Oro-Antral Communications

Ætiology, Diagnosis, Avoidance & Repair

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Oro-Antral Communications

What is an Oro-Antral Communication?

Communication between the maxillary sinus and the oral cavity.

What is an Oro-Antral Fistula?

If an OAC is not treated, this can become lined with epithelium. Hence, an oro-antral fistula is an epithelised tract linking the maxillary sinus to the oral cavity.

(Synonyms also include *oro-antral* & *oral fistulæ*, *sinus perforations* and *antra-oral fistulæ*)

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Why is an OAC a problem (1)?

When an OAC is created, this allows the flow of food, smoke or fluid from the mouth, via the maxillary sinus and into the nose.

Not just these but also bacteria, fungi and viruses. This can set up a maxillary sinusitis, which depending on how long the communication lasts for, may either yield an acute/chronic maxillary sinusitis.

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Why is an OAC a problem (2)?

- *Patients aren't impressed.*
- *Not a practice builder.*
- *Possible hospitalisation.*
- *Possibly medico-legal action.*
- *Removes bone that may be needed for implants (sinus repair & 'lift'/augmentation may be needed).*
- *Remove bony support for dentures (e.g. tuberosity fracture associated with OAC).*

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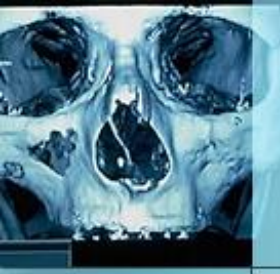
Maxillary Sinusitis (1):

Sinusitis pain may occur in the cheek, around the eye or in the forehead.

Sometimes the pain may be felt in the upper teeth and mistaken for toothache.

Feel malaised, with a headache and perhaps a stuffy nose.

Discharge of pus into the nose is not noticed until beginning to recover.



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Maxillary Sinusitis (2):

Swelling of the face over the sinus sometimes occurs but is not usually marked.

Some patients have repeated infections and go on to develop chronic sinusitis.

Nasal discharge from the back of the nose down the throat may occur.

Often the condition will flare up, with acute pain.

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Ætiology of OAC's (1):

- *The underlying factors were exodontia (48%), tumours (18.5%), osteomyelitis (11%), Caldwell-Luc procedures (7.5%), trauma (7.5%), dentigerous cysts (3.7%), and correction of septal perforations (3.7%).*

- ***Tooth extraction was the most common ætiological factor**; malignancy should be excluded in all patients.*

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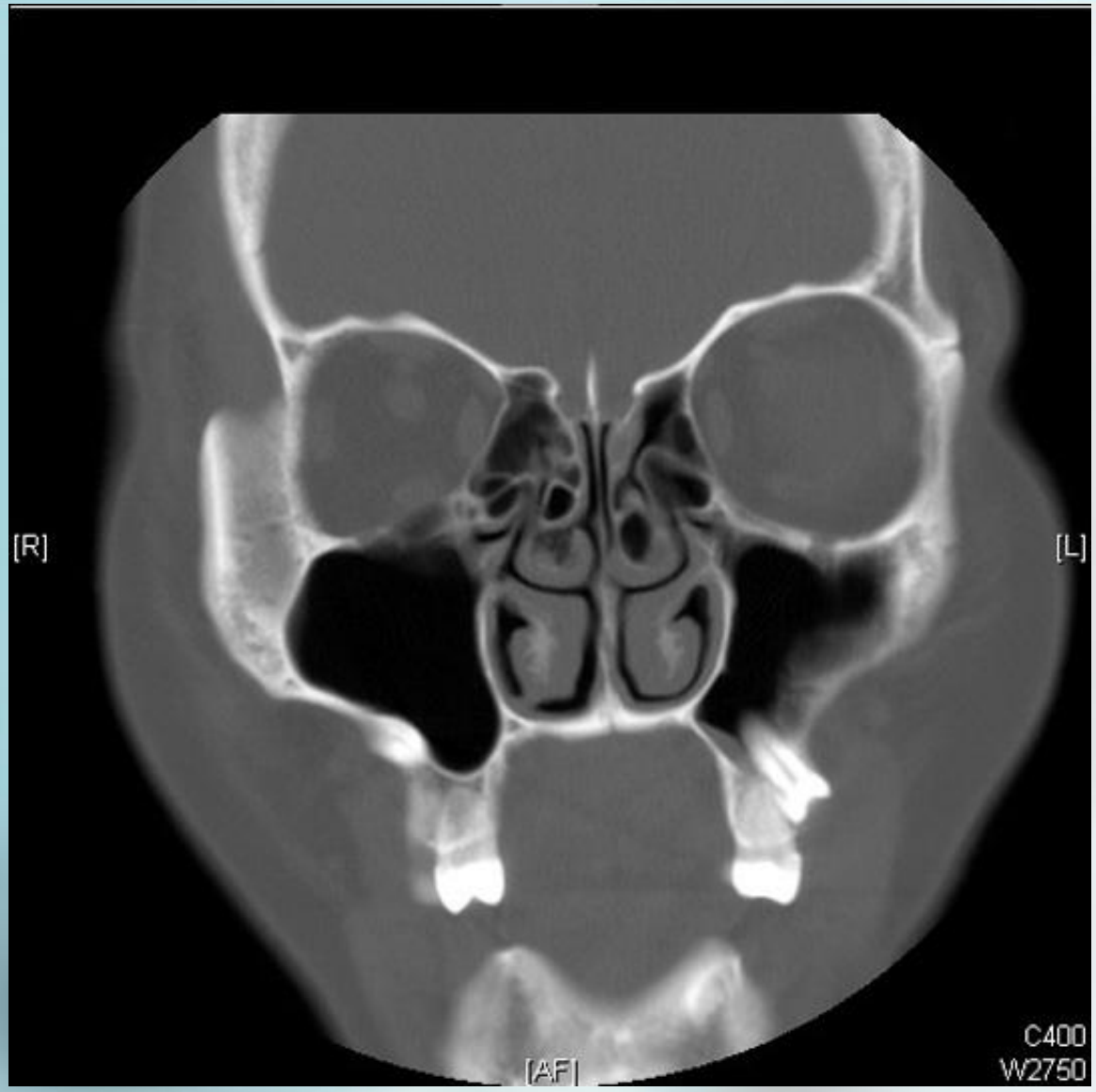

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Ætiology of OAC's (2):

- *Perforation occurred in 77 of all 2,038 teeth (3.8%). Of these, 38 teeth were from males (38/733; 5.2%), and 39 were from females (39/1,305; 3.0%) .*
- *The perforation rate was significantly higher in males.*
- *Perforation occurred most often with extraction of an upper 1st molar, and in the third decade of life.*
- *The perforation rate gradually decreased with higher age.*

Details from the 1st Department of Oral and Maxillofacial Surgery, Tokyo Medical and Dental University 1991 - 1993.

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Ætiology of OAC's (3):

OAC's occur with a variety of dental surgical procedures/pathologies:

- *Apicectomies of maxillary premolars & molars (perforations occurred in 10.4% of teeth).*
- *Plunging an elevator through the bony floor during root tip removal.*
- *Forcing root tips or tooth into sinus.*
- *Penetration while exposing impacted teeth.*
- *Perforation during incorrect curettage.*
- *Fracture of segment of the alveolar process containing several teeth with tearing of floor of antrum.*

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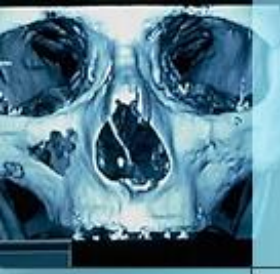
Ætiology of OAC's (4):

- *Luxating an impacted 3rd molar into the antrum whilst attempting to remove it.*
- *HIV-associated periodontitis complicated by necrotising stomatitis and the development of an oro-antral fistula.*
- *Enucleating dental maxillary cysts where the partition twixt cyst and antral lining has become blurred.*
- *Destruction of the maxillary floor by chronic apical infection.*



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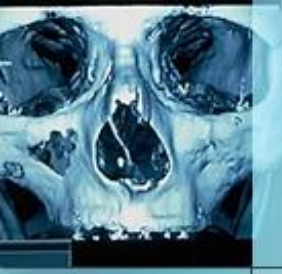
How Do You Pre-Empt Potential OAC Situations?

- *As always, you have to carefully assess the patient - You cannot be gung-ho or complacent about it.*
- *You should not consider removing the tooth if you or your staff do not have the expertise / competence / equipment to resolve any untoward events that may develop.*
- *Refer the patient to Specialists or to the Oral Surgery Department if in doubt.*



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Pre-op Assessment of the Patient (1):

- *Does the tooth need to come out?*
- *Medical History & Dental History checked.*
- *What does it look like on the X-ray?*

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Pre-op Assessment of the Patient (2):

Medical History

- *Underlying systemic disease e.g.: cardiovascular / metabolic / endocrine / hæmatological.*
- *Presence / absence of associated disease (e.g.: cysts/ neoplasia).*
- *Presence / absence of other local bone / soft tissue disease (e.g.: Paget's Disease / vascular malformations / osteoradionecrosis).*

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Pre-op Assessment of the Patient (3):

Dental History & What does it look like on the X-ray?

- *Previous history of OAC's.*
- *Bone quantity / quality / density (infective / condensing osteitis; isolated tooth due to extraction of adjacent teeth some years previously; bridge abutments; Pagets Disease; Osteopetrosis).*
- *Anatomical position (e.g.: angulation / rotation leading to limited visual access).*
- *Previous radiotherapy.*
- *Extent / Proximity of Antrum.*

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Pre-op Assessment of the Patient (4):

- *Associated ankylosis / hypercementosis.*
- *Root morphology (divergent roots / curved roots).*
- *Status of adjacent teeth (e.g.: periodontal disease / presence of restoration / function as bridge abutment).*
- *RCT?*
- *Periapical infections / Periodontal disease.*
- *Relationship to the tuberosity.*
- *Lone standing tooth or adjacent teeth?*
- *Patient cooperation / compliance.*
- *Age of patient.*

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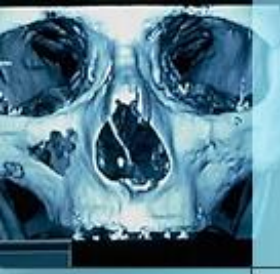
As a very broad generalisation, the following may be thought to indicate an OAC-likely situation:

- *Proximity of Antrum.*
- *Hypercementosis / Ankylosis.*
- *Periapical infections / Long-standing Caries.*
- *Marked Periodontitis.*
- *Proximity to the Tuberosity.*
- *Lone-standing / End of Arch.*
- *Previous history of OAC's.*



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What To Do Surgically?

- *Warn the patient as to what to expect of the procedure & take their consent.*
- *(Use a periotome?)*
- *Raise a flap that can be converted into a buccal flap to close the OAC.*
- *Remove bone from around the tooth in question.*
- *Section the tooth.*
- *Elevate with care.*
- *Check the socket after exodontia.*
- *If no OAF obvious, close as normal.*
- *Post-op advice including no nose-blowing, advice about signs / symptoms of an OAC.*

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How to Recognise the Acute OAC

If OAC possible, then:

- *Examine tooth for adherent bone.*
- *"Nose-blowing" test.*
- *Determine the size of the defect.*
- *< 2mm in diameter, no treatment required.*

NB The majority of OAC's are not diagnosed as they spontaneously heal.

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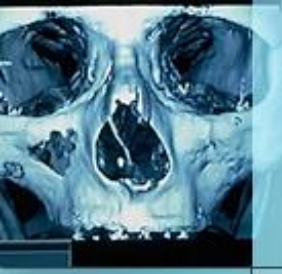
Treatment of the Acute OAF:

- *Do not probe the defect*
- *Promote good blood clot*
- *Good gingival approximation*
- *Hæmostatic Agent* (Surgicel, Curaspon)
- *Antibiotics* (Amoxycillin, Vibramycin)
- *Nasal decongestants* (Ephedrine *nasal drops*, Oxymetazoline)
- *Steam inhalations* (Menthol & Eucalyptus)
- *Antiseptic mouth-wash* (Corsodyl)
- *No nose-blowing or smoking*



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How to Recognise the Chronic OAC / OAF (1):

The OAC is likely to become chronic / OAF if:

- *OAC is greater than 5mm in diameter*
- *Gingival tissues can't be approximated*
- *Post-op régime is not followed*
- *Wound dehiscence*
- *Enucleation of a cyst*

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How to Recognise the Chronic OAC / OAF (2):

- *May develop 4 – 6 weeks post-extraction.*
- *Problems with smoking, eating or drinking.*
- *Cacogeusia.*
- *Chronic maxillary sinusitis.*
- *Antral polyp herniating into oral cavity.*
- *Purulent discharge from nose.*

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Treatment of the Chronic/Larger OAC / OAF (1):

- *Assess the OAC / OAF radiographically by OM's, OPG's, PA's or CT's.*
- *May still spontaneously close if cover plate used.*
- *If OAC / OAF needs closing, pre-op antibiotic & decongestant régime (starting 3 – 7 days pre-op).*

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Treatment of the Chronic/Larger OAC / OAF (2):

Buccal Flaps

- ***Buccal Advancement Flap*** *most common.*
- *Described by* Rehrmann *& made popular by* Berger.

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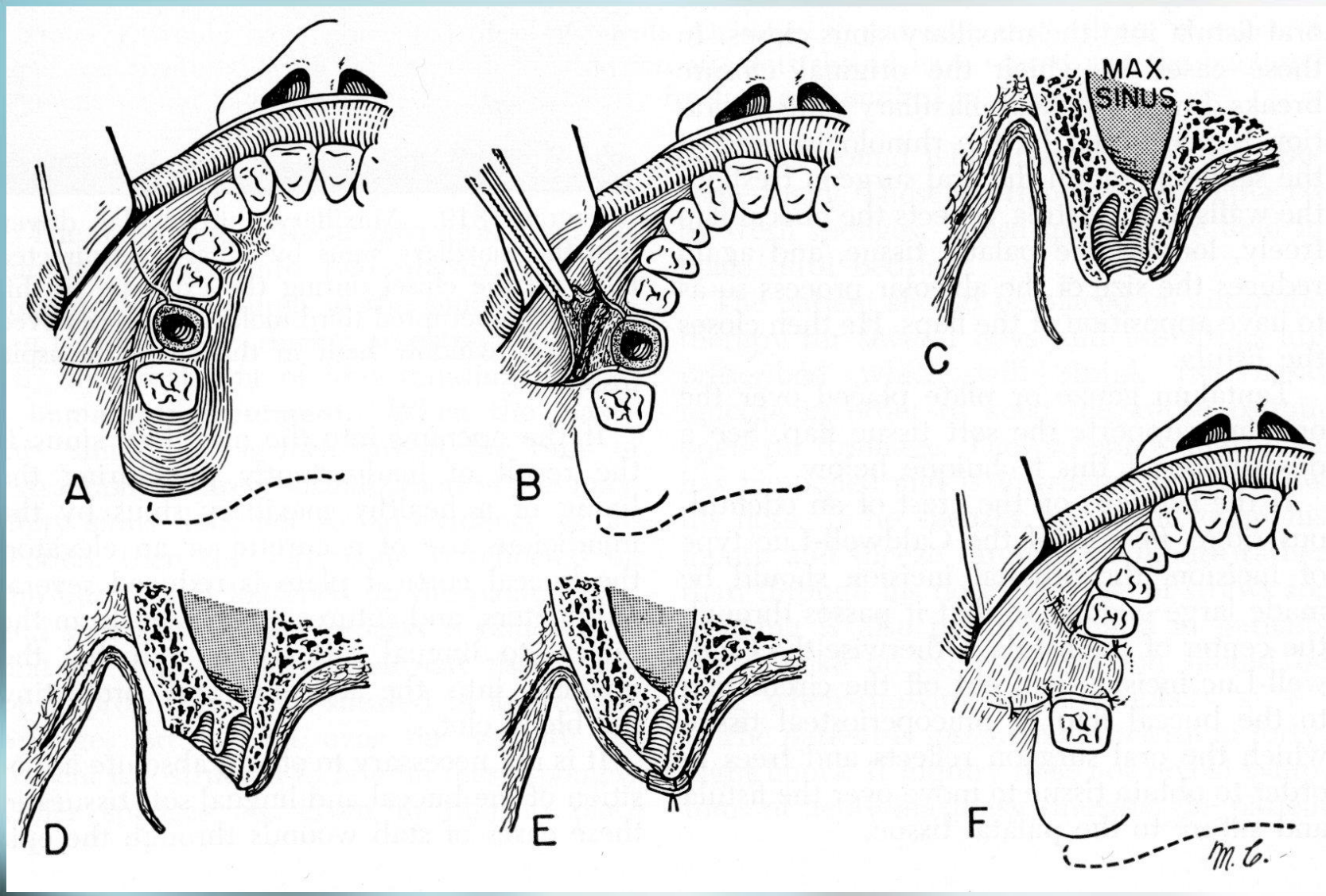

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Treatment of the Chronic/Larger OAC / OAF (3):

Buccal Advancement Flap

- *Broad base providing good blood supply.*
- *Periosteum scored parallel to base of flap to allow greater mobilisation of flap.*
- *OAC / OAF mucosa excised.*
- *Alveolus reduced in height.*
- *Palatal mucosa incised & mobilised.*
- *Flap brought across defect & secured with sutures.*
- *There must be no / minimal tension on the flap.*
- *Disadvantage of reduction of buccal vestibular depth; reshapes in 4 - 8 weeks as flap adapts to underlying bone.*

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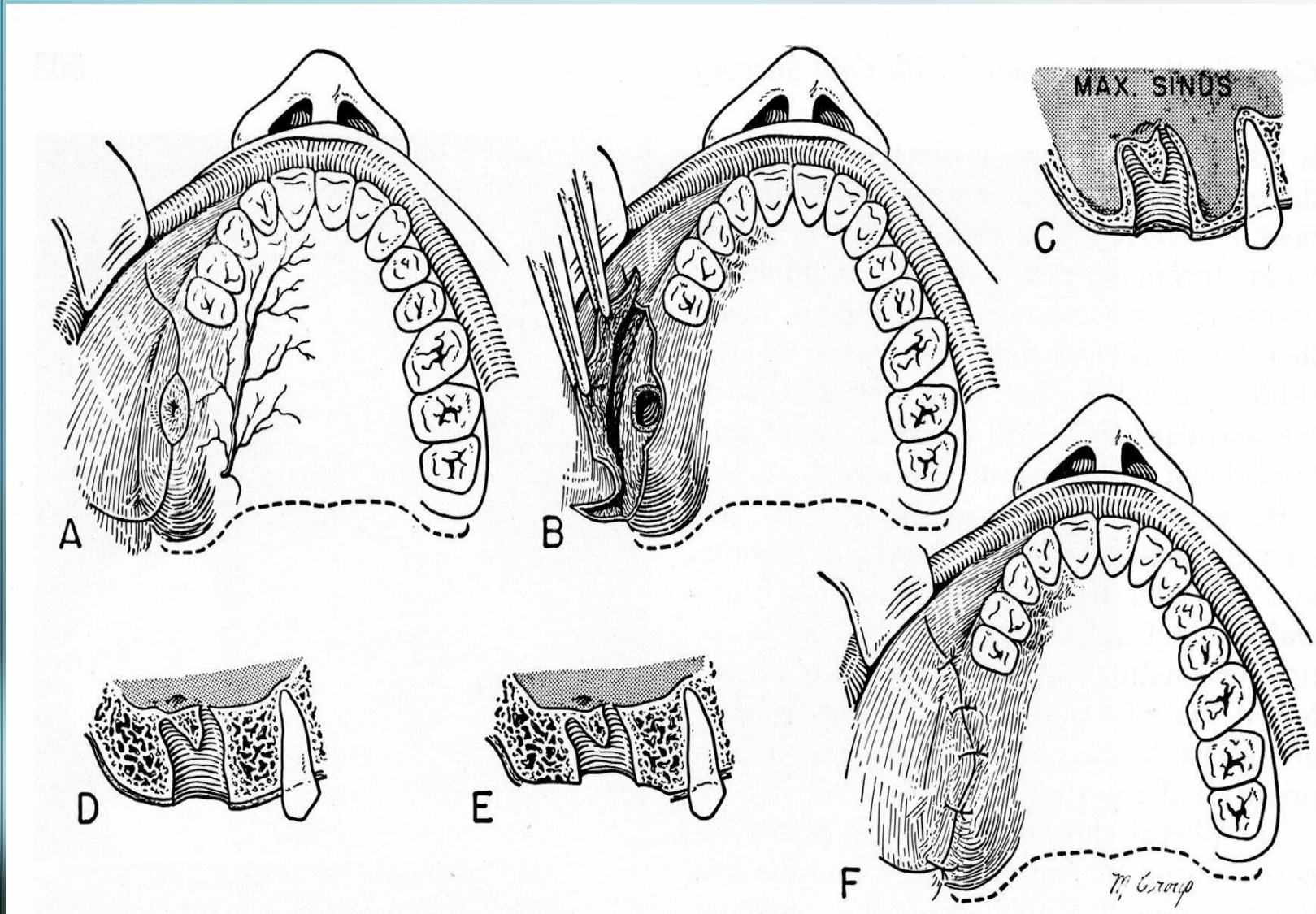

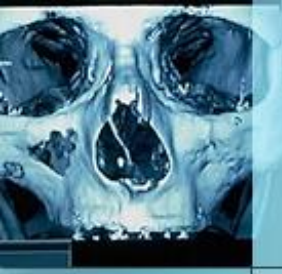

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Treatment of the Chronic/Larger OAC / OAF (3):

Palatal Flaps

- ***Palatal Rotational Advancement Flap*** *most common.*
- *Others include* ***Palatal Pedicle Island Flap*** **(**Henderson), ***V-shaped Palatal Flap*** (Krueger) & ***Split-thickness Palatal Flap*** (Ito & Hara).

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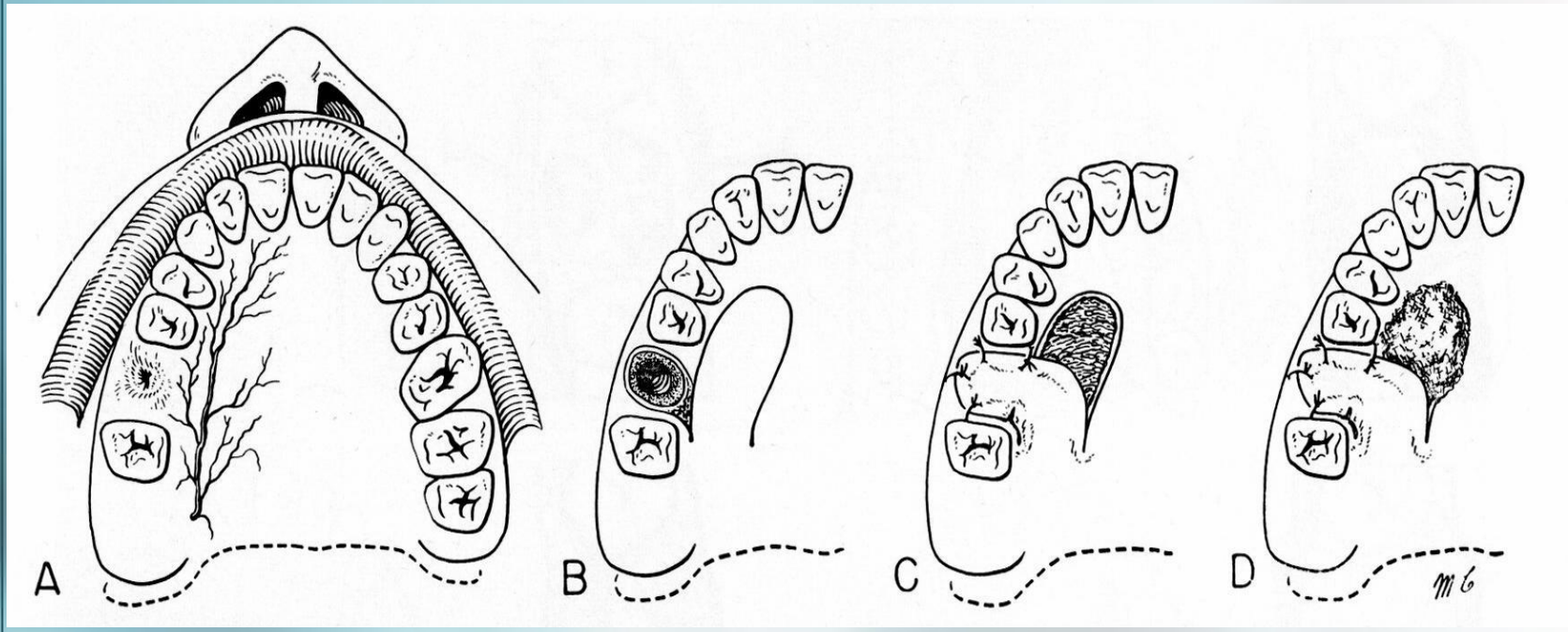

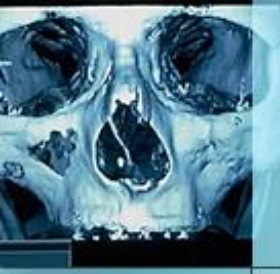

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Treatment of the Chronic/Larger OAC / OAF (4):

Palatal Rotational Advancement Flap

- *Advantages of insured vascularity (greater palatine vessels) & thickness of tissue more like crest of ridge.*
- *OAC / OAF mucosa excised.*
- *Buccal mucosa incised & mobilised.*
- *Flap brought across defect & secured with sutures.*
- *There must be no / minimal tension on the flap.*
- *Allows for the maintenance of the vestibular sulcus depth.*
- *Indicated in cases of unsuccessful buccal flap closure.*
- *Disadvantage of raw surface left behind; can be covered with a plate or Coe-pack.*

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Treatment of the Chronic/Larger OAC / OAF (5):

Post-op Régime:

- *Antibiotics* (Amoxycillin, Vibramicin)
- *Analgesics*
- *Nasal decongestants* (Ephedrine *nasal drops*, Oxymetazoline)
- *Steam inhalations* (Menthol & Eucalyptus)
- *Antiseptic mouth-wash* (Corsodyl)
- *No nose-blowing or smoking*

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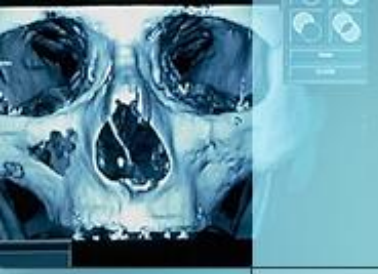
Alternative Ways to Close an OAC:

- *Buccal fat pad.*
- *Laser bio-stimulation (over 5 days).*
- *Transplantation of a mature third molar (followed by RCT of the tooth 5-6 weeks later).*
- *Autogenous monocortical bone blocks (from the chin)*



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Buccal fat pad closure of OAC

- *55 year old male.*
- *Exodontia of UR7 created OAC.*
- *Complaining of stuffy R maxillary sinus, discharge from the sinus & fluid from nose after drinking.*

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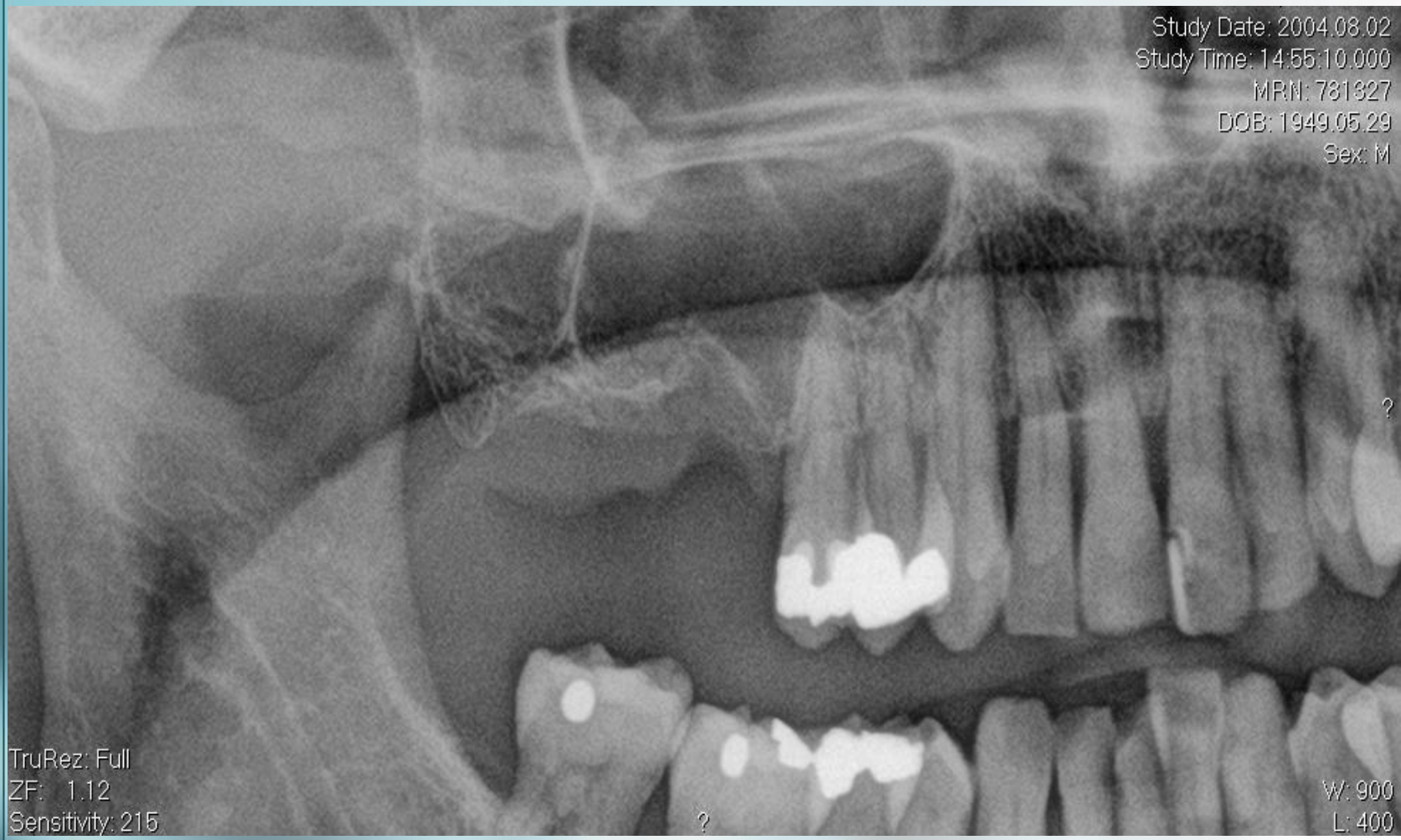

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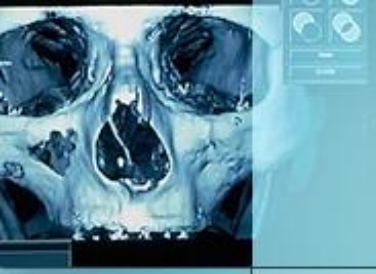

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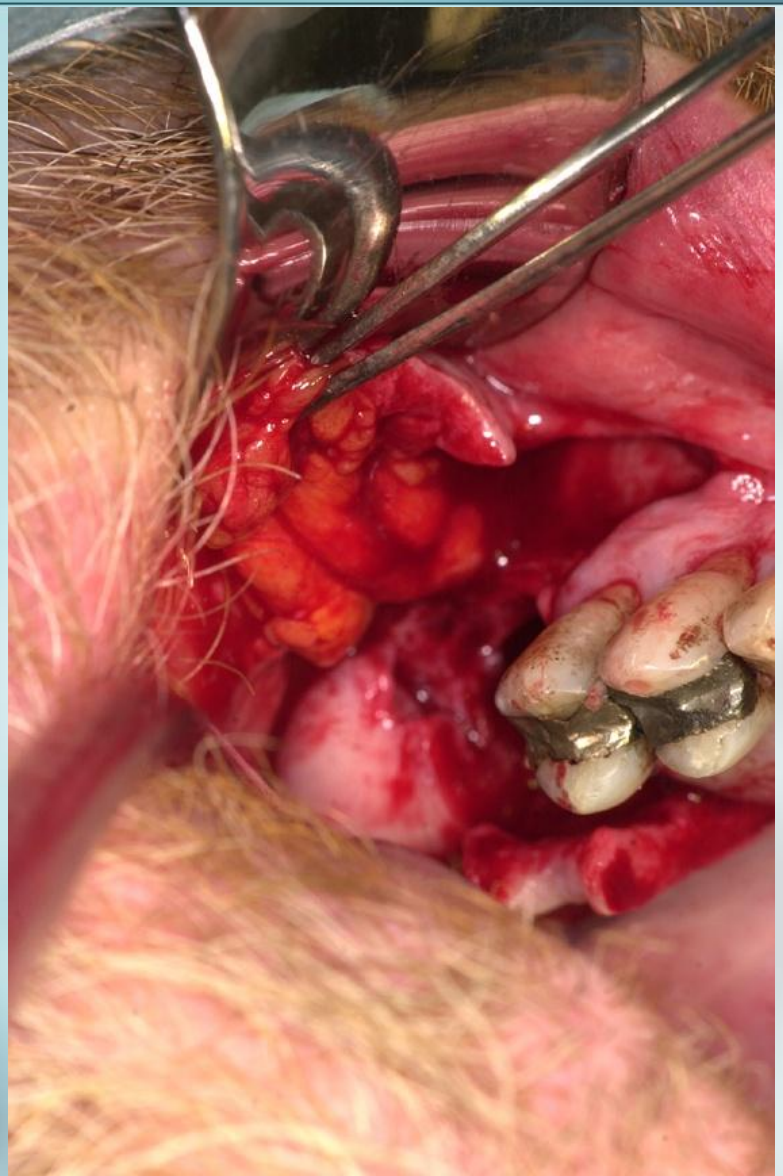

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Oro-Antral Communications (UL8)

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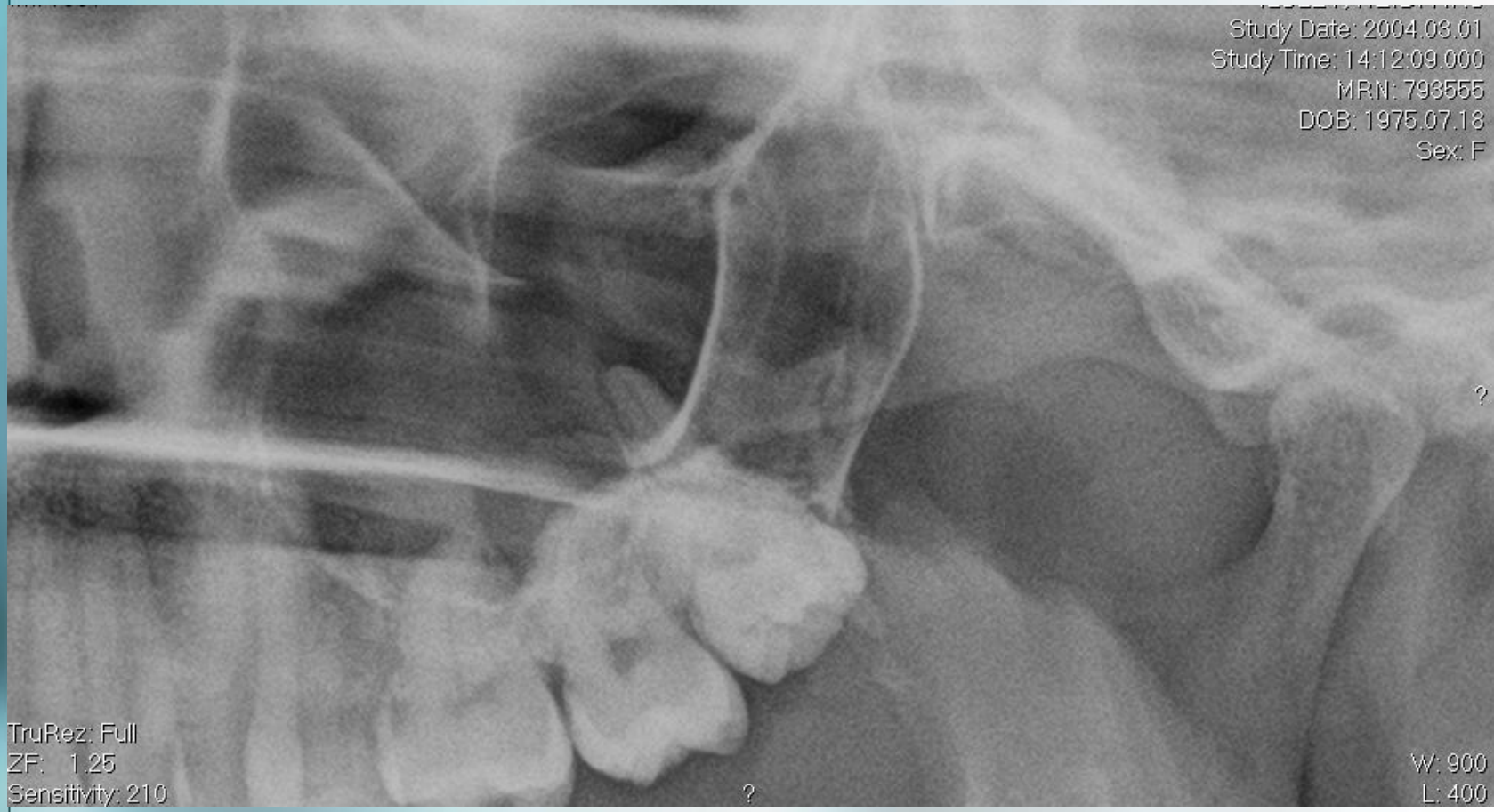

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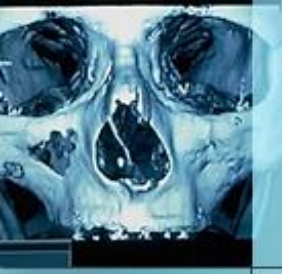
Oro-Antral Communications (UR5)

Oro-Antral Communications (UR5)



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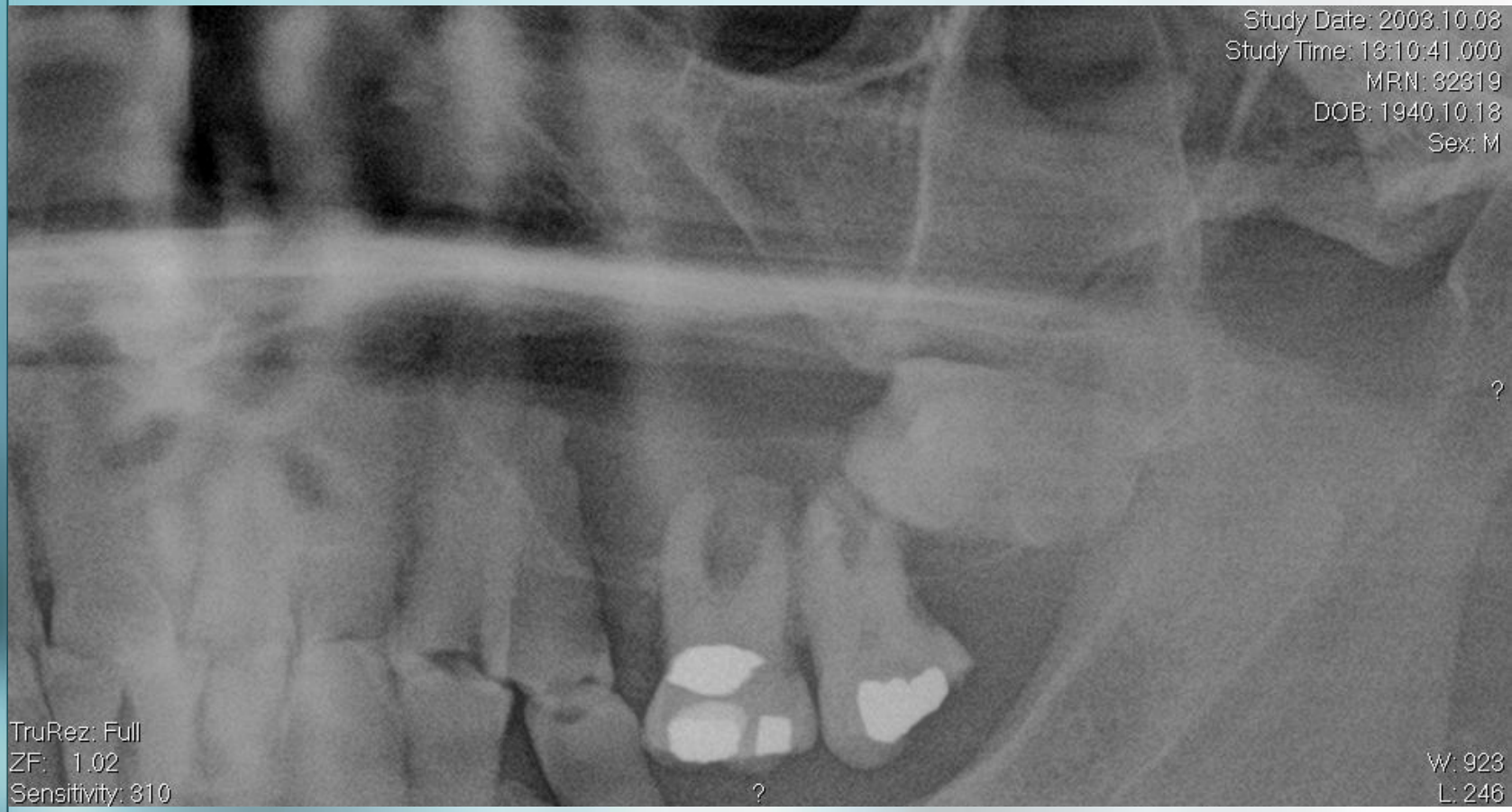

Oro-Antral Communications (UL8)

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Thank you for your attention.

If you do encounter an OAC / OAF, I hope this talk will help you in how you decide to treat it.