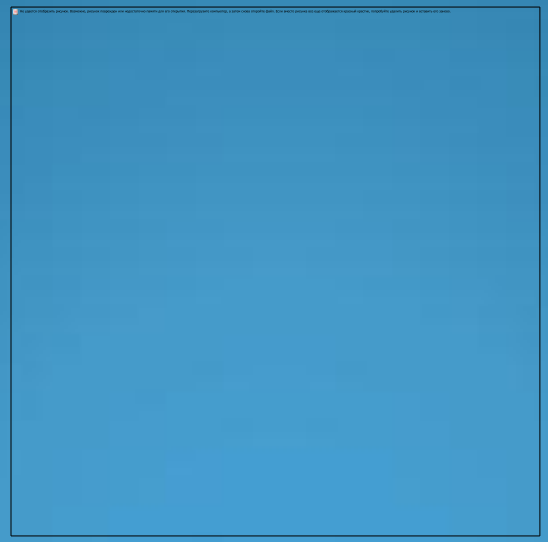
Treatment planning for edentulous post. maxilla

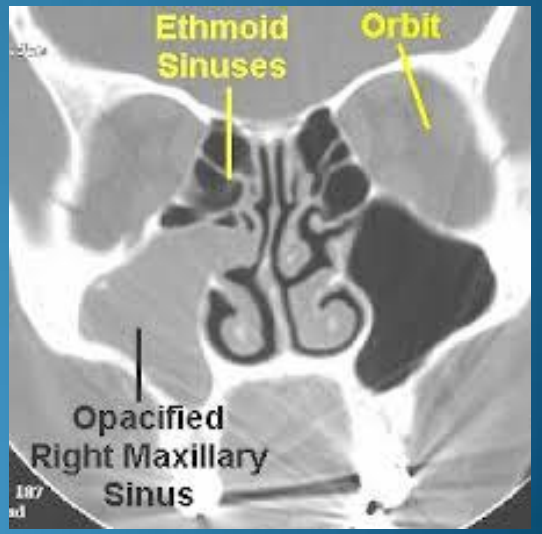
- Intermaxillary relation vertical, horizontal and study models.
- Planning of final restoration with dentist.



contraindication local factors

1. Purulent exudate in the maxillary sinus.
2. Situation after Caldwell-Luc operation.
3. If the patient reports a history of acute sinusitis and the cause thereof has not been eliminated,
4. odontogenic infection.
5. Patology in sinus.



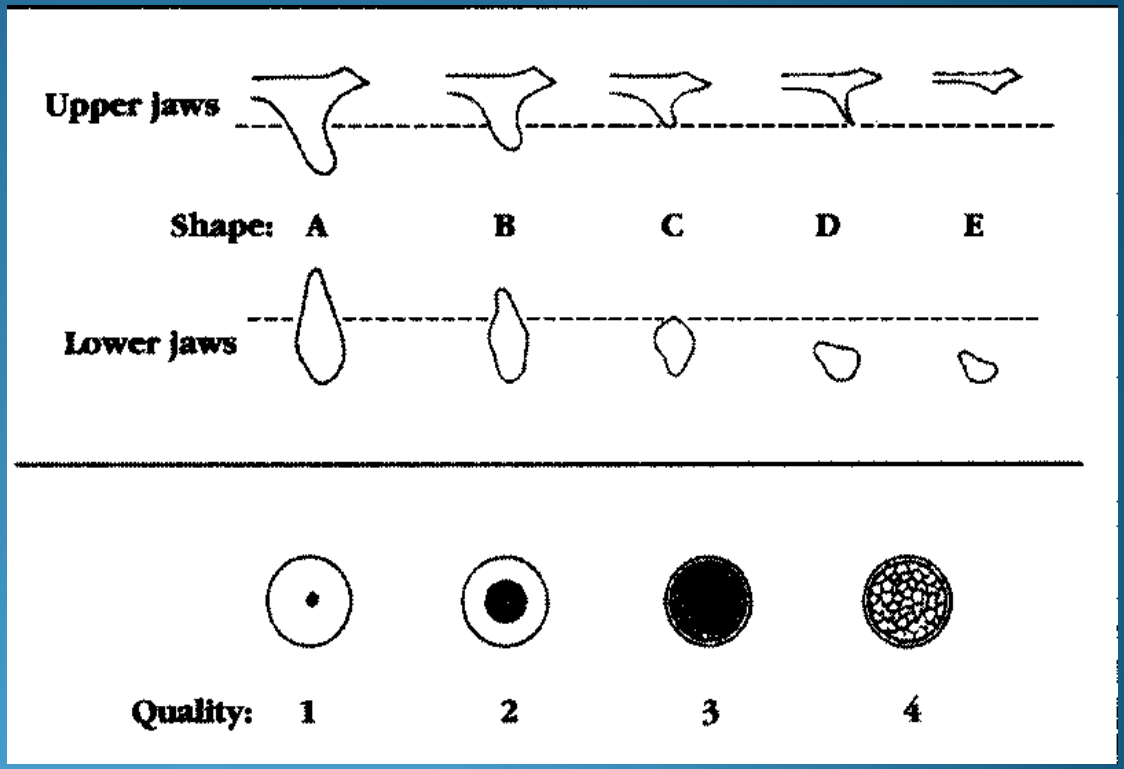


contraindication general factors

1. Severe osteoporosis.
2. Anti-aggregation
3. An Controlled diabetes.
4. Post eradiation maxilla.

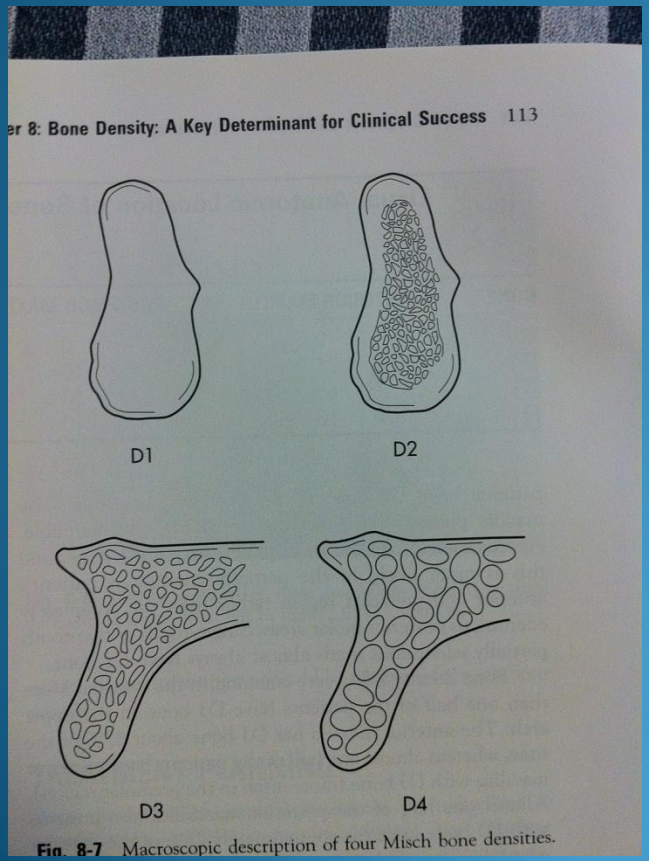
Bone classification density and quantity

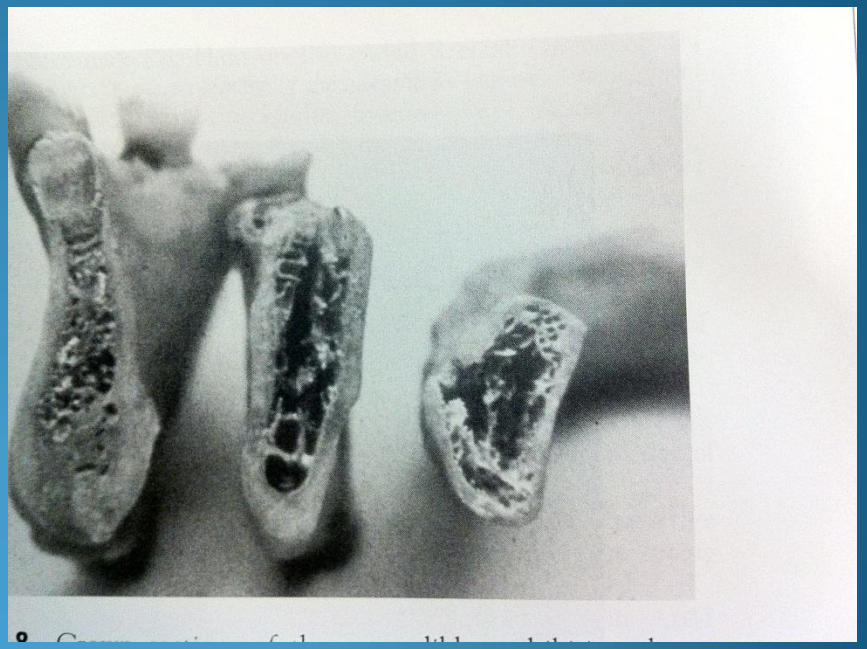
1. Dense cortical bone.
2. Thick dense to porous cortical bone on crest and coarse trabecular bone within.
3. Thin porous cortical bone on crest and fine trabecular bone within.
4. Fine trabecular bone



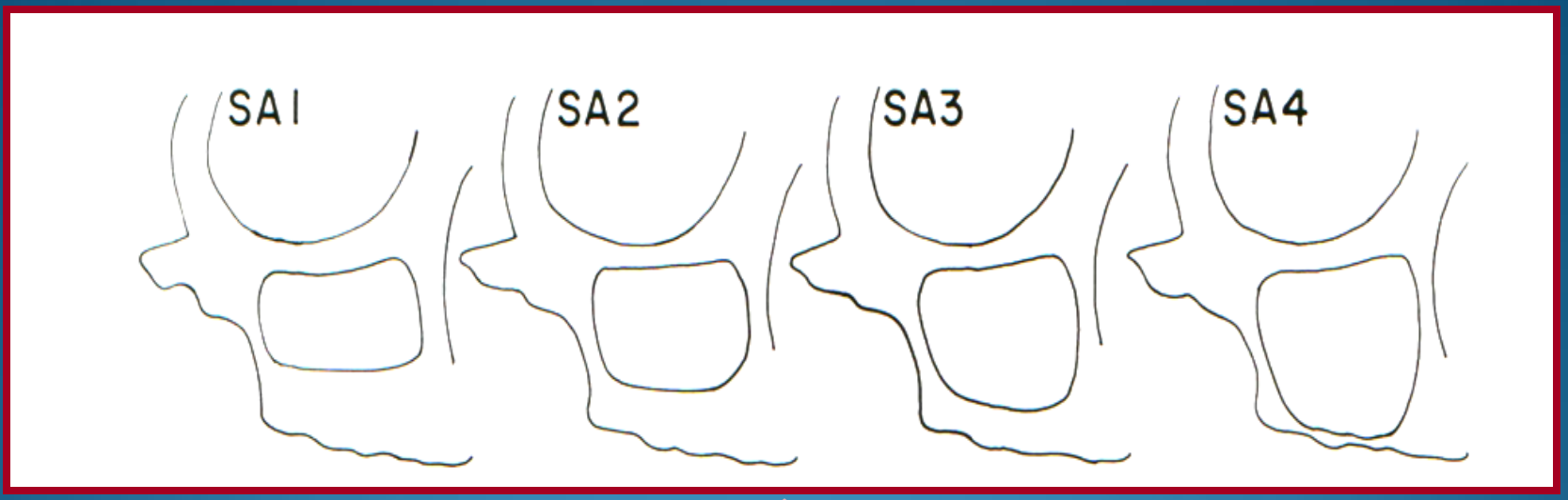
Zarb G , Lekholm U . (1985)

Bone classification density Mish





Bone classification density and quantity

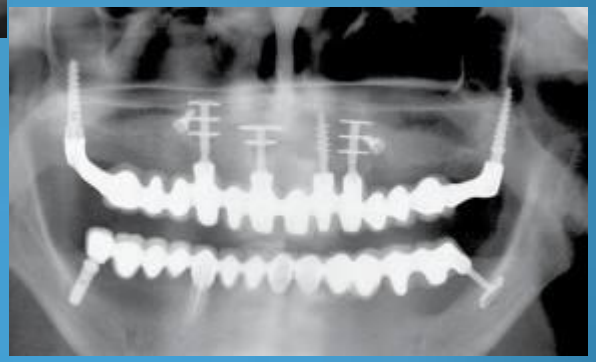


SUBANTRAL TREATMENT OPTIONS

Treatment history of the edentulous posterior maxilla

- Avoid the sinus and place implants ant., post. Or medially.
- Place implants and perforate the sinus floor.
- Subperiosteal implants.
- Perform horizontal osteotomy, interpositional bone grafting and endosteal implants.
- Elevate sinuses during implant placement.
- Perform lateral wall approach, sinus graft, and simultaneous or delayed implant placement.

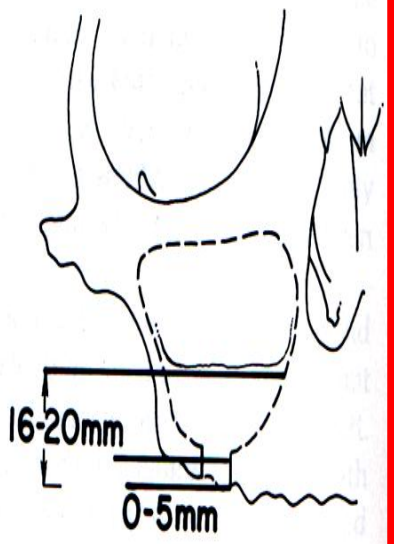
Avoid the sinus lift.



Subperiosteal implants.

Open sinus lift

FIG 25–10.
SA-4 option is used when 0 to 5 mm of bone exists between the antral floor and the crest of the ridge. This condition requires the greatest amount of graft material. Implants are not placed until the graft matures.



Historic Background

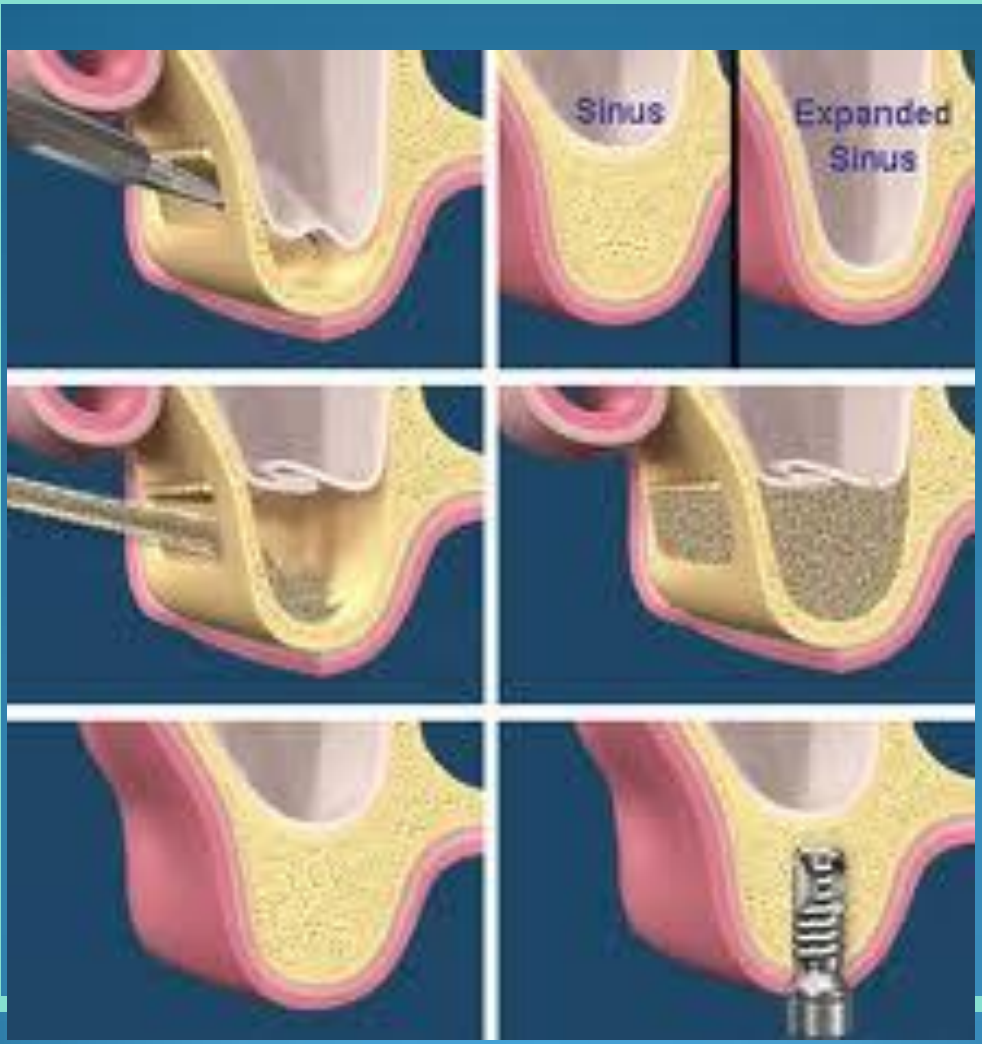
Tatum at an Alabama implant conference in 1976 and subsequently published by Boynein 1980.

Its need stemmed from the necessity to restore the posterior maxilla using implants.

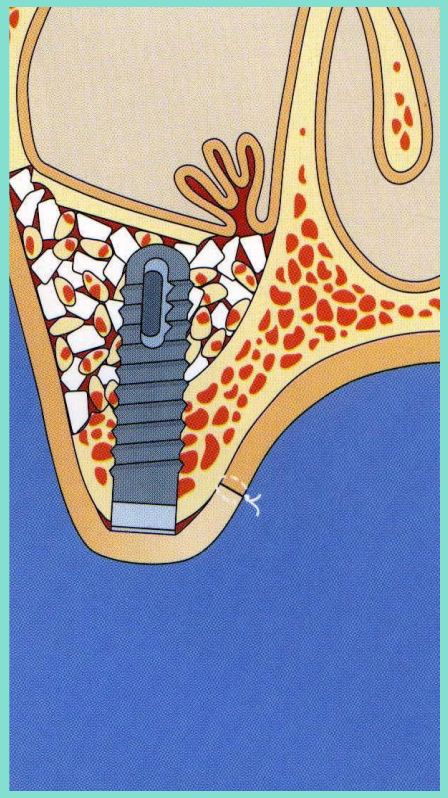
The procedure is one of the most common pre prosthetic surgeries performed in dentistry today.

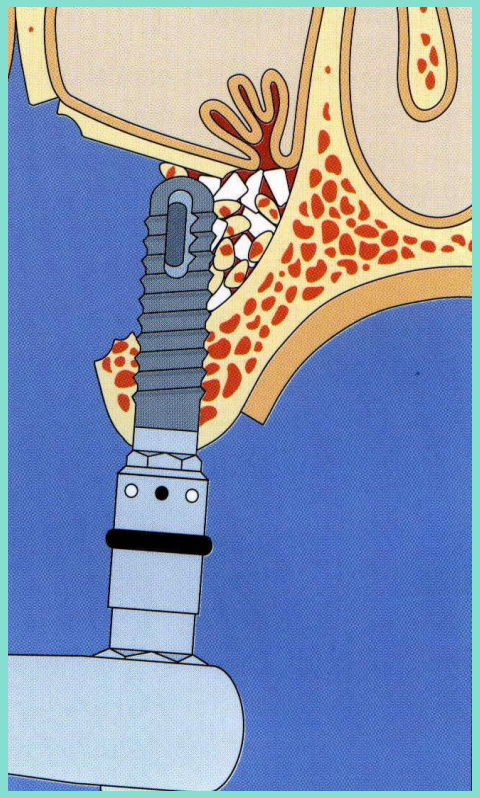
Different grafting materials, modifications to the classic technique, and comparisons between different techniques.

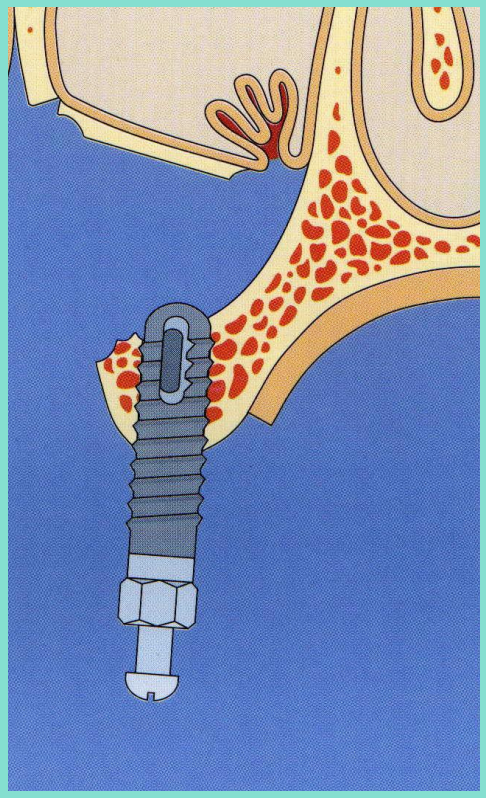
OPEN SINUS LIFT



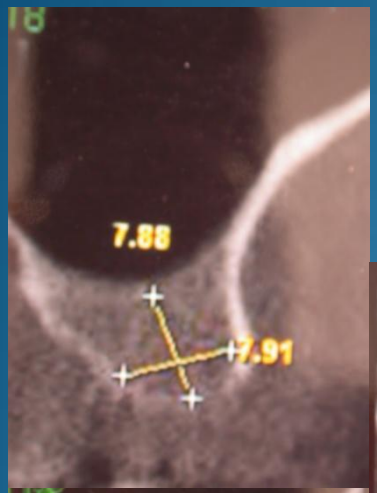
Open sinus lift primary stability

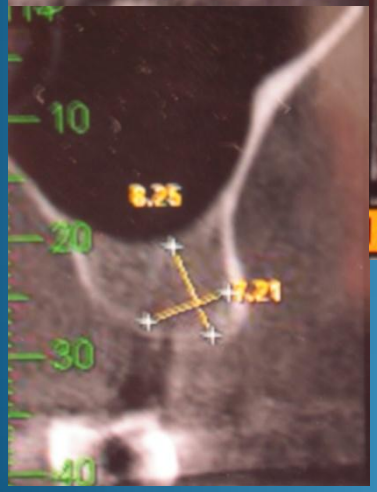


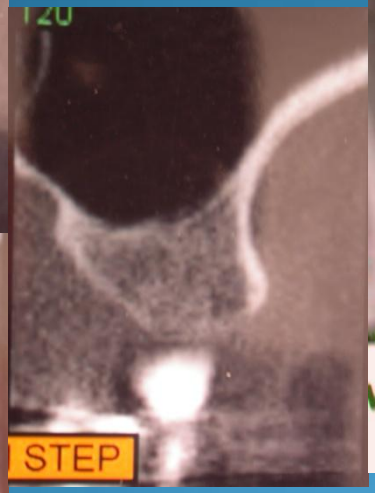


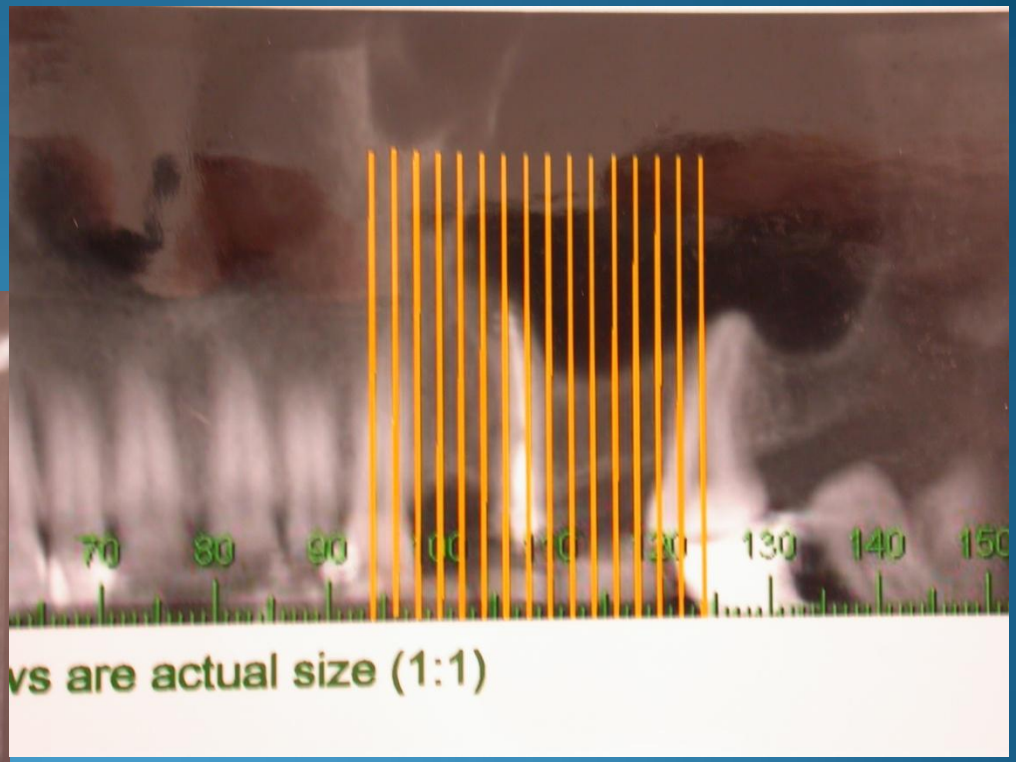


Open sinus lift



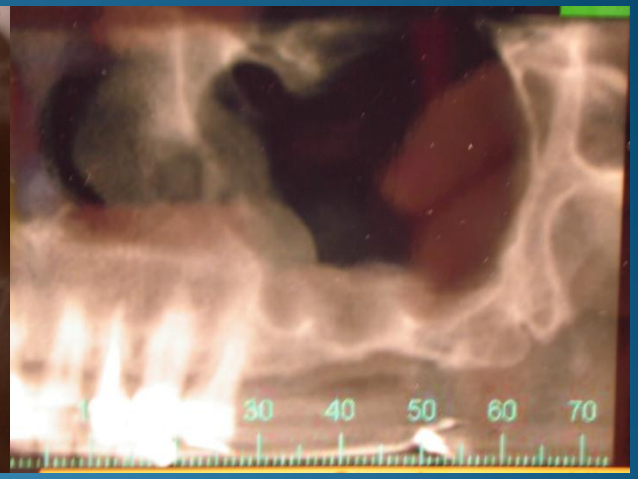


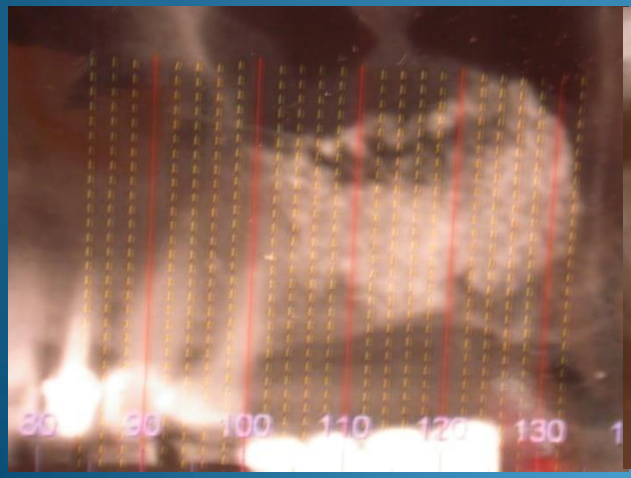


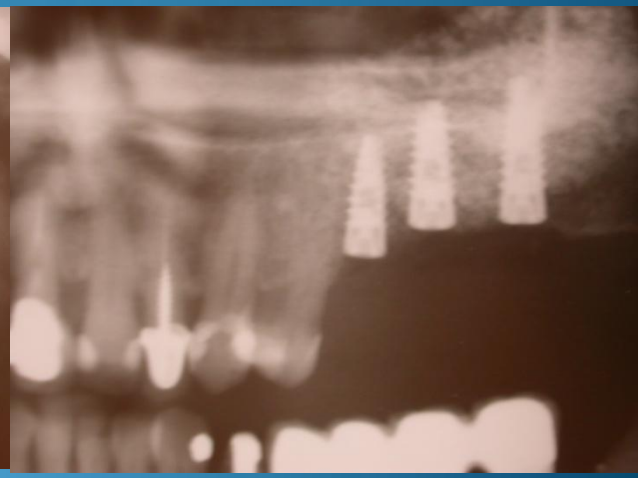


Open sinus lift

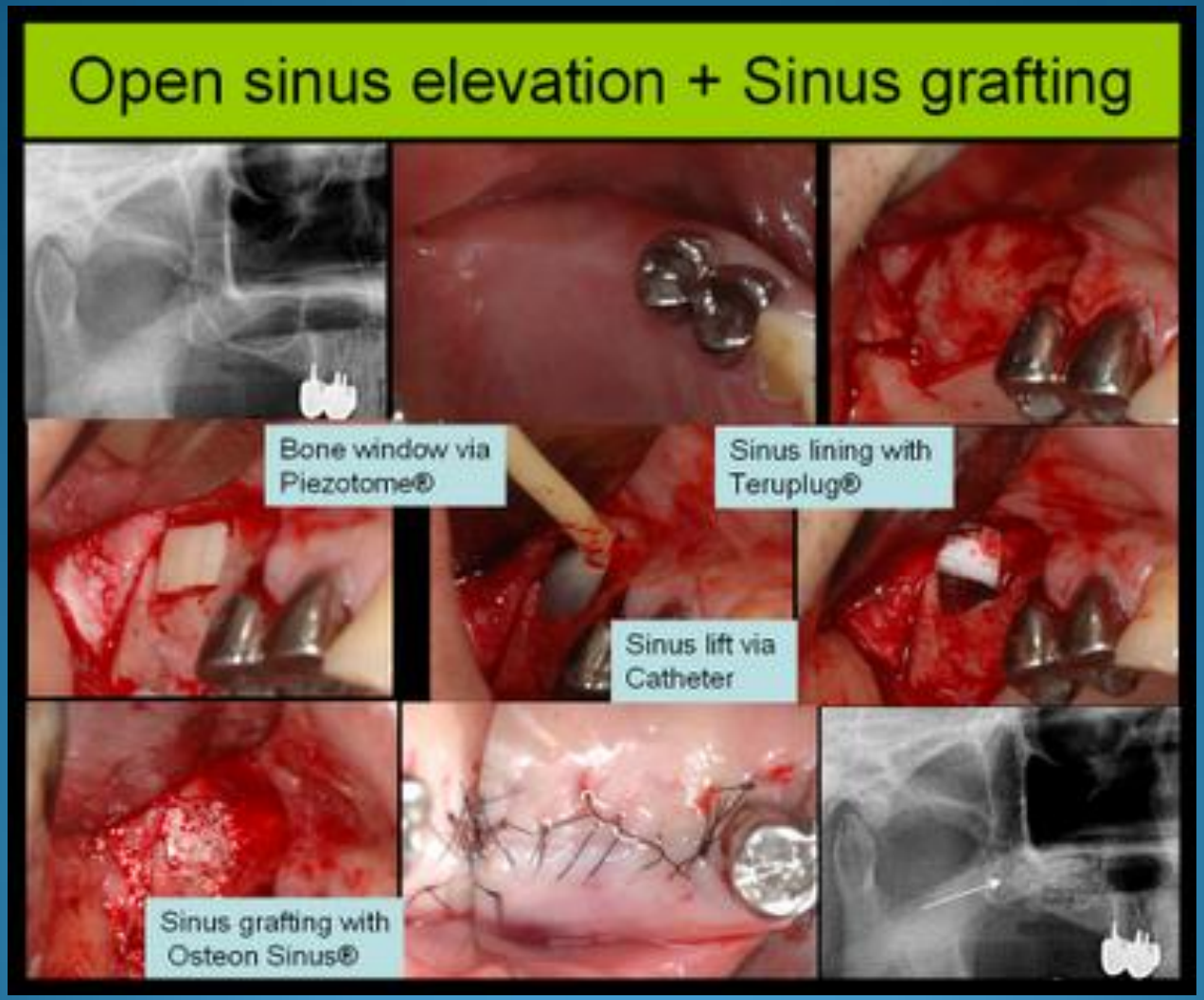
Open sinus lift



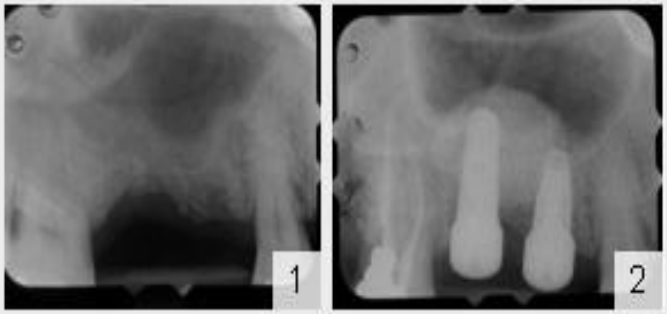


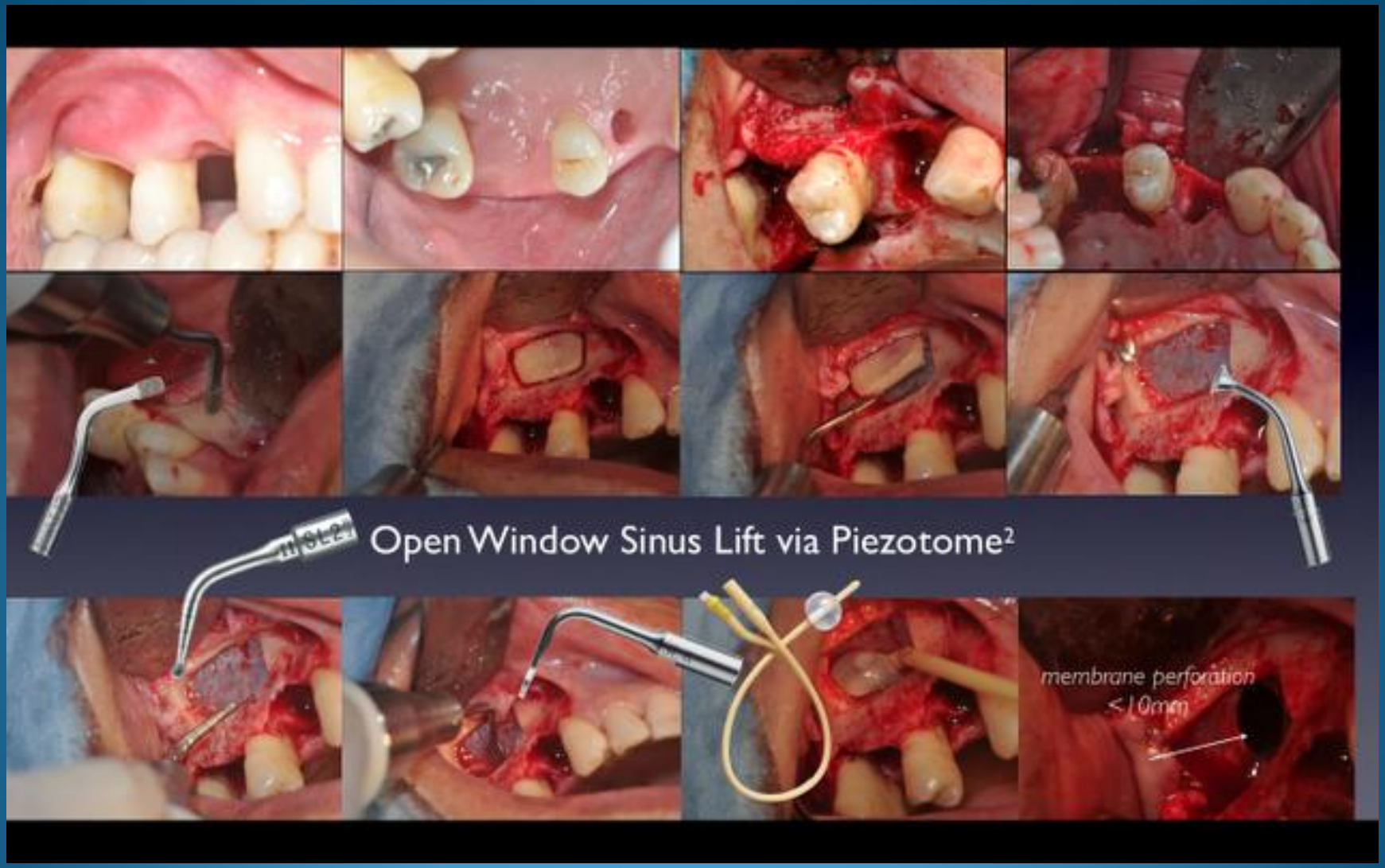


Open sinus elevation + Sinus grafting



Xr Open sinus lift




Open Window Sinus Lift via Piezotome²
membrane perforation
< 10mm

Complication

Complication

Intra-operative complications

Early post-operative complications

Late post-operative complications

Intra-operative complications

Membrane perforation

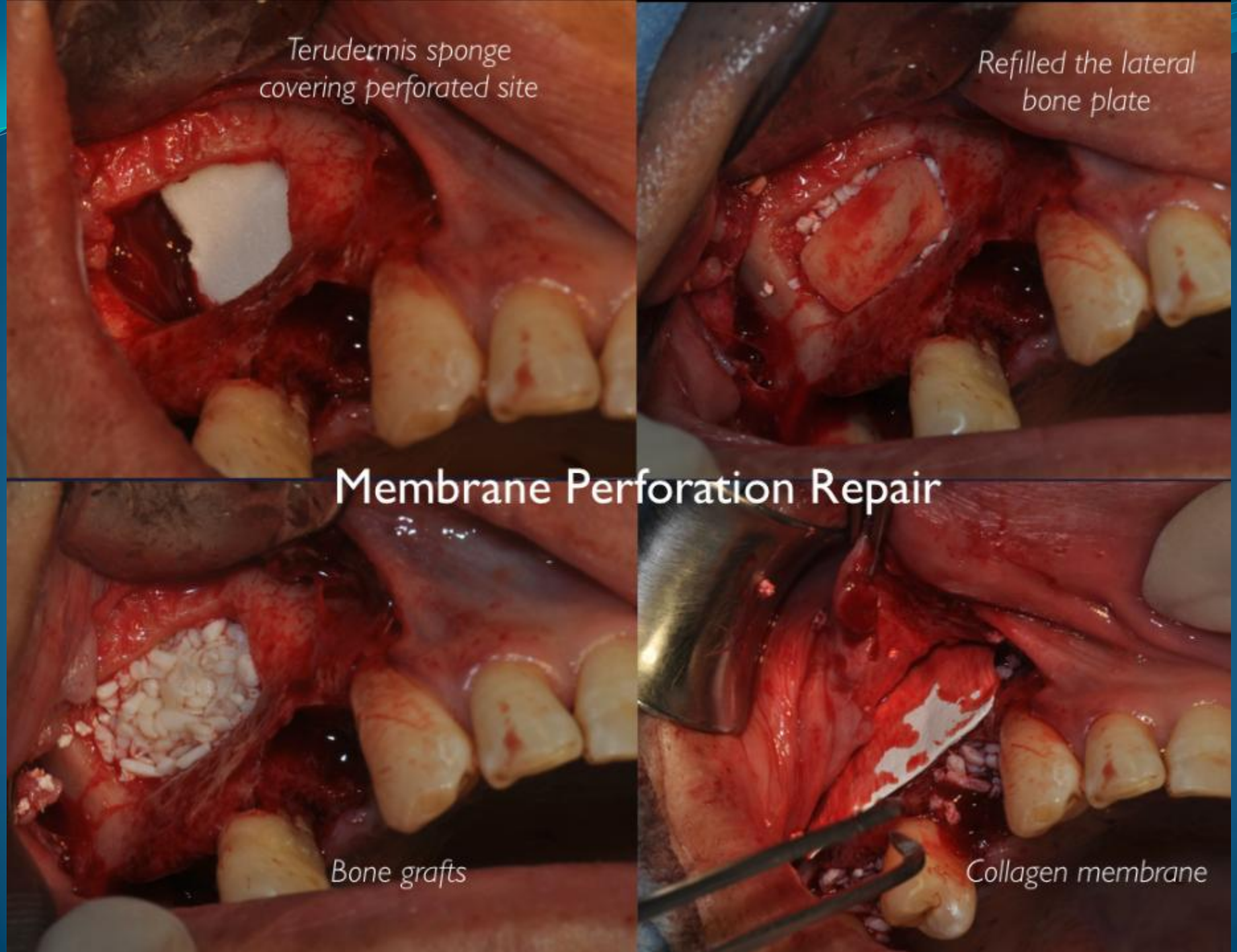
Unexpected sinus septa
Disadvantageous sinus morphology

Alveolar fractures

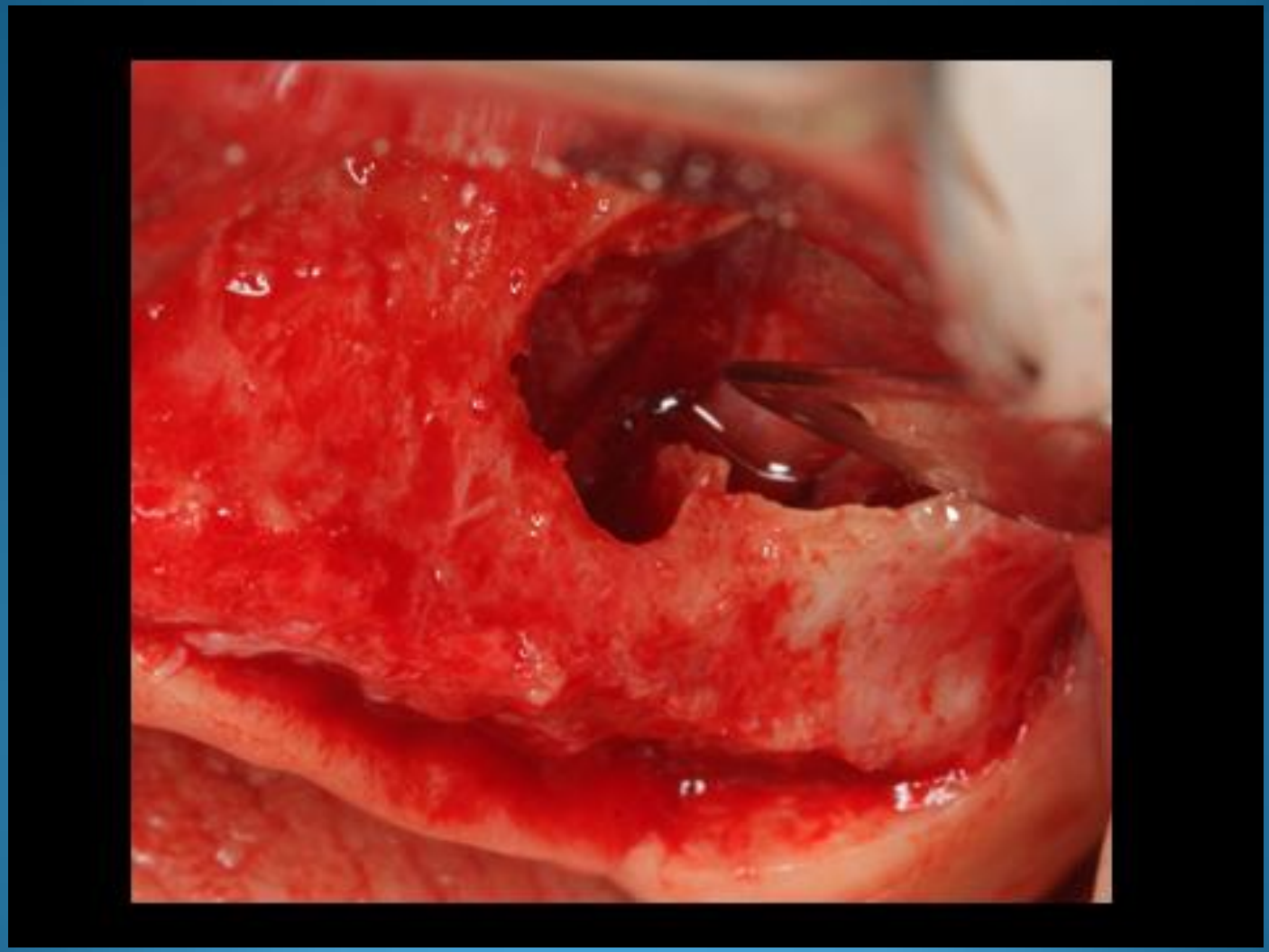
Bleeding

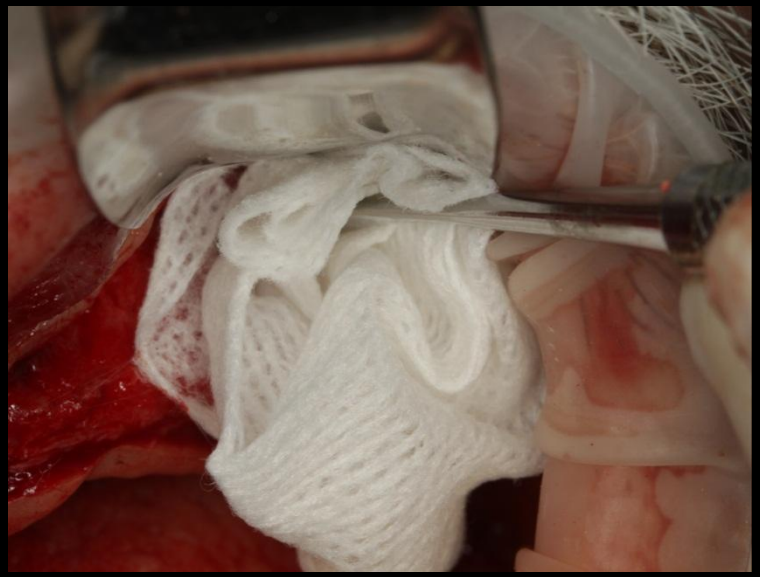
Obstruction of nasal drainage

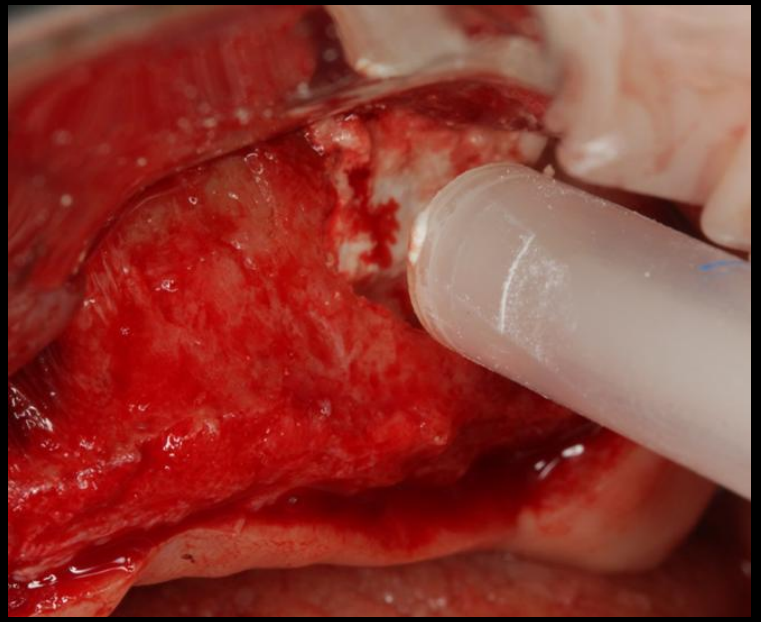
Damage of anatomic structure

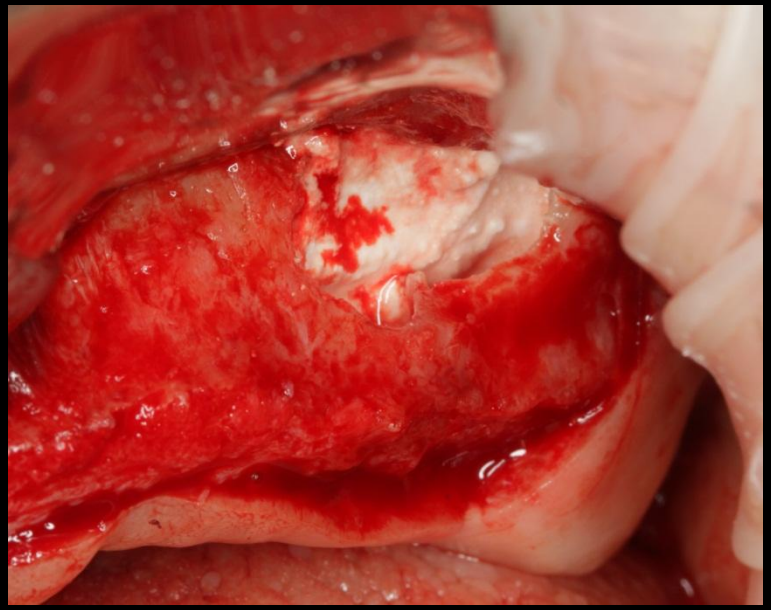

Terudermis sponge
covering perforated site
Refilled the lateral
bone plate
Membrane Perforation Repair
Bone grafts
Collagen membrane

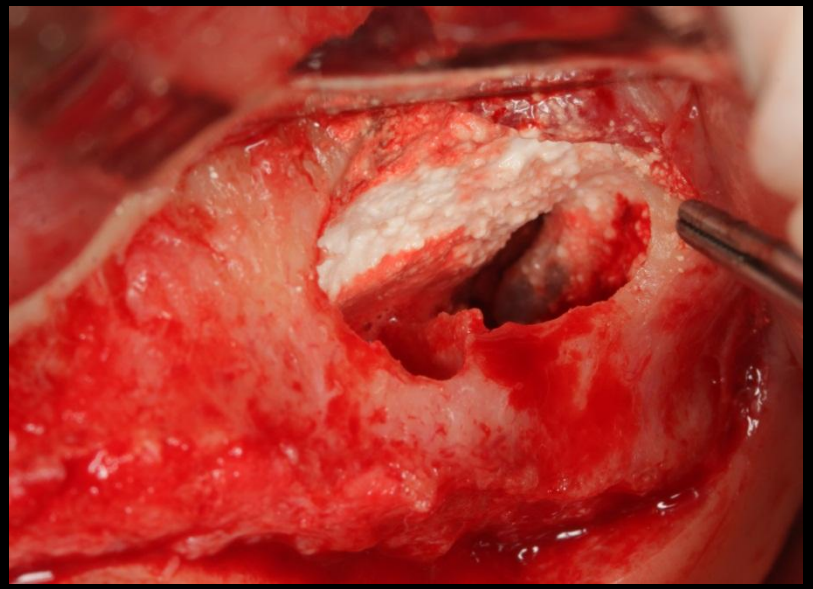
Case-I

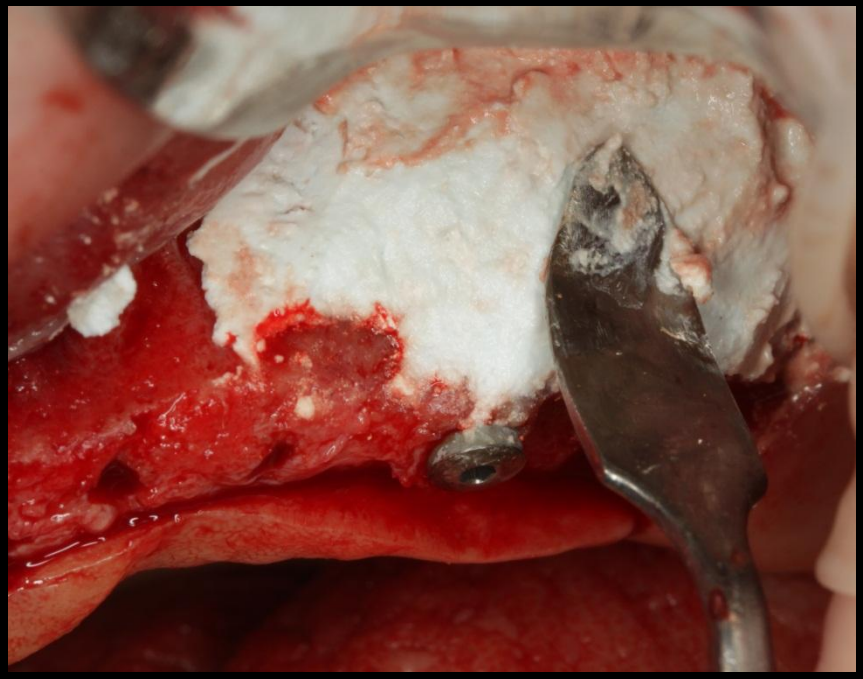


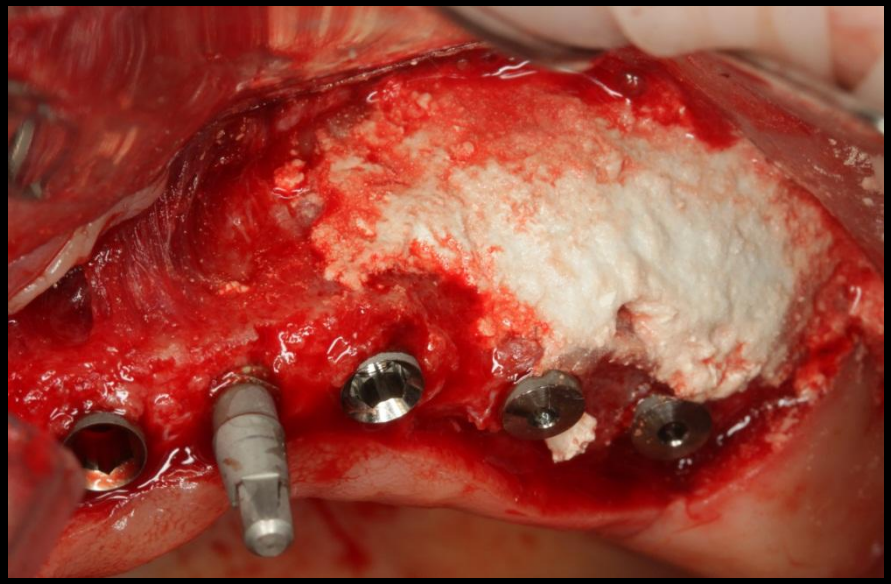




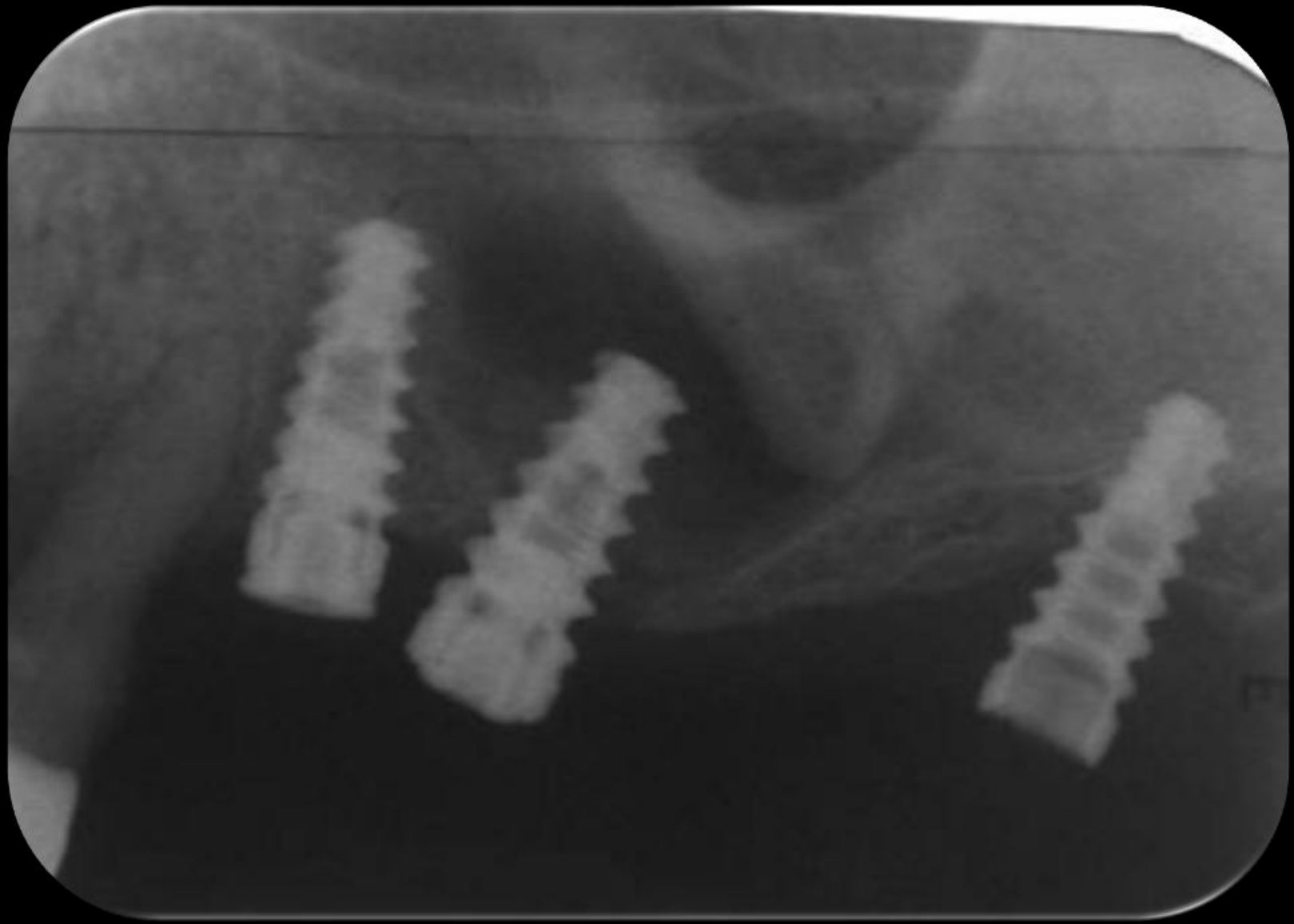


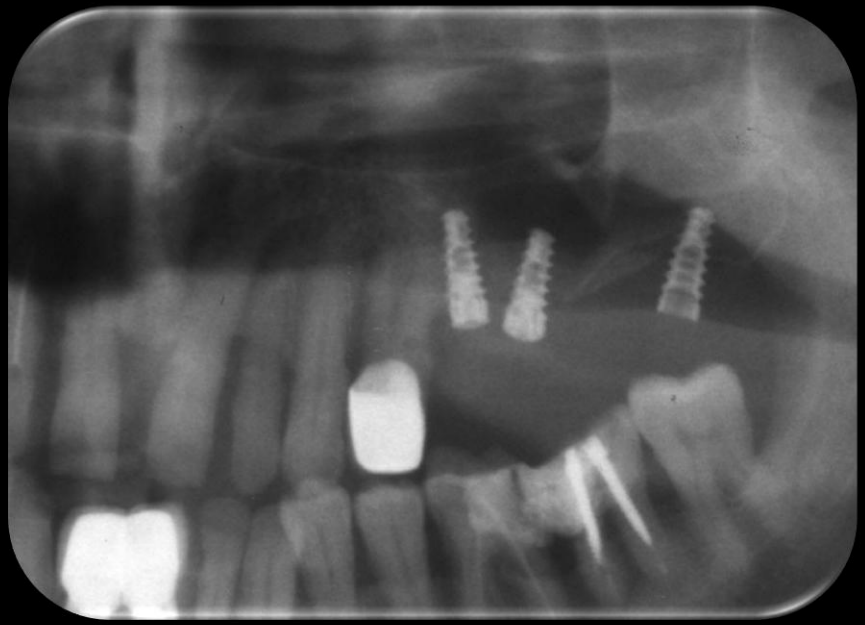


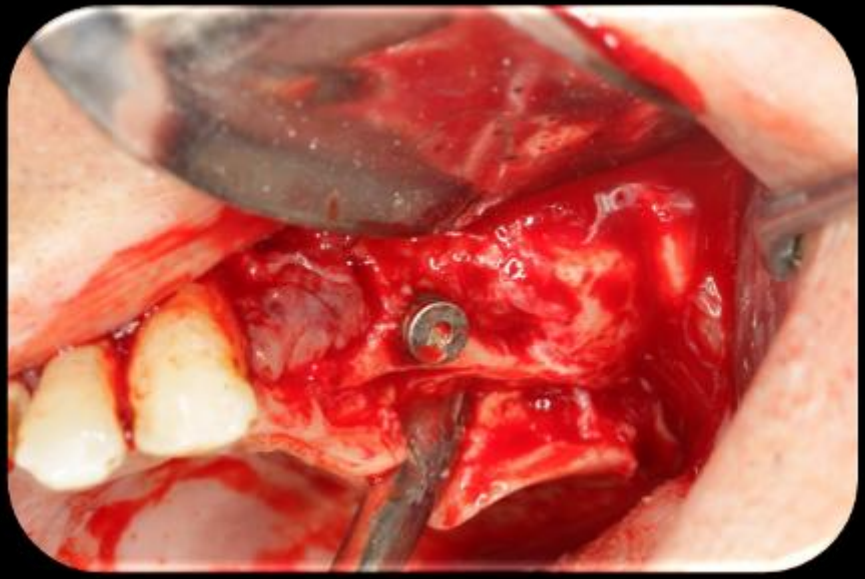


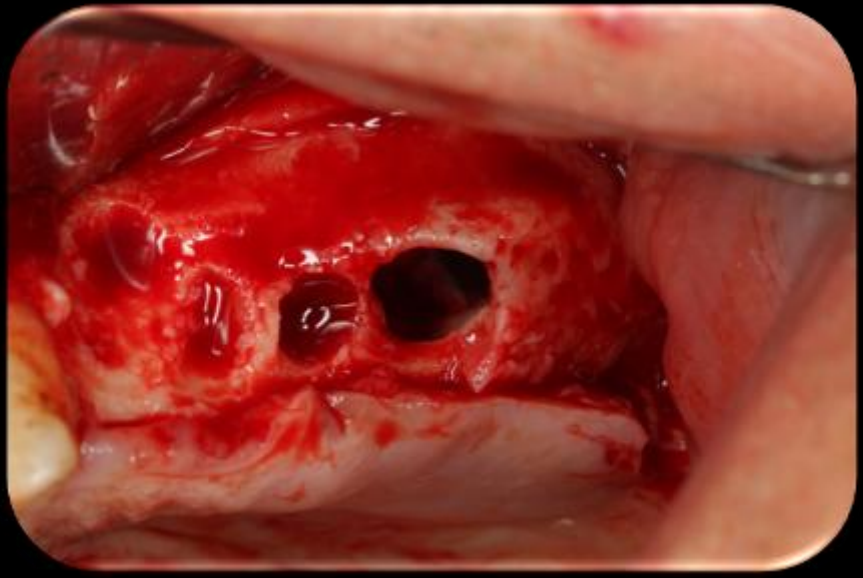


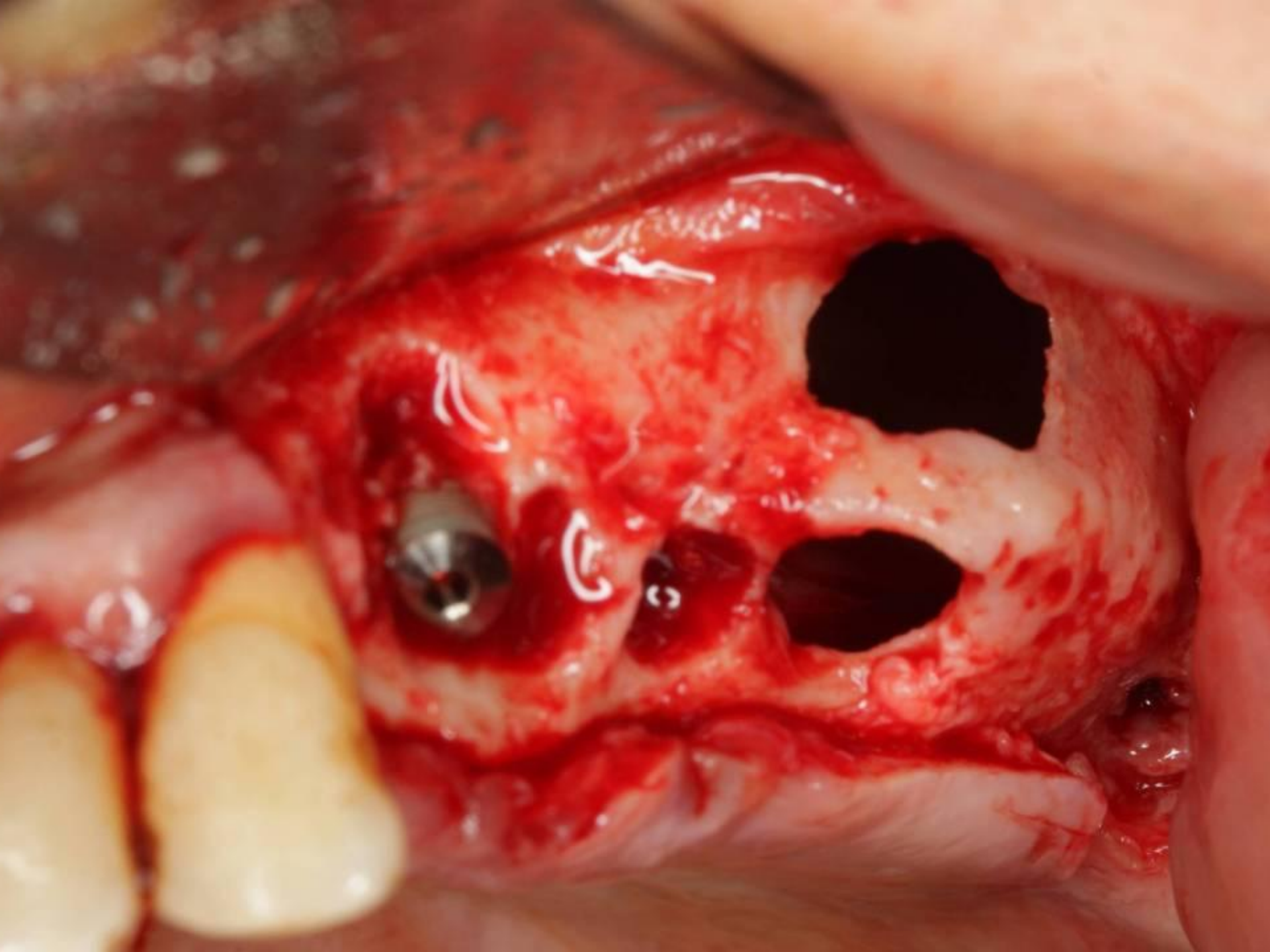
Case-II

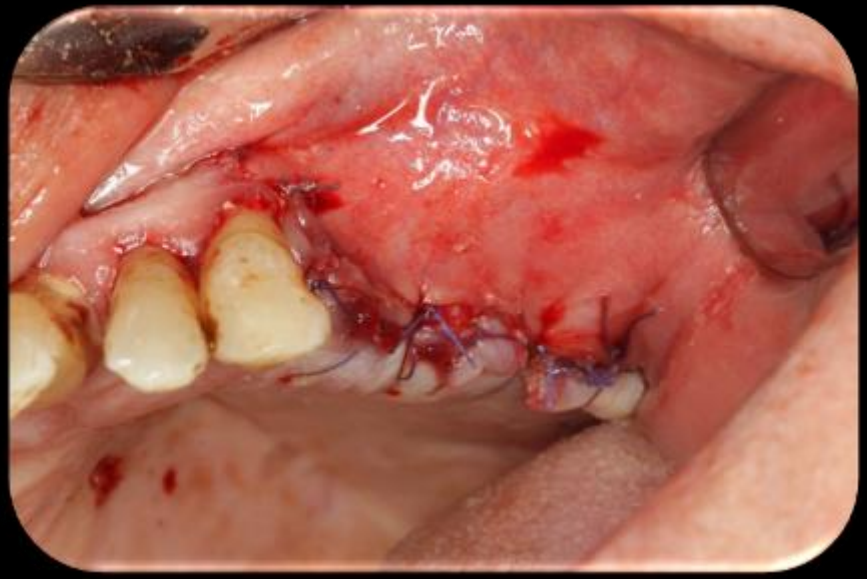




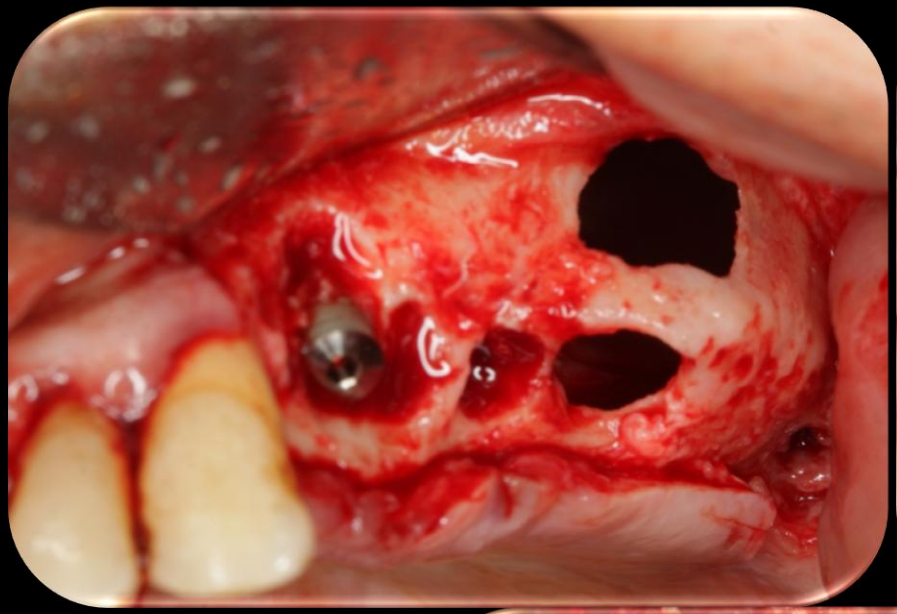


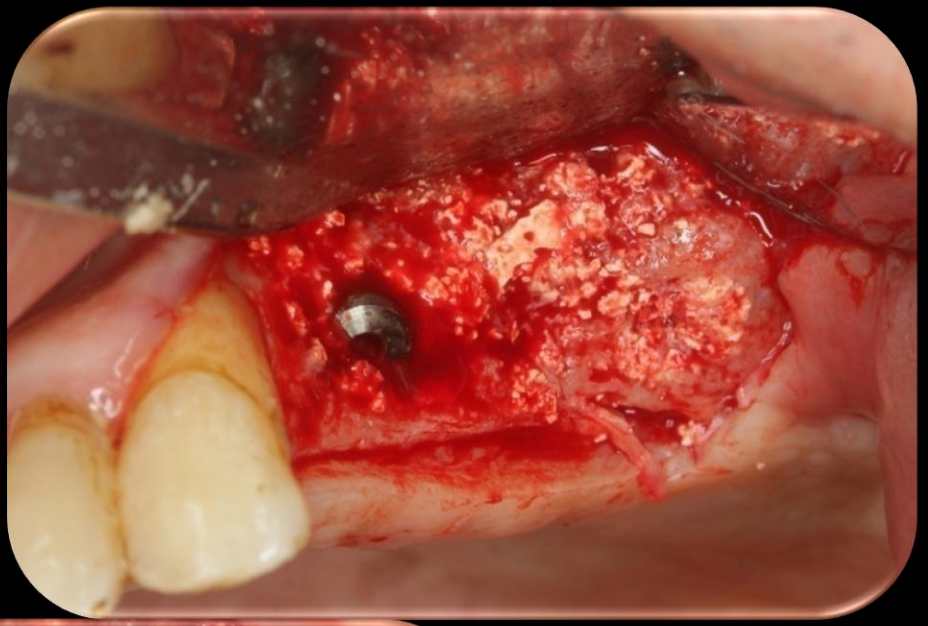


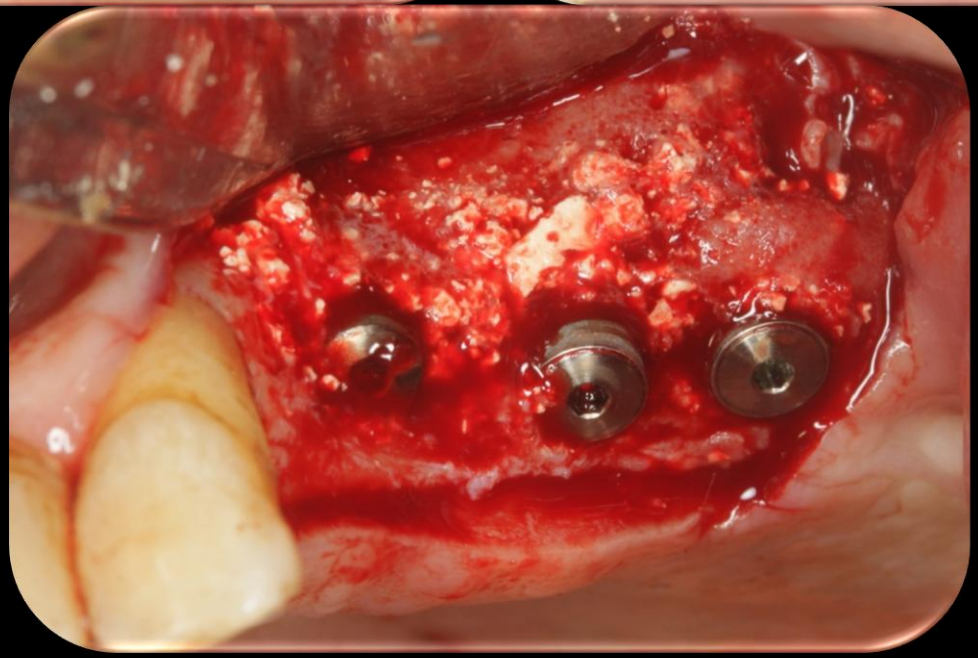




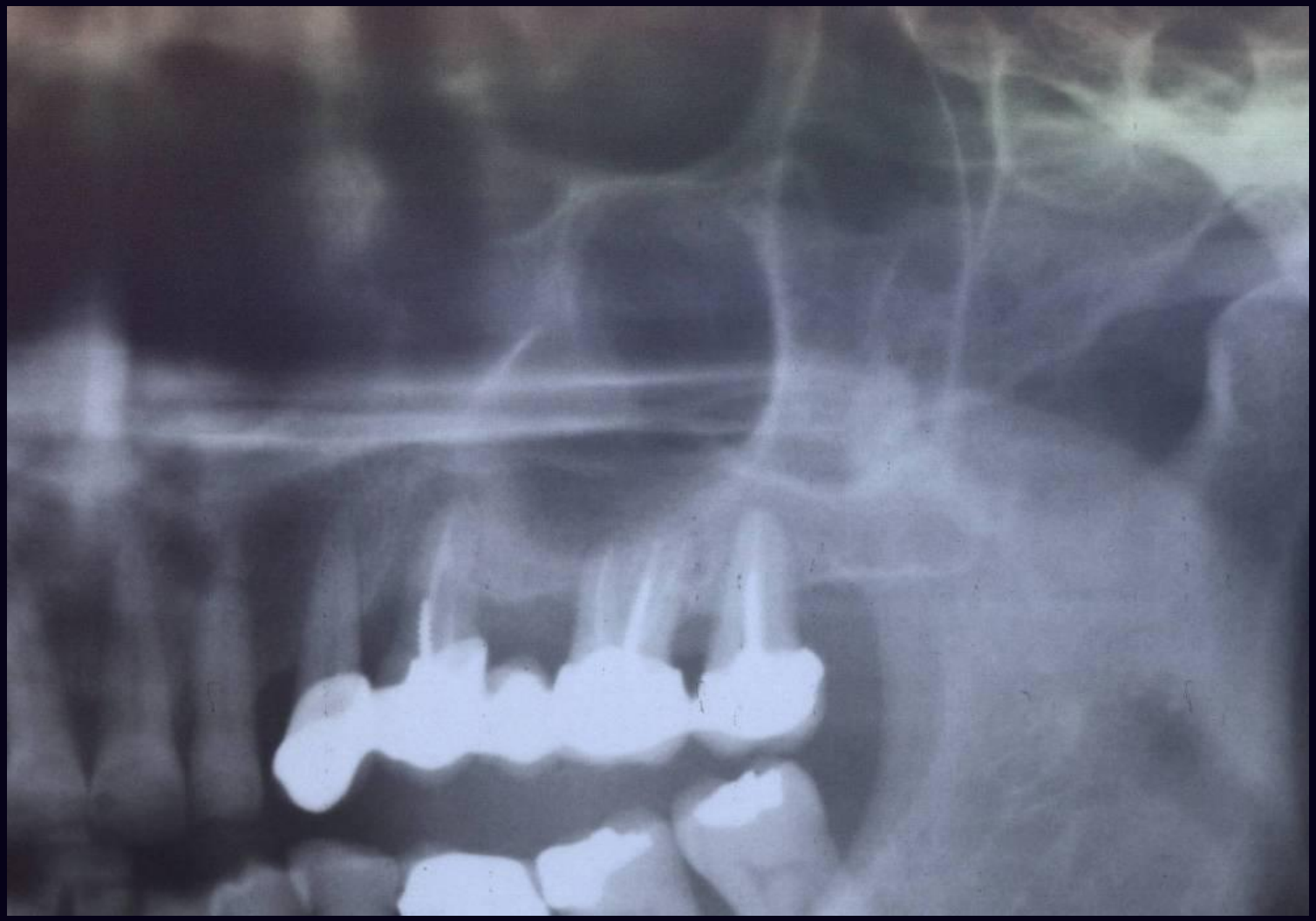

Radiography after 3 month
R
Scale: 120%



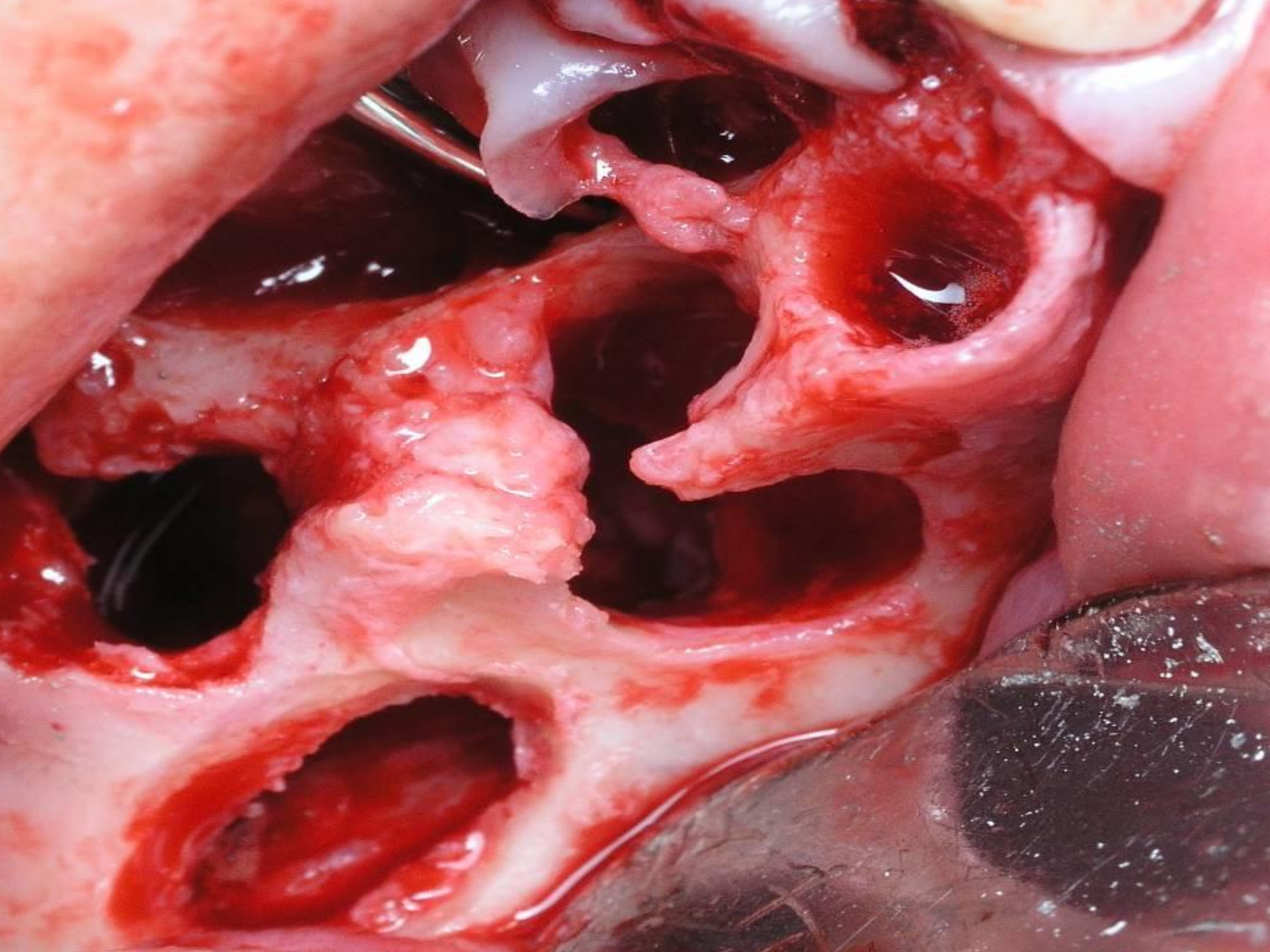


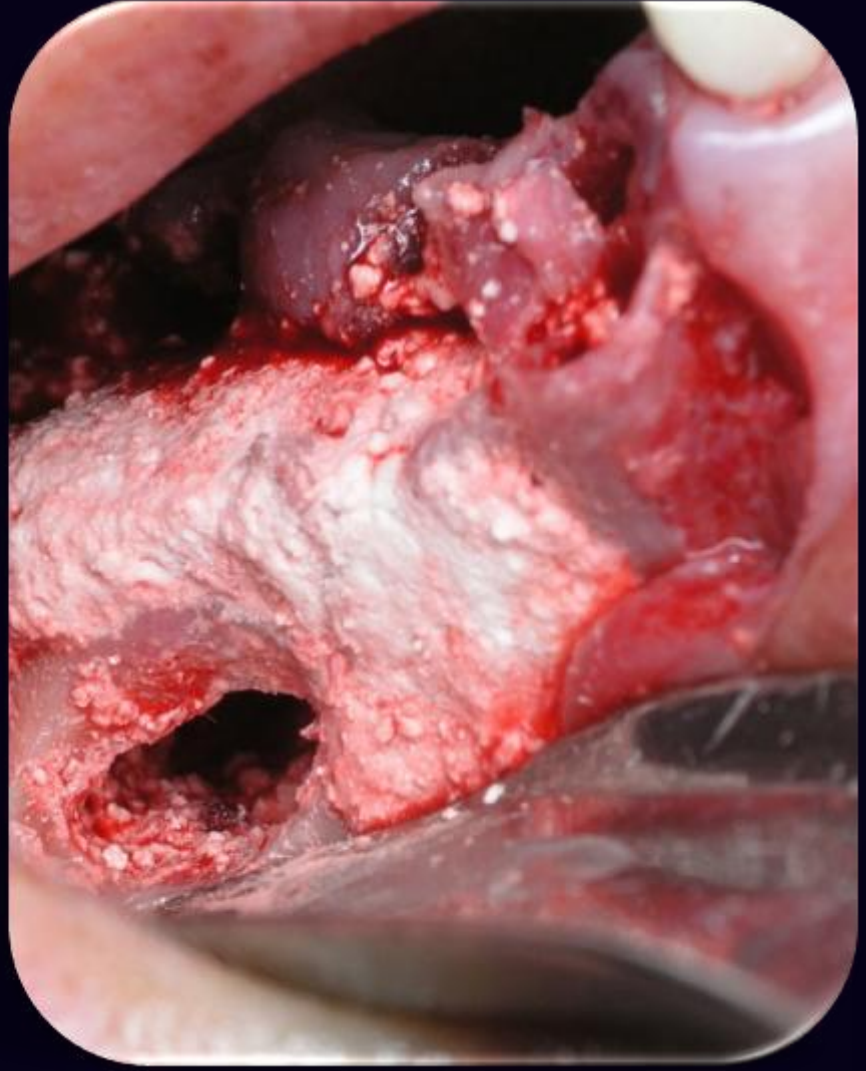


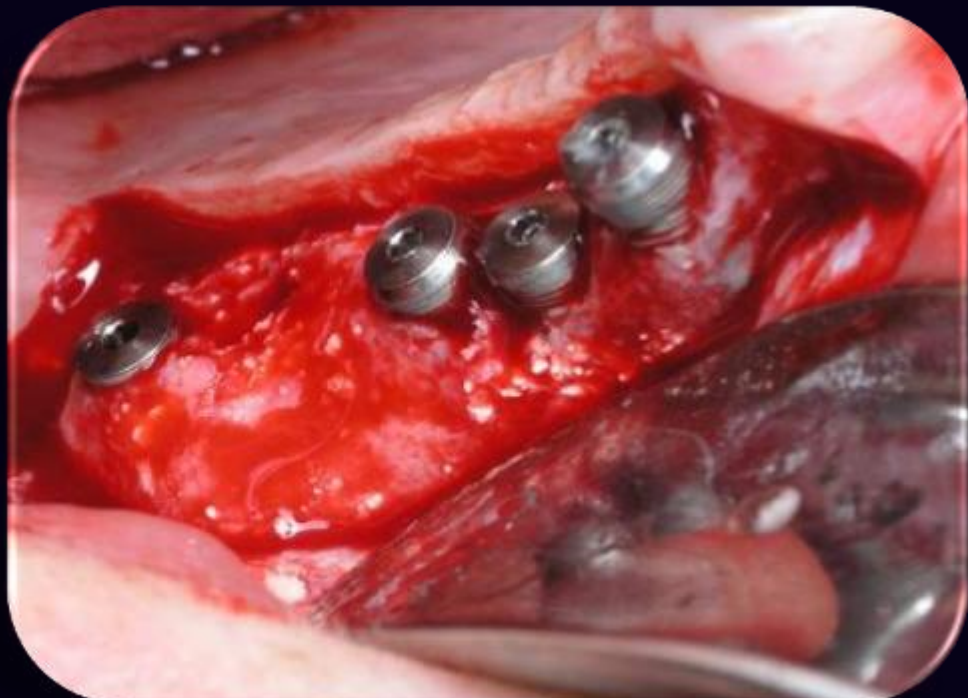
Case-III



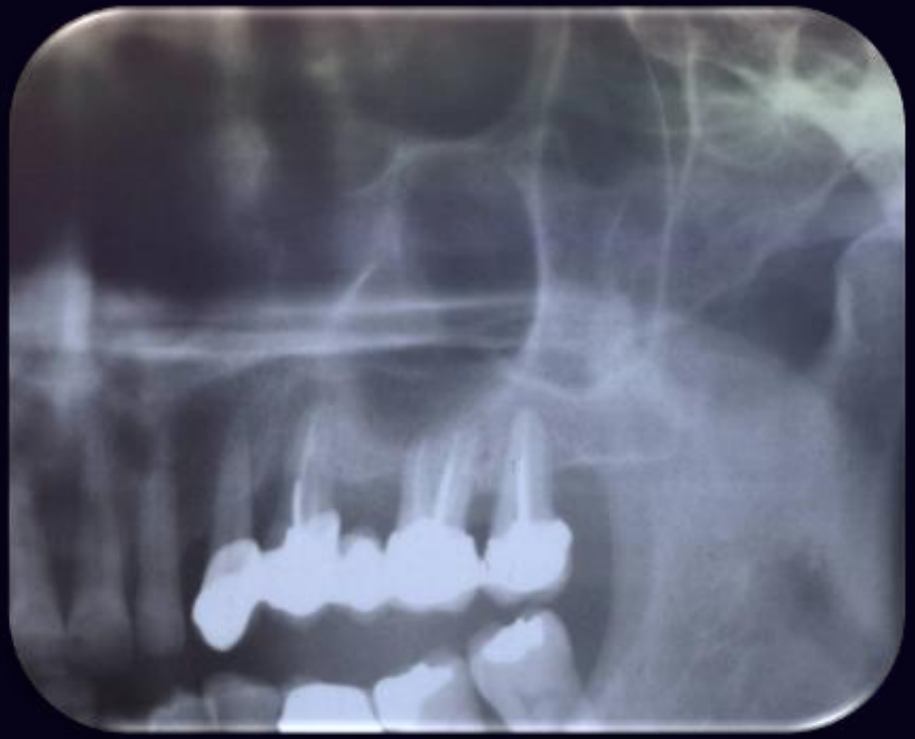


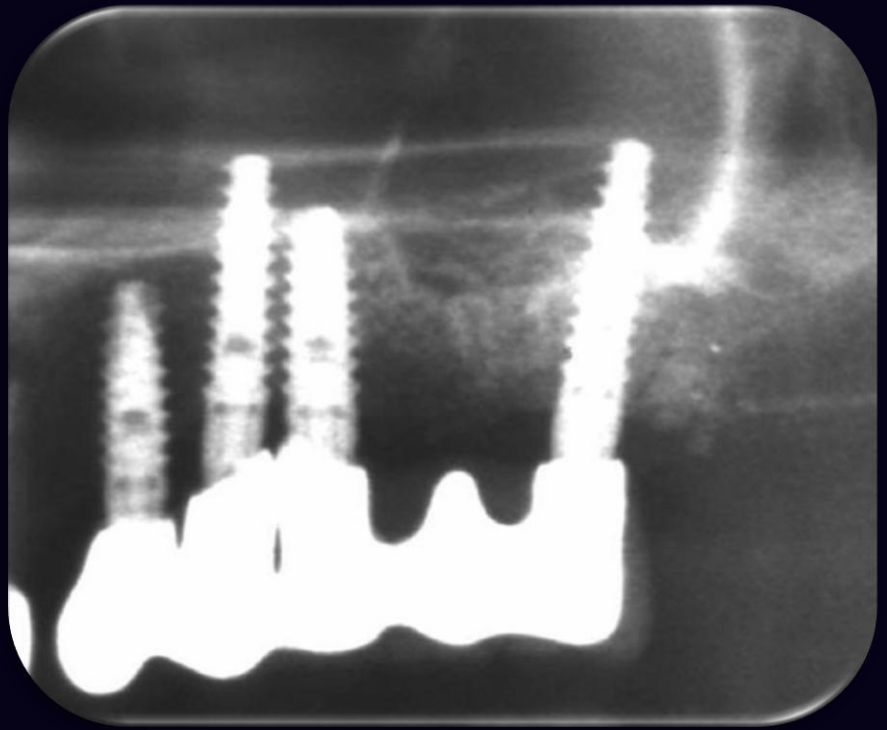



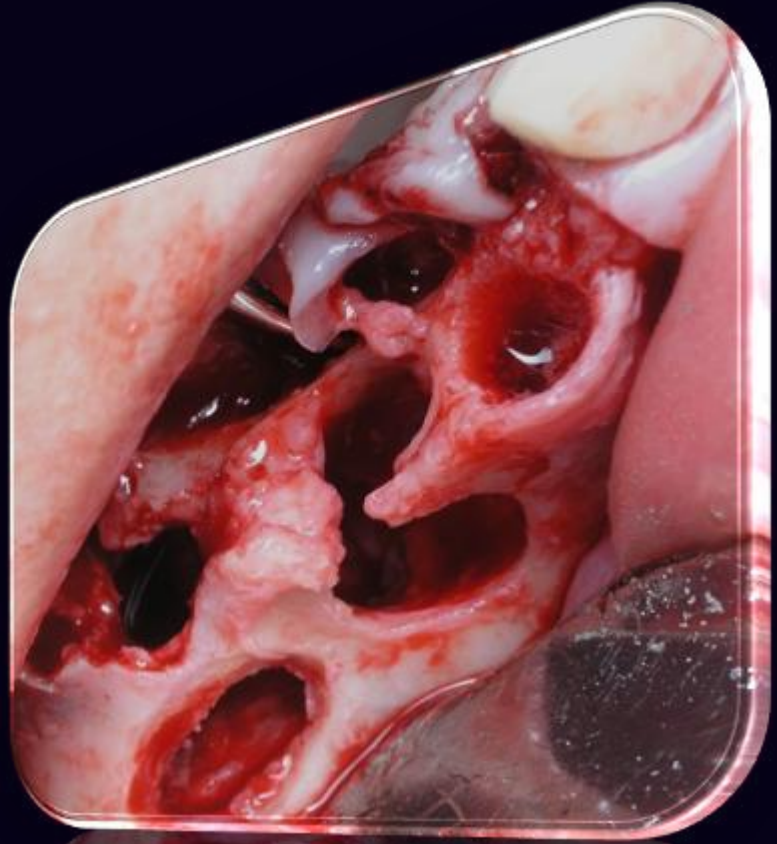




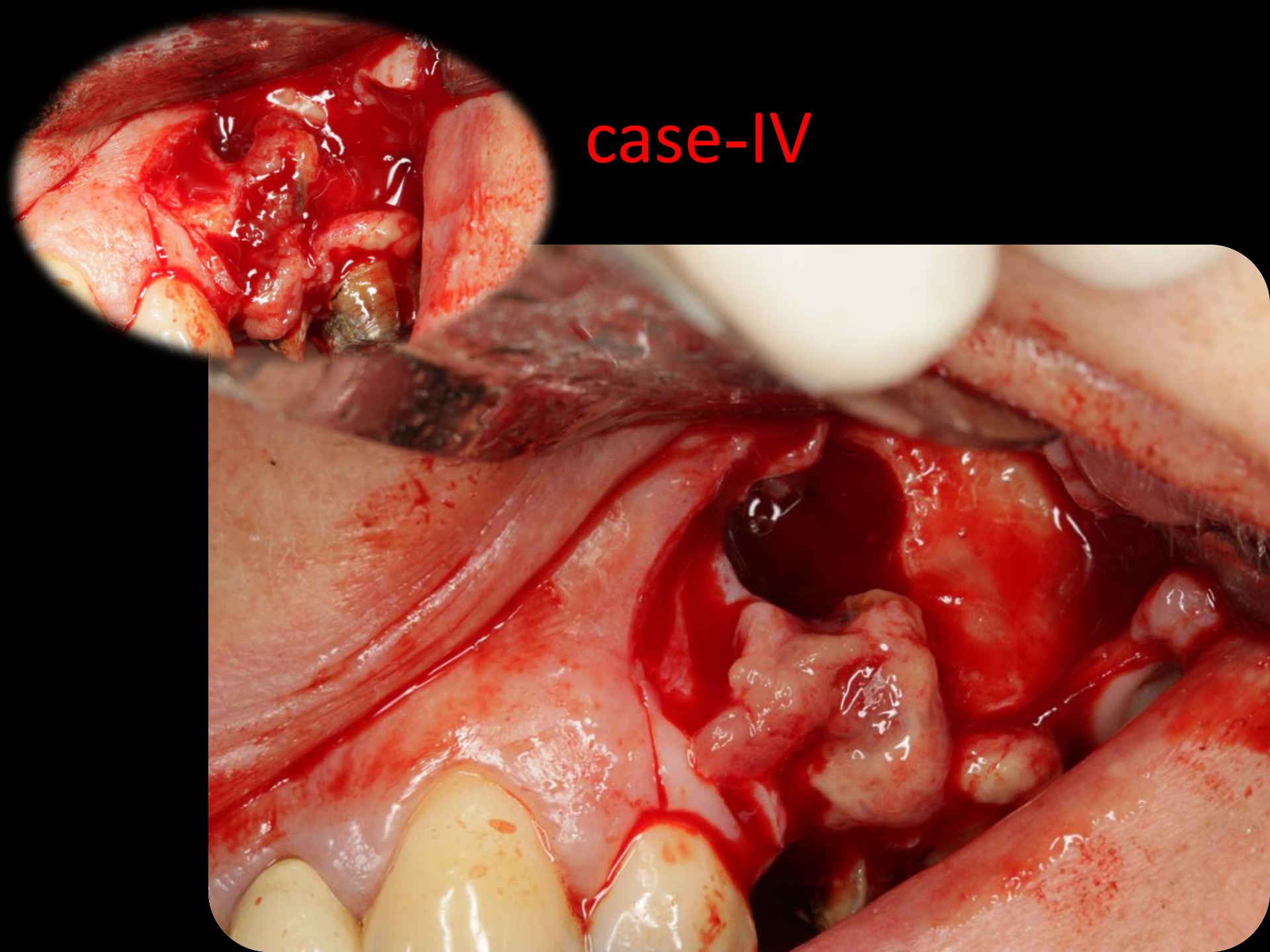
Radiography after 12 month



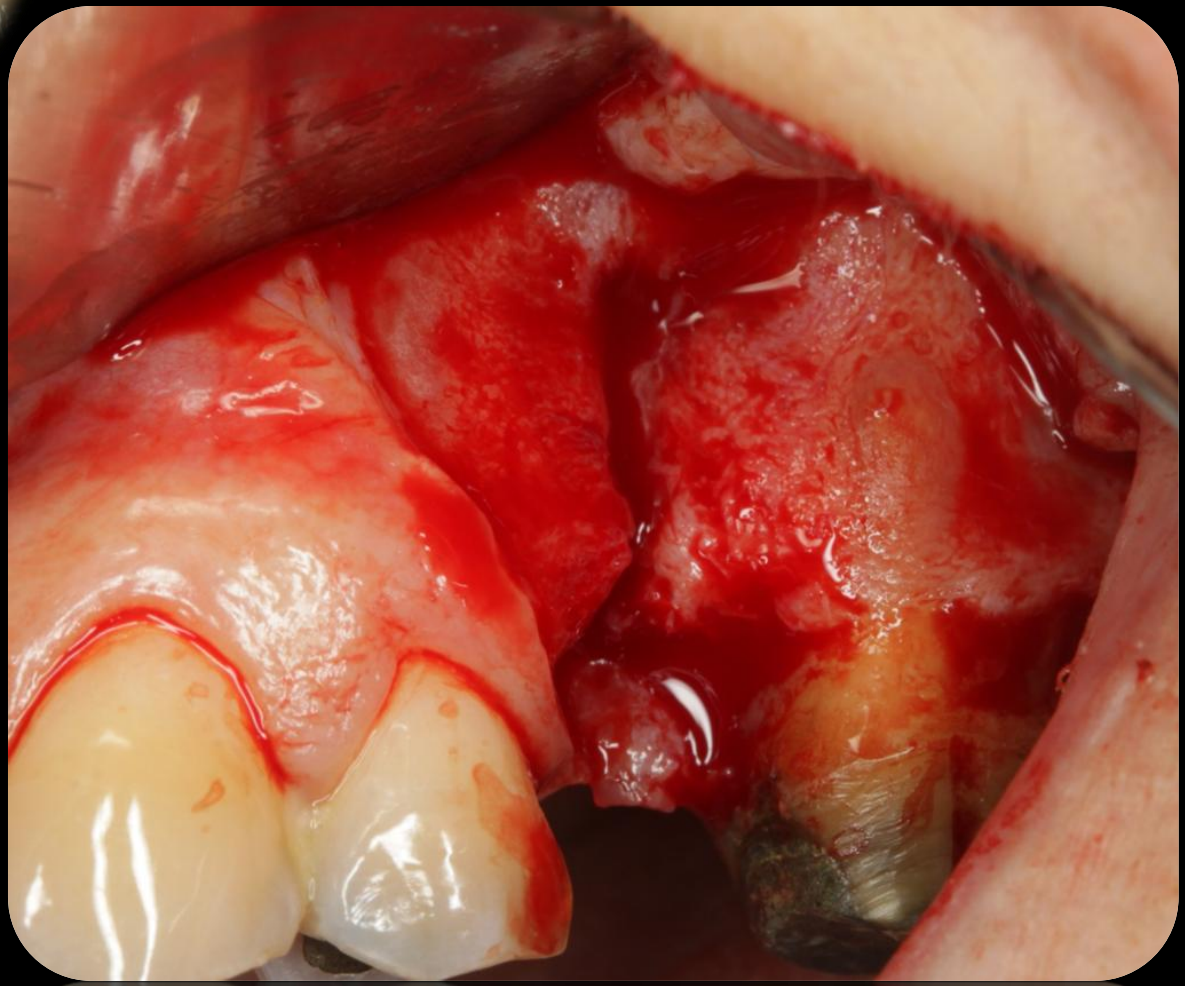




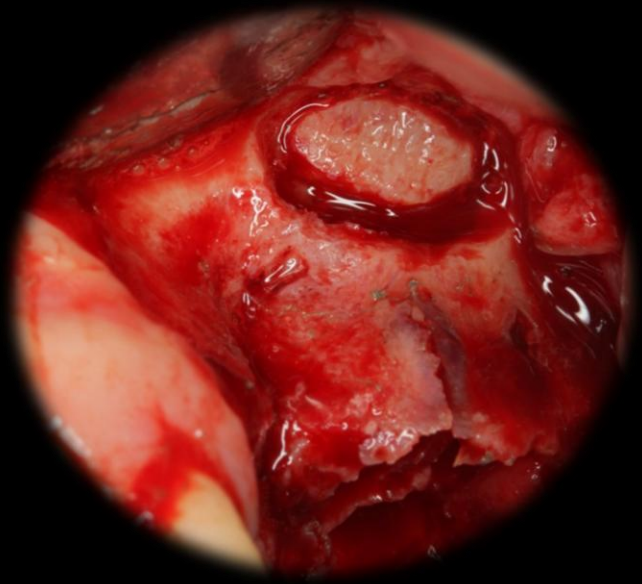
case-IV

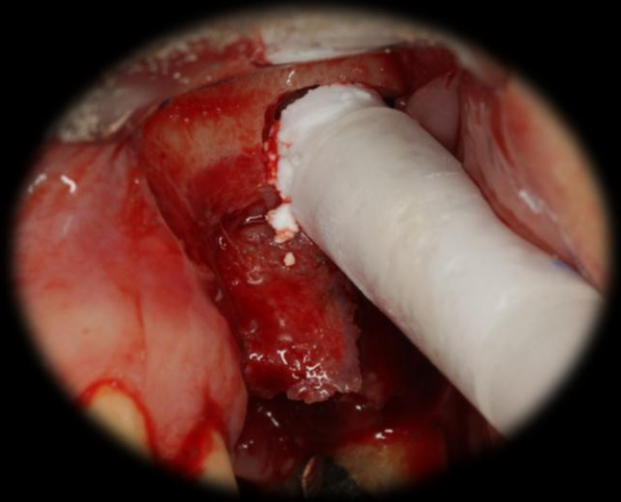


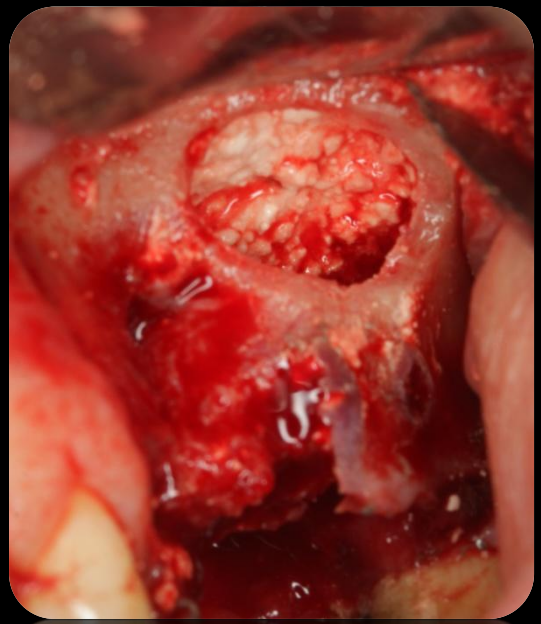
3 month post op

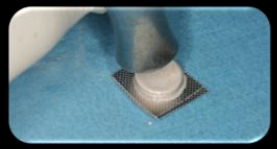


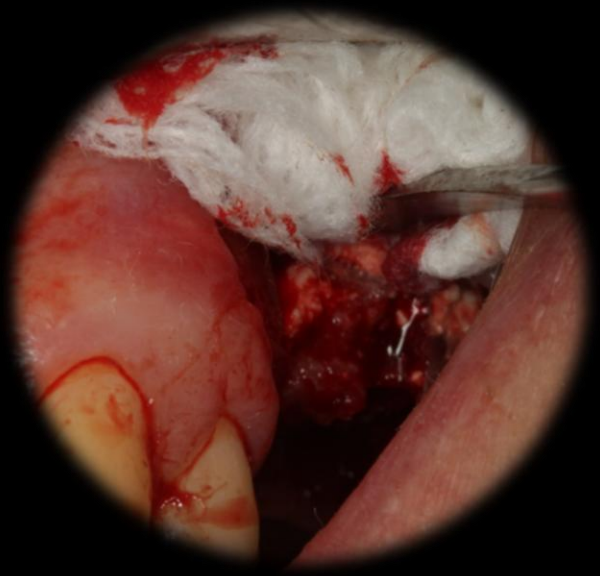
Sinus lift by sandwich layers technique

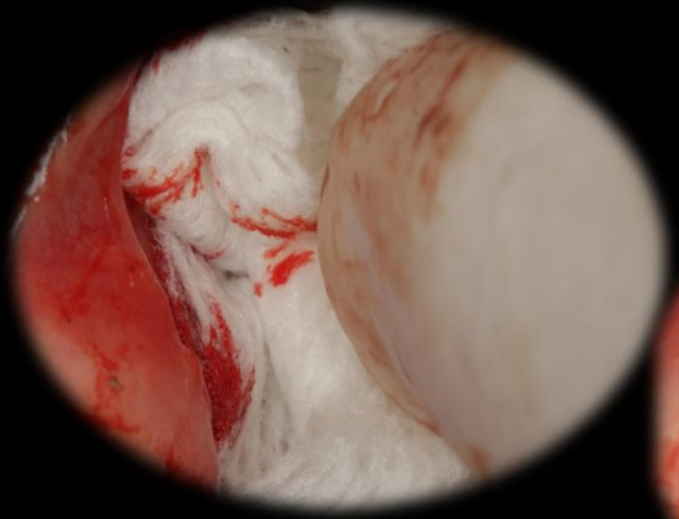


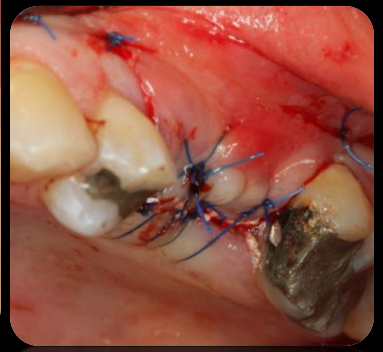








5 month post op

Final restoration

Intra-operative complications

Membrane perforation

Unexpected sinus septa

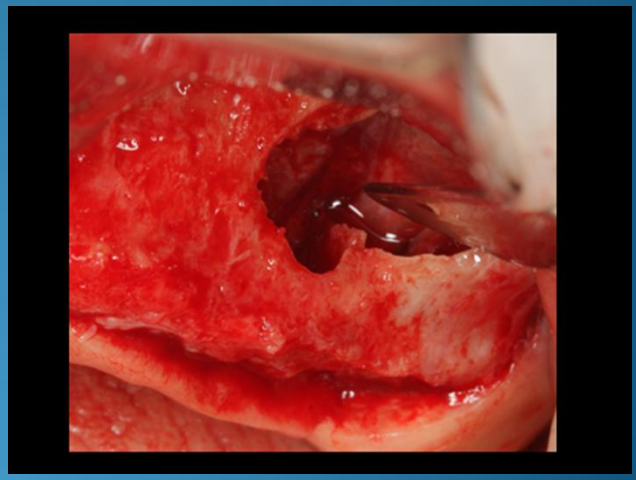
Disadvantageous sinus morphology

Alveolar fractures

Bleeding

Obstruction of nasal drainage

Damage of anatomic structure



Intra-operative complications

Membrane perforation

Unexpected sinus septa

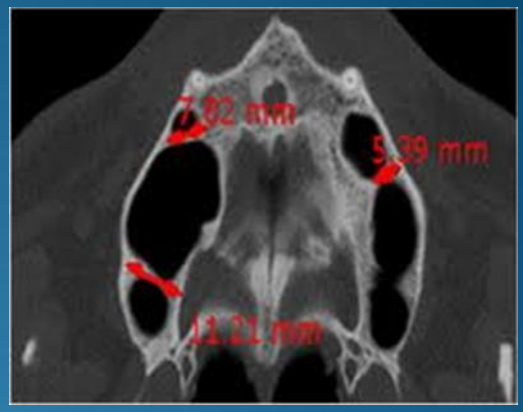
Disadvantageous sinus morphology

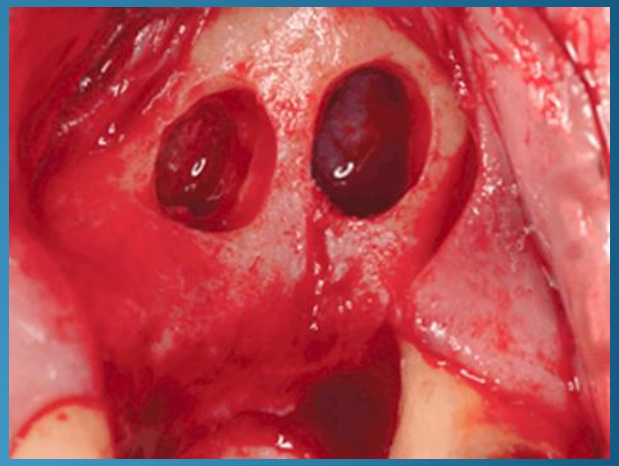
Alveolar fractures

Bleeding

Obstruction of nasal drainage

Damage of anatomic structure





Intra-operative complications

Membrane perforation

Unexpected sinus septa

Disadvantageous sinus morphology

Alveolar fractures

Bleeding

Obstruction of nasal drainage

Damage of anatomic structure

Early post-operative complications

Wound dehiscence

Implant loss

Loss of the augmented bone

Infection

Late post-operative complications

Maxillary sinusitis
(The post-operative sinusitis rates are between 3% and 8% (Strietzel 2004).

Antral perforation

Implant shifting

Implant loss