"Oh dear."

COMPLICA OF EXODONTIA

LECTURE BY,
Dr. SWATI

OPERATIVE COMPLICATIONS

1. Failure to secure anaesthesia
2. Failure to remove tooth
3. Fractura of tooth
4. Injuries to adjascent teeth
5. Fracture of alveolar process
6. Extraction of wrong tooth
7. Fracture of maxillary tuberosity
8. Maxillary sinus perforation
9. Root displaced in sinus
10. Root displaced in submandibular space
11. Gingival and mucosal lacerations
12. Injury to inferior alveolar nerve
13. Haemorrhage
14. Subcutaneous emphysema
15. TMJ trauma
16. Fracture of either jaw
17. Syncope
18. Cardiac arrest

1. FAILURE TO SECURE ANAESTHESIA

- Usually due to faulty technique or insufficient dosage of the anaesthetic agent.
- After explaining to the patient that although he may feel pressure, he should not feel any sensation of sharpness, a blunt probe is pushed firmly into the gingival crevice on the buccal and lingual surfaces of the tooth to be extracted.
- If nothing is felt by the patient, anaesthesia has been secured.
- If he feels pressure, but no pain, analgesia has been obtained.
- But pain indicates that a further injection of loocal anaesthetic solution is required.

2. FAILURE TO REMOVE THE TOOTH WITH EITHER FORCEPS OR ELEVATORS

- Then, the instruments should be put down, and the cause of the difficulty sought.
- In most cases, the tooth will be better removed by dissection.

3. FRACTURE OF TOOTH

- FRACTURE OF THE CROWN

Causes
- presence of a caries or a large restoration
- improper application of the forceps to the tooth the blades being applied either to the crown, or with their long axis across that of the tooth.
- if the operator chooses a pair of forceps with blades which are too broad and give only 'one-point' contact, the tooth may collapse when gripped.
- if the forceps handles are not held firmly together, the blades may may slip off the root and fracture the crown of the tooth.
- excessive force used in an effort to overcome resistance may cause a fracture of the crown.

Management:

✓ When a coronal fracture occurs, the method used to remove the retained portion of the tooth will be governed by the amount of tooth remaining and the cause of the mishap.

✓ Sometimes, a further application of the forceps or elevator will deliver the tooth, and on other occasions, the trans-alveolar method should be used.

FRACTURE OF THE ROOT

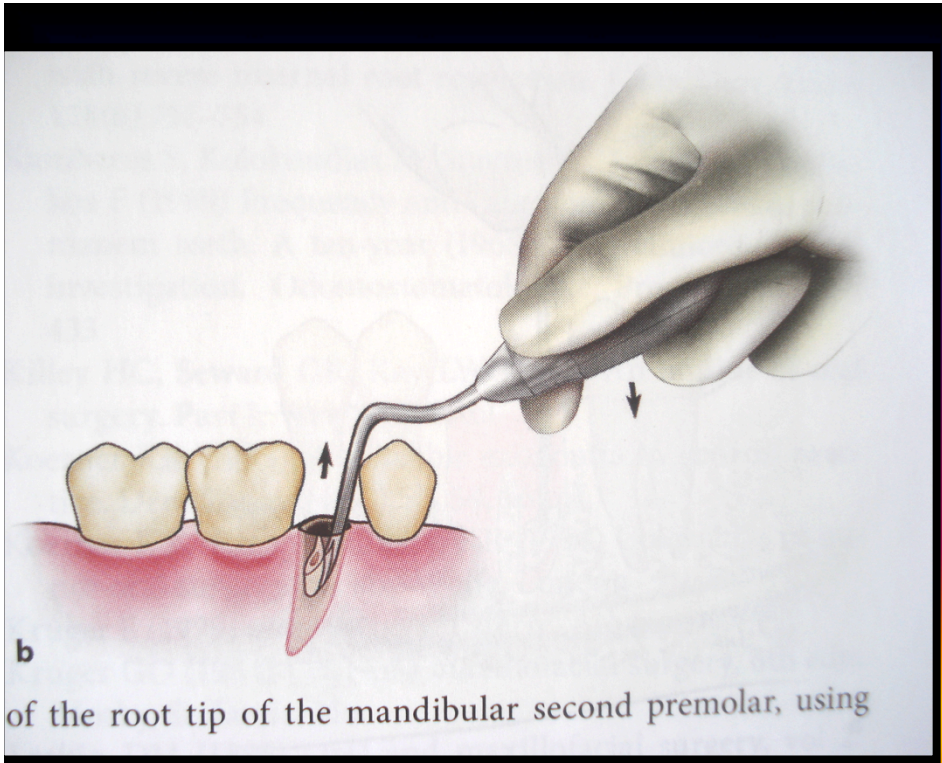
- Cause - The facts causing fracture of the
- crown may also cause fracture of the
- roots and avoidance of these faults will
- reduce the incidence of such fracture.
- Management –

➢ Although ideally all root fragments should be removed, it is wiser to leave them in certain circumstances.

➢ A root apex may be defined as a root fragment less than 5mm. The removal of large amounts of bone may be necessary for the location and removal of such an apex

➢ In healthy patients, retained apices of vital teeth seldom give trouble and in most cases they should be left unless they are is such a position that they are liable to become exposed when dentures are worn.

➢ When it is decided to leave a root fragment in situ, the patient must be informed and the particulars of the retained root entered in the patient's record.



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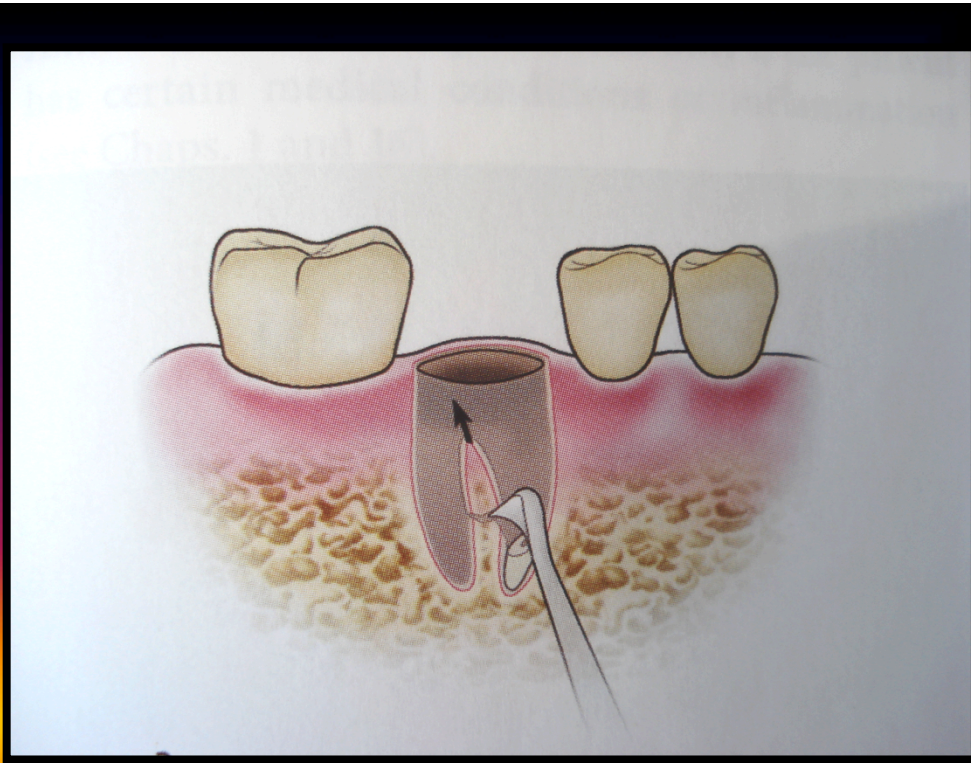
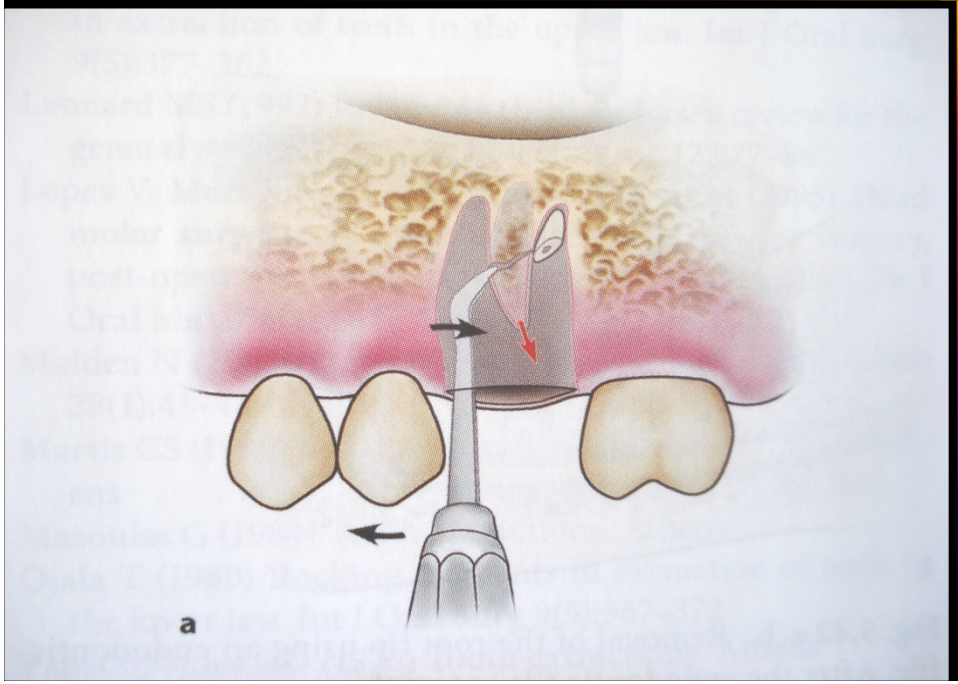
of the root tip of the mandibular second premolar, using





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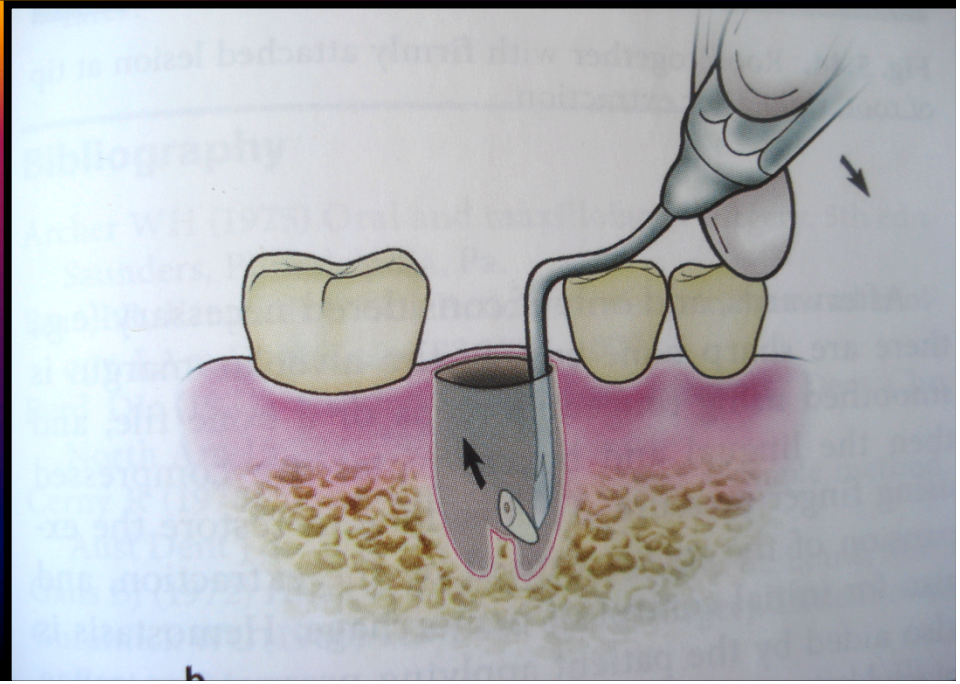

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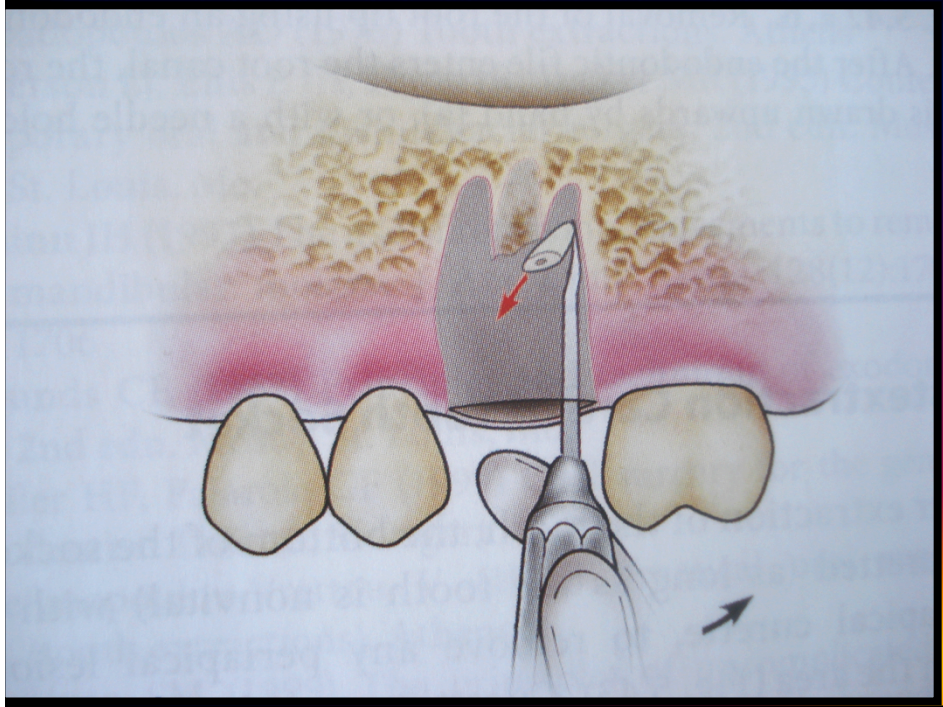

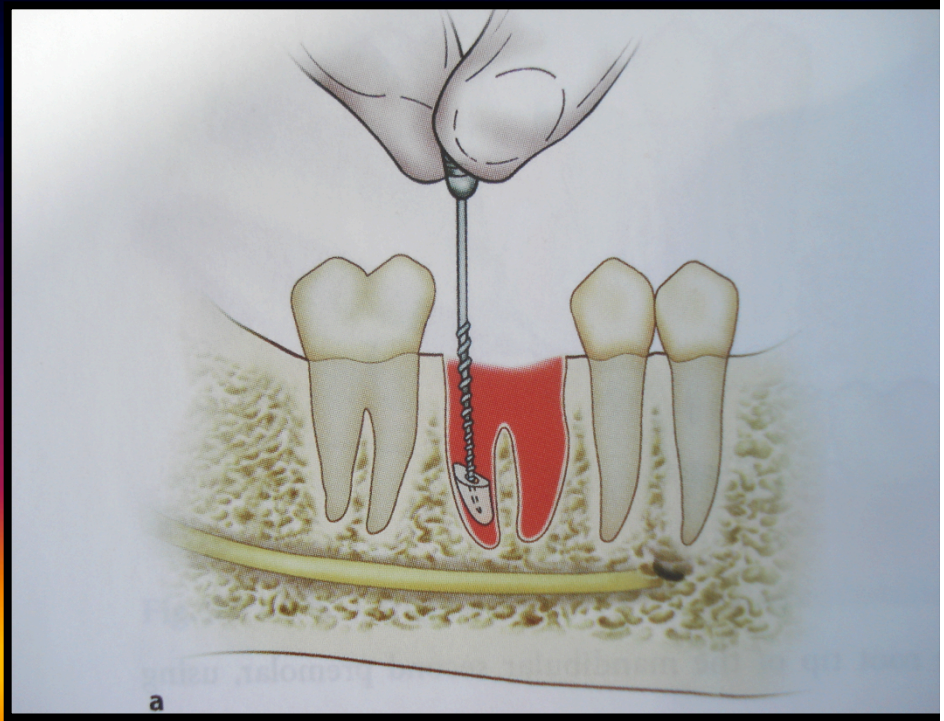
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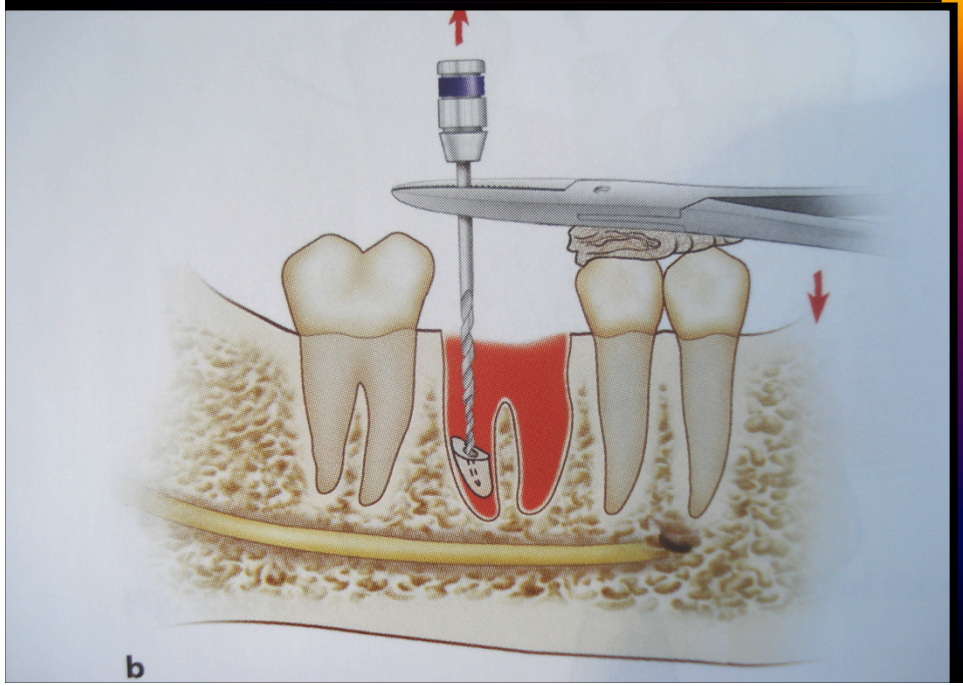
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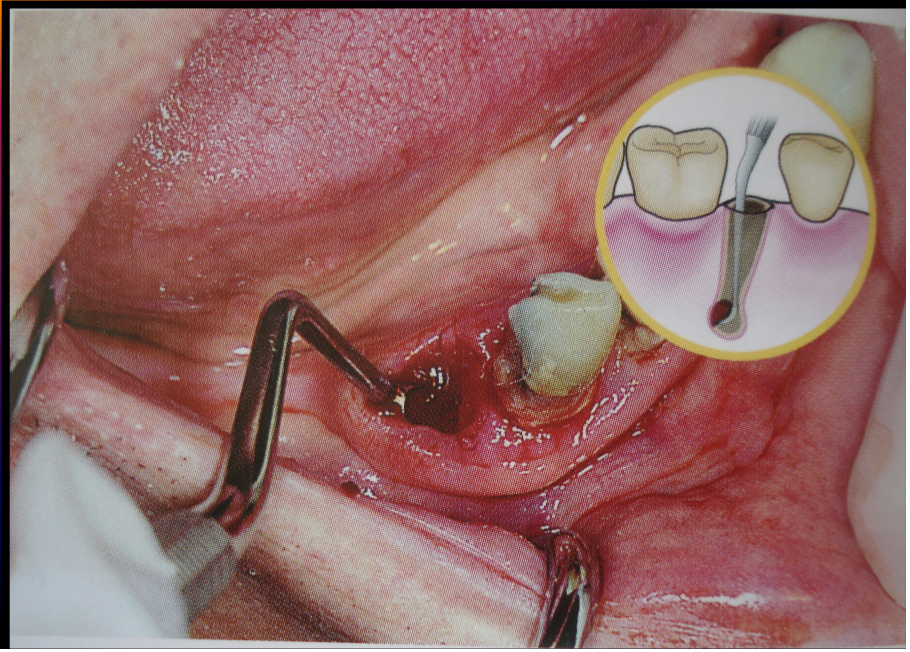
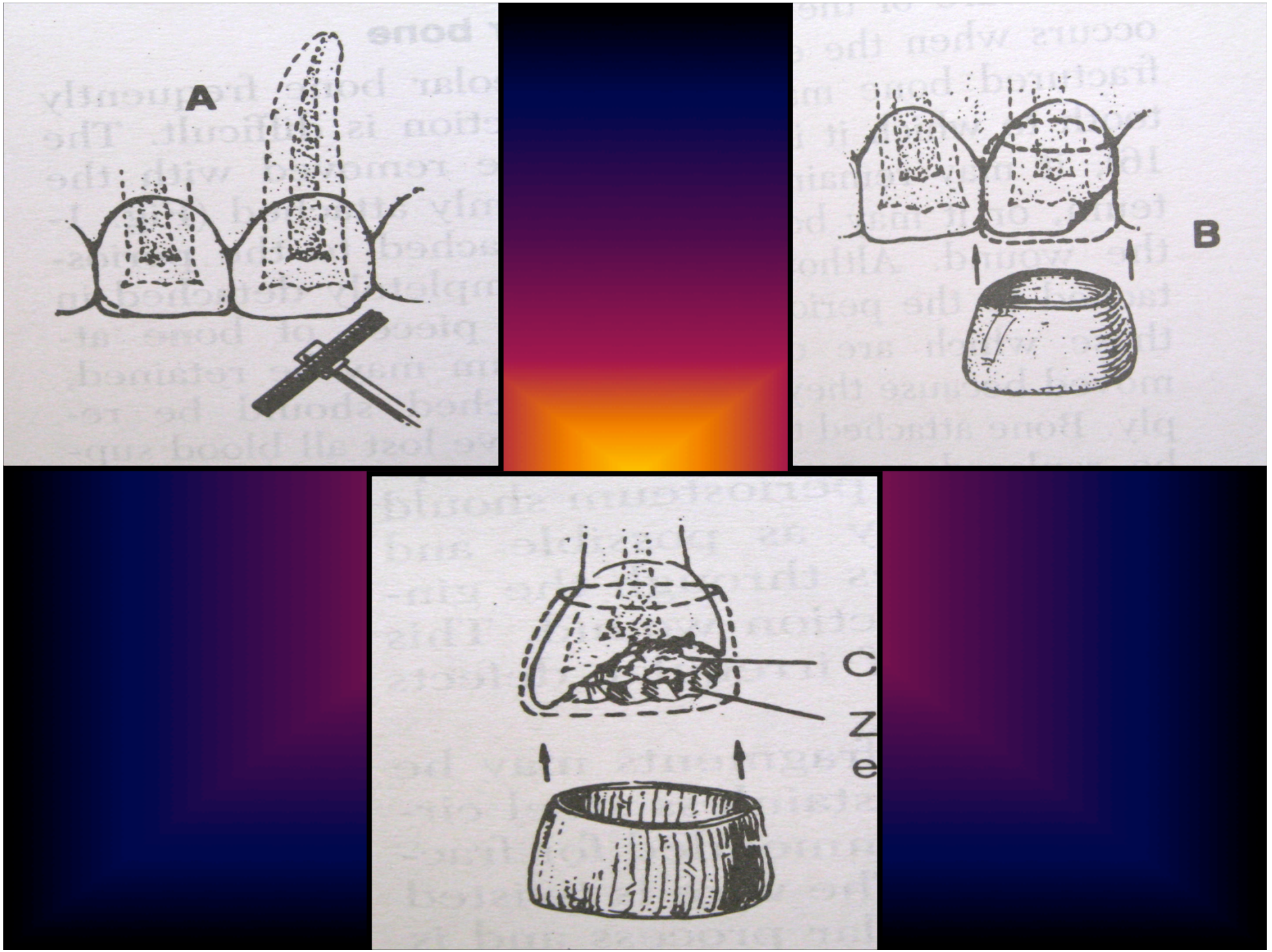


4. INJURIES TO AN ADJACENT OR OPPOSING TOOTH

- Caries and loose or over-hanging fillings should be removed from and adjacent tooth and a temporary dressing inserted before the extraction.
- In an adjacent tooth is in the line of withdrawal of the tooth to be extracted, it should be considered and the extraction should be carried accordingly.
- No force should be applied to any adjacent tooth during an extraction and other teeth should not be used as a fulcrum for an elevator unless they are to be extracted at the same visit.
- Opposing teeth may be chipped of fractured if the tooth being extracted yields suddenly to uncontrolled force and the forceps strike them.
- Under general anaesthesia, teeth other than the one being extracted may be damaged by the injudicious use of gags and props.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Ze

DISLOCATION OF AN ADJACENT TOOTH

- It is an unavoidable accident.
- Causes are similar to those giving rise to a fracture of an adjacent tooth.
- Prevention - Even during the correct use of an elevator, some pressure is transmitted to the adjacent tooth through the interdental septum. For this reason, an elevator should not be applied to the mesial surface of a first permanent molar, because the smaller second premolar may be dislodged from its socket. During elevation, a finger should be placed upon the adjacent tooth to support it and enable any force transmitted to it.

5. FRACTURE OF THE ALVEOLAR BONE

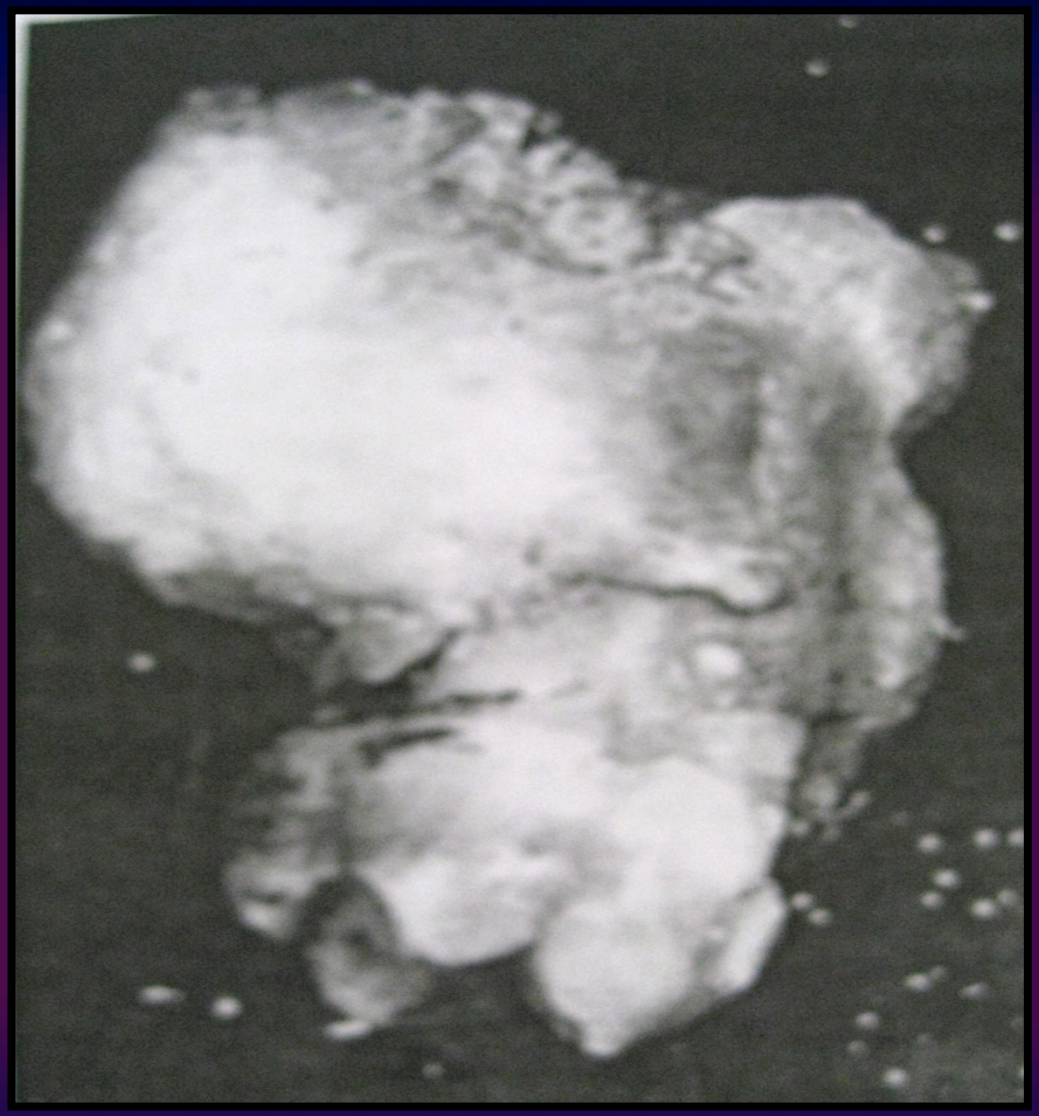
- Here, examination of extracted tooth reveals alveolar fragments adhering to a number of them
- Causes- may be due to the accidental inclusion of alveolar bone within the forceps blades , the shape of the alveolus or to pathological changes in the bone itself.
- The extraction of canines is frequently complicated by fracture of the labial plate, especially if the alveolar bone has been weakened by extraction of the lateral incisor and/ or first premolar prior to the removal of the canine.
- It is advisable to remove any alveolar fragment which has lost over one-half of its periosteal attachment, by gripping it with haemostatic forceps and dissecting off the soft tissues with a periosteal elevator, a Mitchell trimmer or a Cumine scaler.

7. FRACTURE OF THE MAXILLARY TUBEROSITY

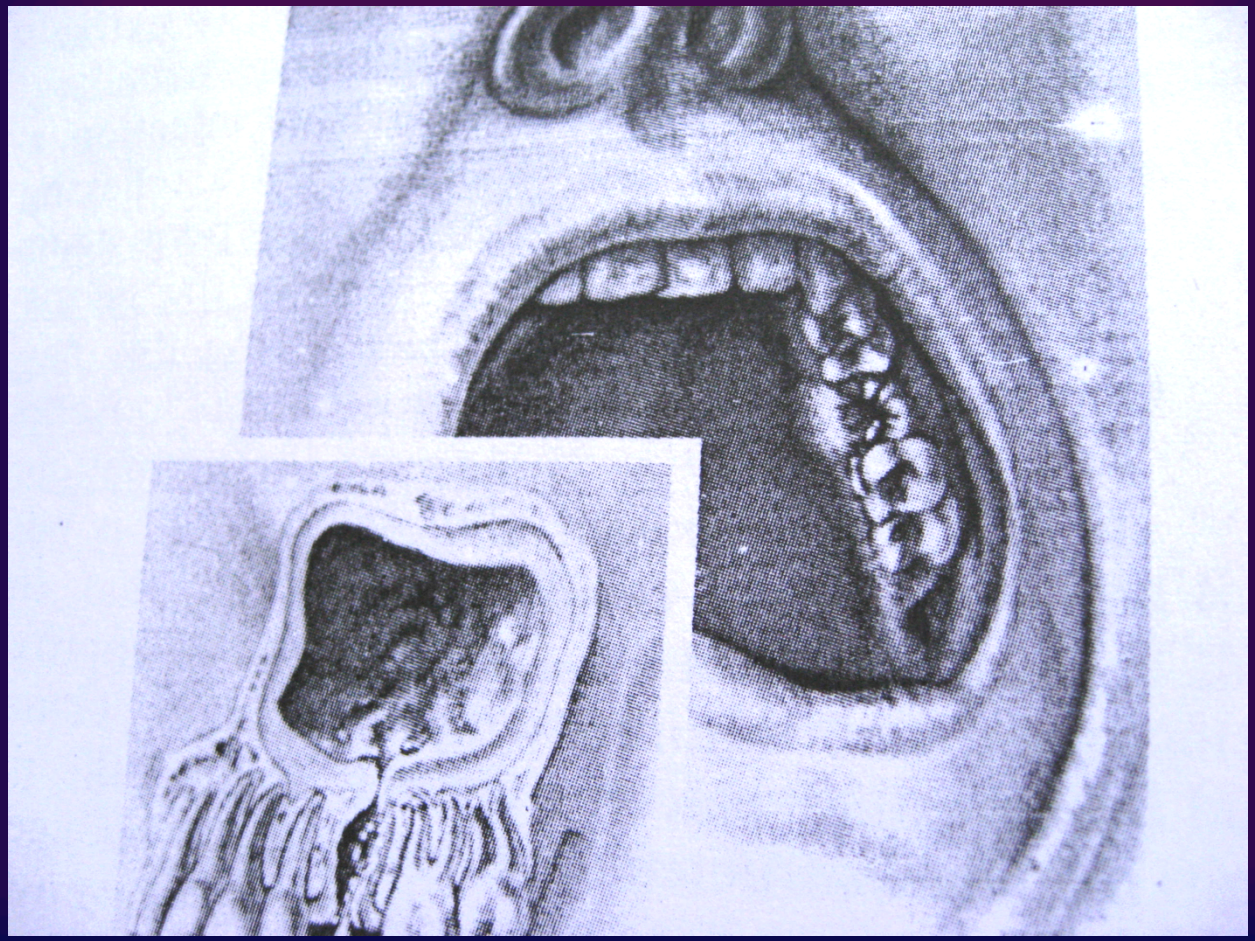
- Occasionally, during the extraction of an upper molar, the supporting bone and maxillary tuberosity are felt to move with the tooth.

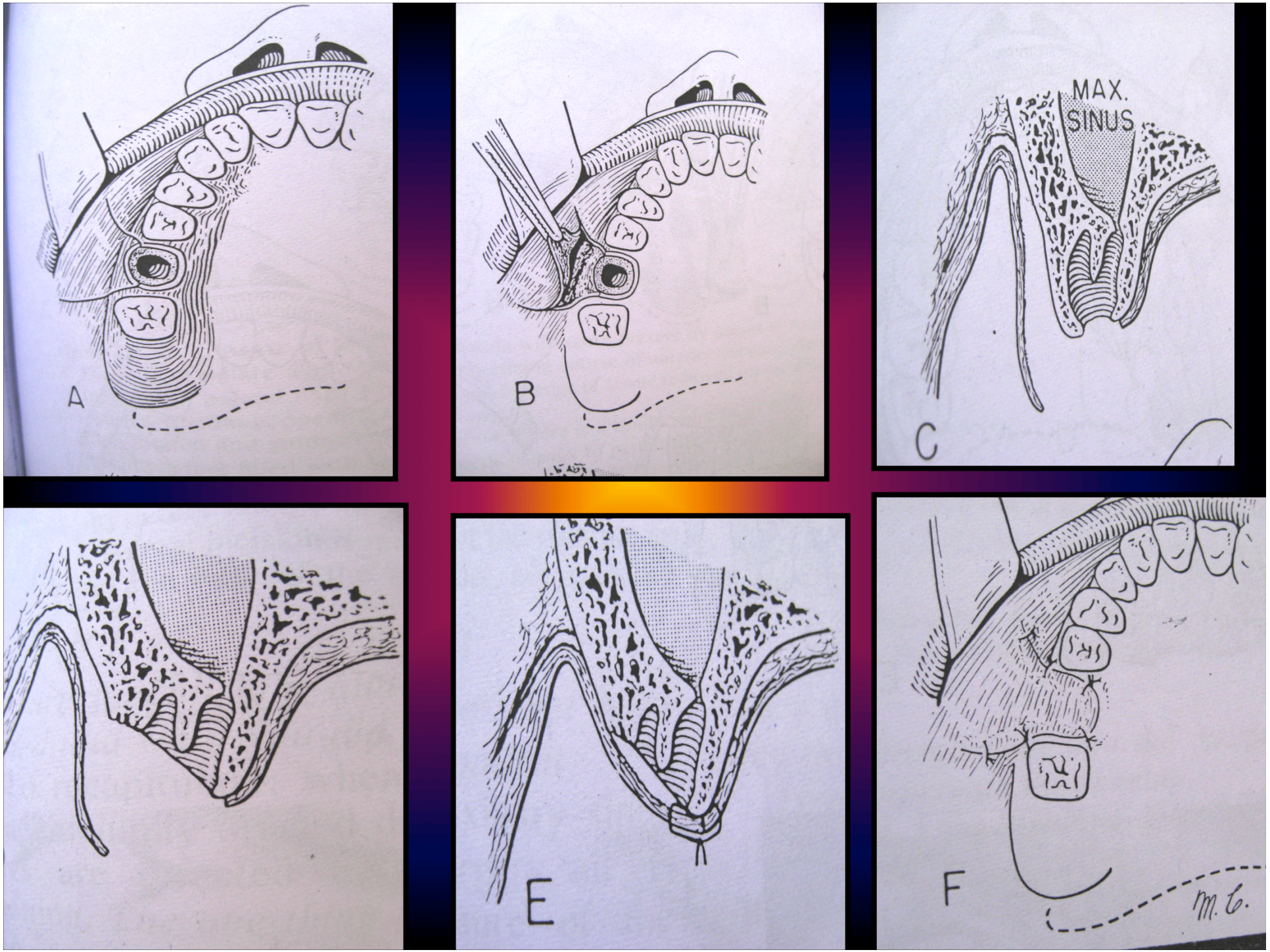
- Cause –
  - Usually due to invasion of the tuberosity by the antrum, which is common when an isolated maxillary molar is present, especially if the tooth is unerupted.
  - Pathological gemination between an erupted maxillary second molar and an unerupted maxillary third molar is a rare predisposing cause.

- Management –
  - When fracture occurs, the forceps should be discarded and a large buccal mucoperiosteal flap raised.
  - The fractured tuberosity and the tooth should then be freed from the palatal soft tissues by blunt dissection and lifted from the wound.
  - The soft tissue flaps are then apposed with mattress sutures which evert the edges and are left in situ for at least 10 days



8. MAXILLARY SINUS PERFORATION:

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B
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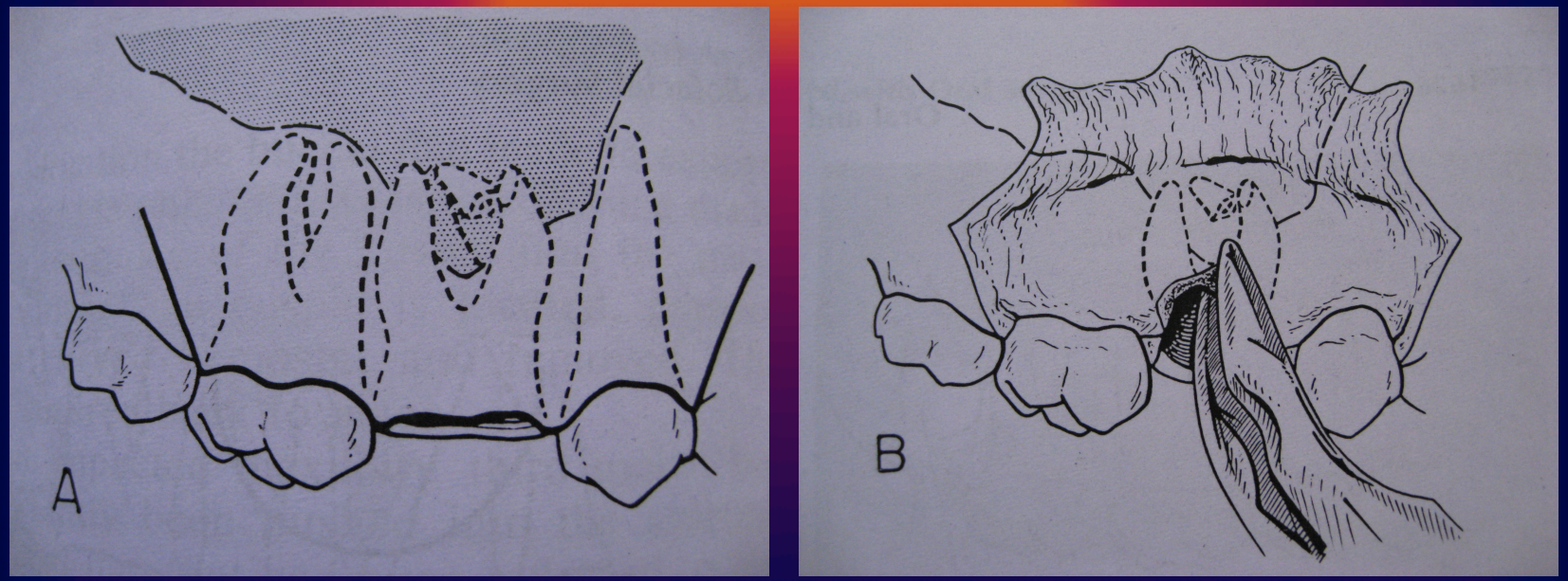
9. DISPLACEMENT OF THE ROOT INTO MAXILLARY ANTRUM

- Usually occurs in case of maxillary premolar or molar and is usually the palatal root.
- The presence of a large antrum is a predisposing factor.
- Any previous history of antral involvement should not be disregarded for it is probable that the patient has large maxillary sinus.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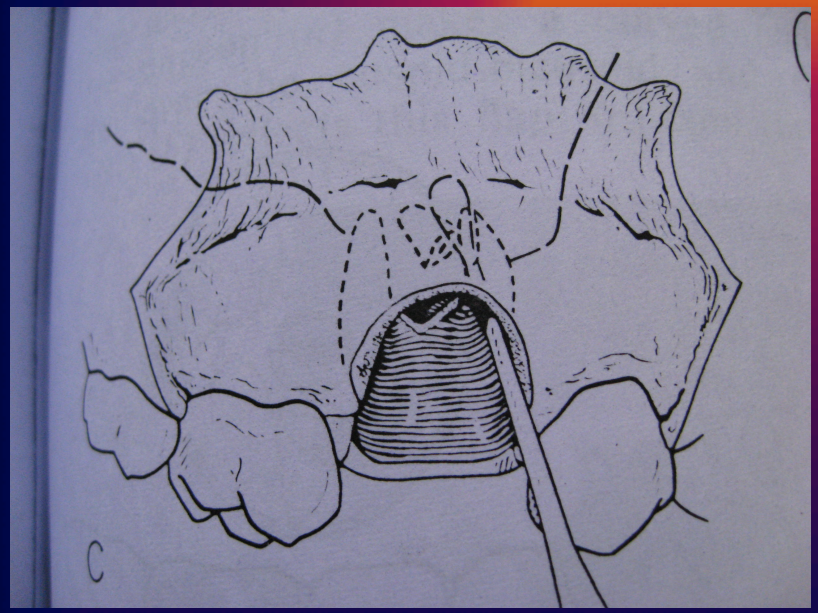
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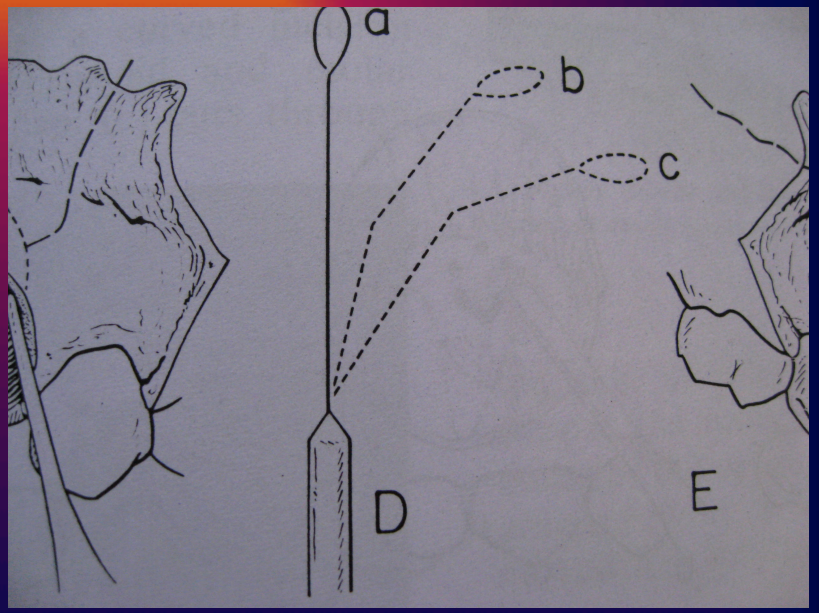
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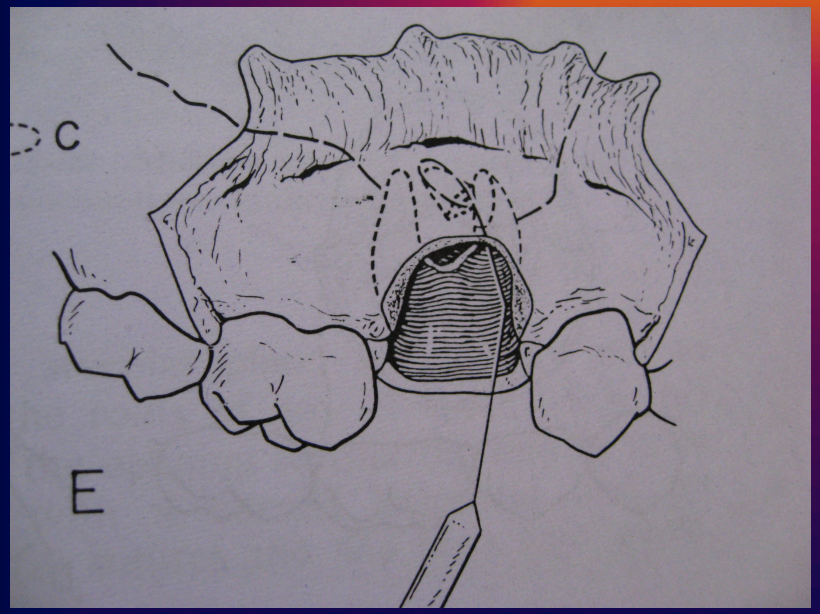
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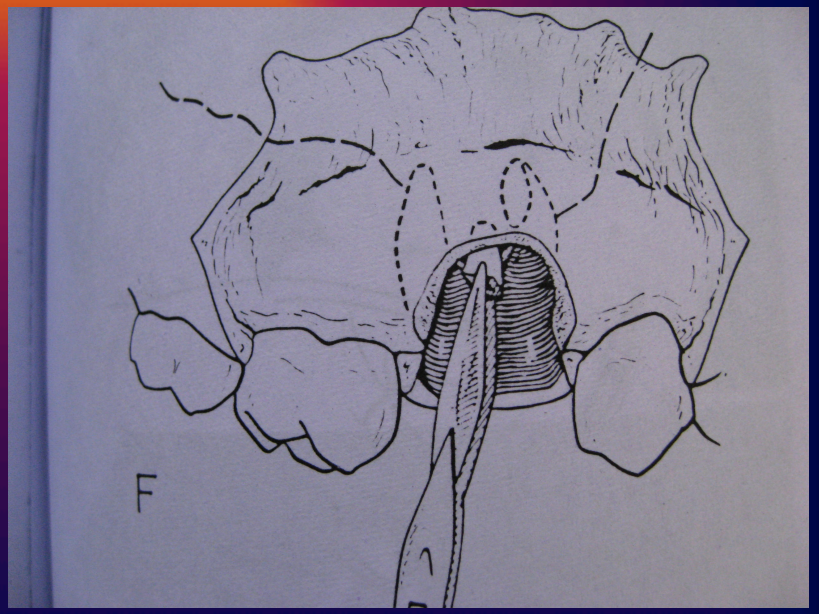
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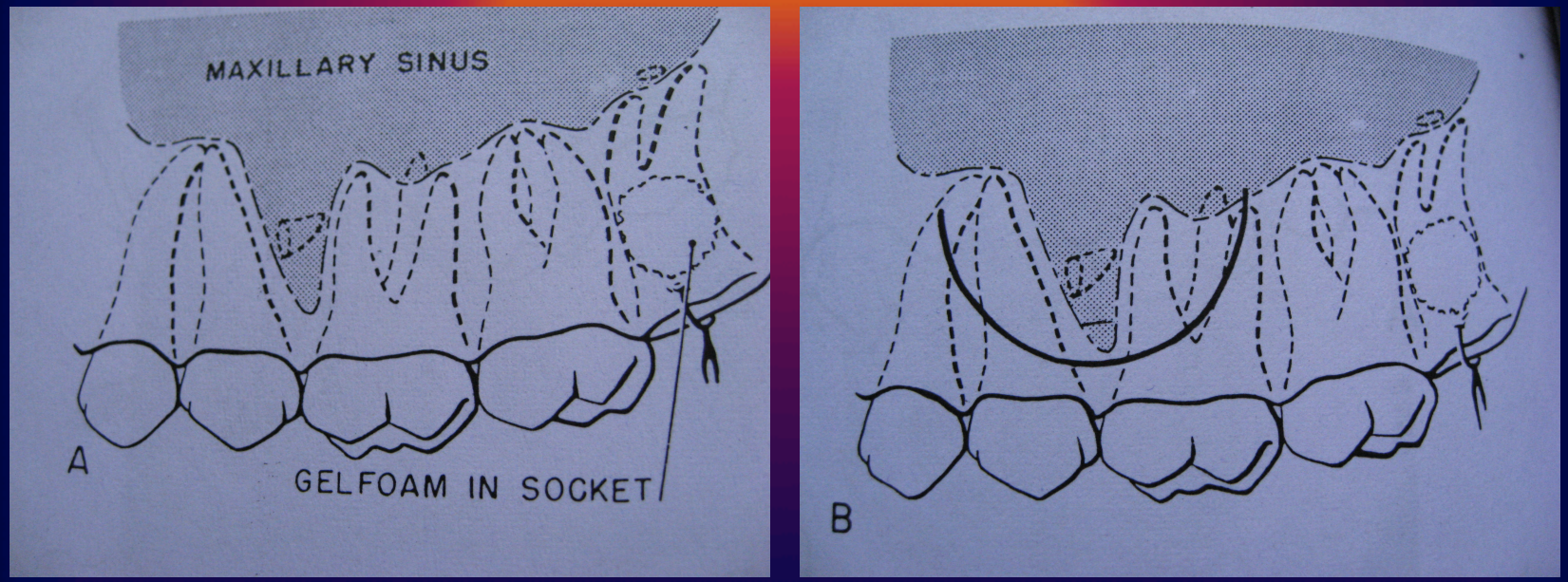
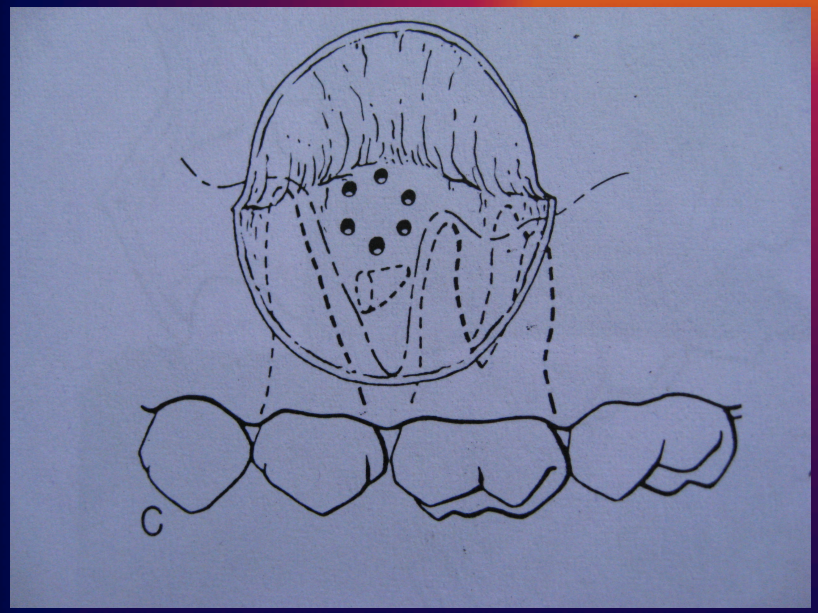

MAXILLARY SINUS
A
GELFOAM IN SOCKET
B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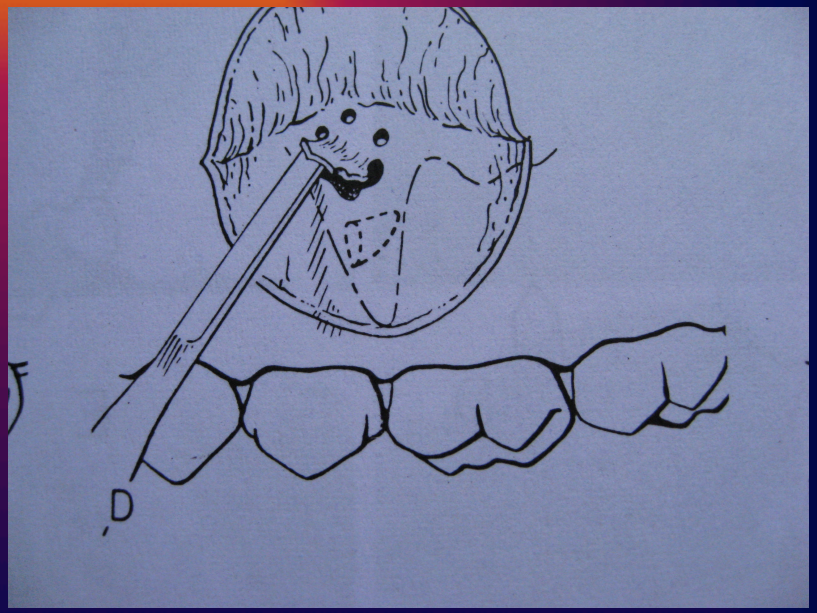
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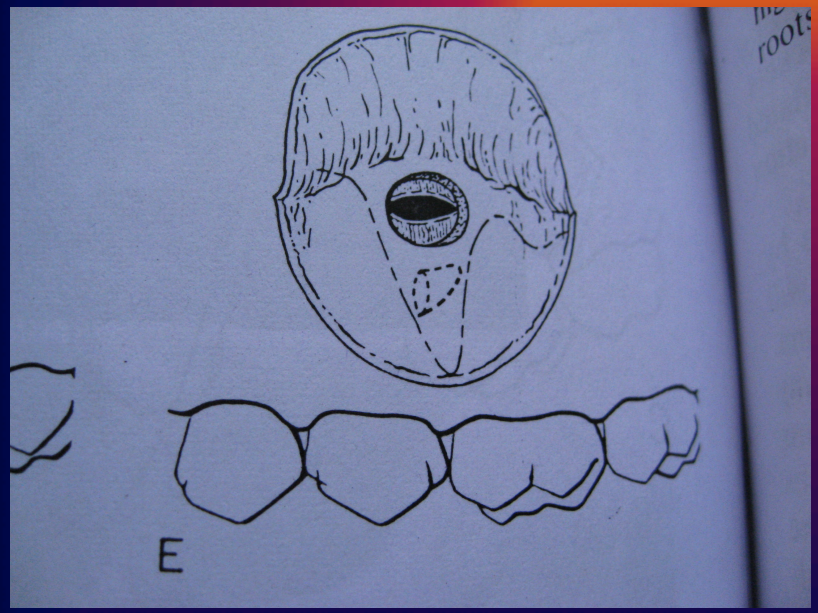


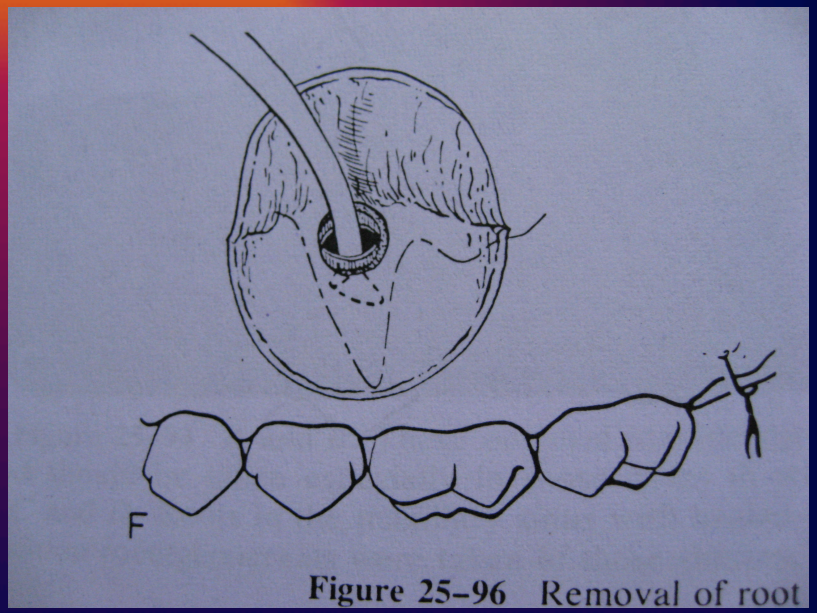
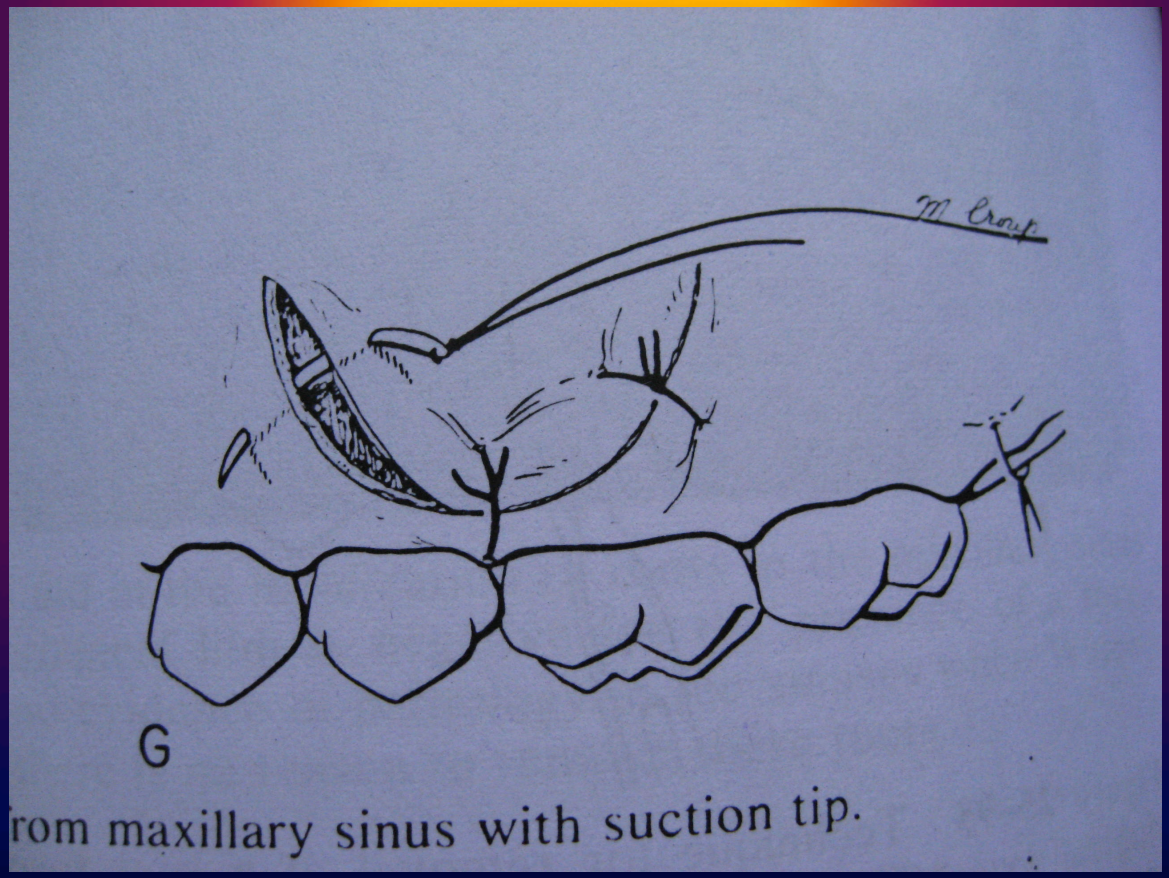


Figure 25–96 Removal of root



G

rom maxillary sinus with suction tip.

- The incidence of the root displacement into the antrum would be greatly reduced if the following simple rules are observed -

- Never apply forceps to a maxillary cheek tooth or root unless sufficient of its length is exposed, both palatally and buccally, to allow the blades to be applied under direct vision.
- Leave the apical one-third of the palatal root of a maxillary molar if it is retained during forceps extraction unless there is a positive indication for removing it.
- Never attempt to remove a fractured maxillary root by passing intruments up the socket. If removal is indicated, raise a large mucoperiosteal flap and remove enough bone to permit an elevator to be inserted above the broken surface of the root, so that all the force applied to the root tends to move it downwards and away from the antrum.

10. ROOT DISPLACEMENT IN SUBMANDIBULAR SPACE

Roots of second and third mandibular molars may be pushed through a perforation In the lingual surface of the mandible into the region of the submandibular fossa. The thin bone can be fractured during removal of root tip , or there may be thin bone Or no bone covering the root tip, or a perforation caused by periapical infection may Facilitate root displacement during instrumentation.

REMOVAL:

1.Visualize the tooth and grasp with sucction tip or hemostate. Assistant keeps constant upwards external pressure in submandibular region.

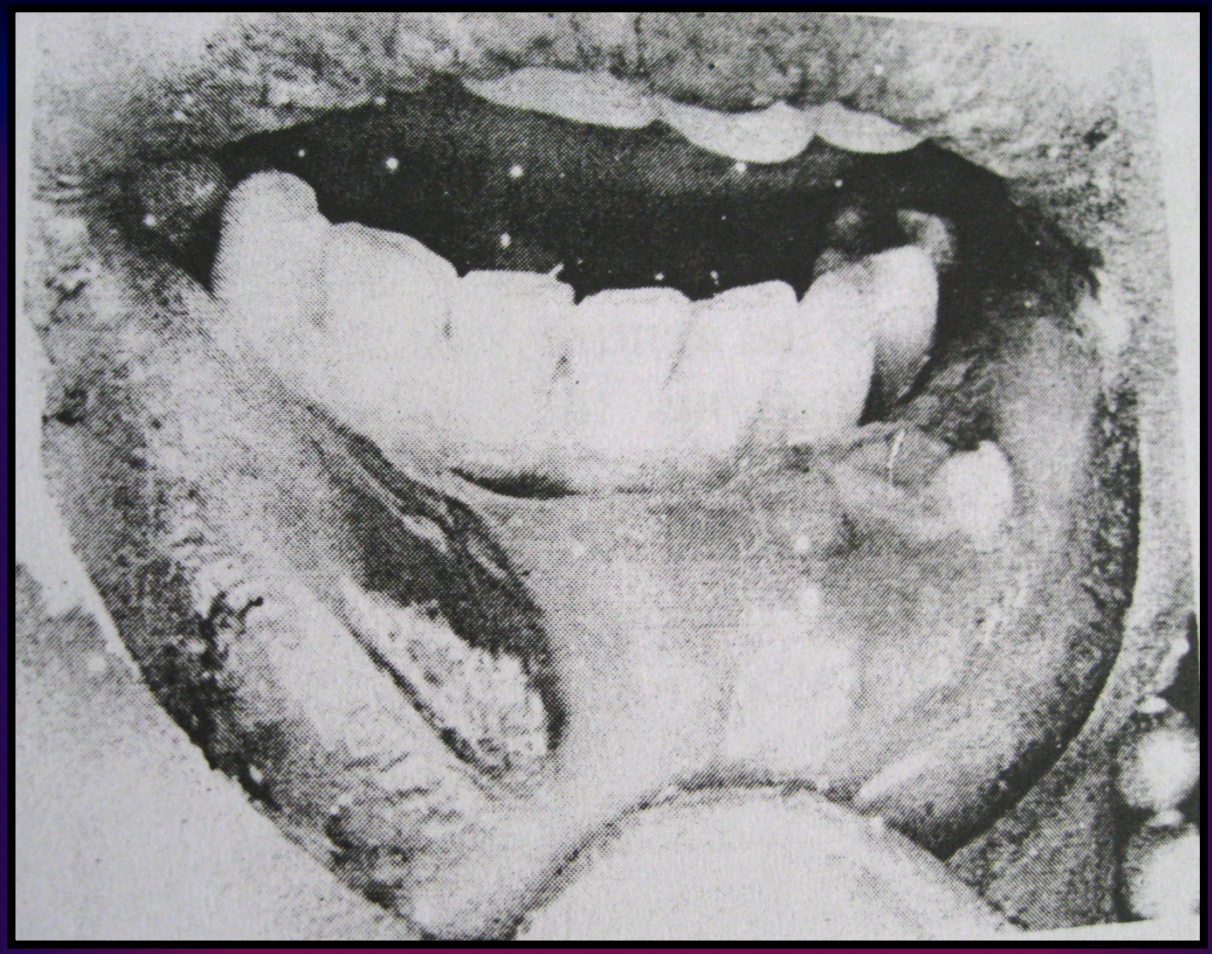
2. Reflect the lingual gingiva, detach the mylohyoid muscle, careful dissection should reveal the displaced root fragment.

3. Propylactic antibiotic therapy must be given prior to dissection

11. GINGIVAL AND MUCOSAL LACERATIONS:

- DAMAGE TO THE GUMS can be avoided by careful selection of forceps and good technique. Should gum adhere to a tooth being delivered from its socket, it should be carefully dissected from the tooth with either a scalpel or scissors before any further attempts to deliver the tooth are made.

- THE LOWER LIP may be crushed between the handles of the forceps and the anterior teeth. The skilled use of operator′s left hand should ensure that the lip is our of harm′s way. The lips may be burned if instruments are not allowed to cool before use after being sterilized.



A lacerated and pinched lip.

- THE TONGUE AND THE FLOOR OF THE MOUTH are mostly damaged during tooth extraction done under general anaesthesia, the soft tissues either being crushed in the forceps of between the teeth and the blades of a mouth gag.

- The tongue is very vascular and profuse bleeding may follow such an injury. This haemorrhage can be controlled by pulling the tongue forward and by the insertion of suture.
- Effective use of the left hand prevents these accidents.
- If the operator uses an elevator without proper control, his hand may slip and the instument may be driven into either the tongue or the floor of the mouth.

12. DAMAGE TO THE INFERIOR DENTAL NERVE

- if a tooth or a root is in an intimate relationship with the inferior dental nerve, damage can be prevented or minimized only by preoperative radiographic diagnosis.
- To prevent damage of mental nerve during the extraction of lower premolar, it should be protected by mental retractor during the operation.
- The lingual nerve may be damaged either by a traumatic extraction of a lower molar in which the lingual soft tissues are trapped in the forceps, or by being caught up with the bur during the removal of bone. A mental retractor should be used to protect adjacent soft tissues from harm whenever a bur is in use.

13. HAEMORRHAGE:

Prevention –

Inquires should be made to elicit any previous history of bleeding before an extraction is undertaken.

If a patient states that he bleeds excessively, full details should be obtained of any previous haemorrhagic episode.

A family history of bleeding is of great importance. Any patient with a history which suggests the presence of a haemorrhagic diathesis should be referred to a haematologist for investigation before the extractions are undertaken.

If a patient has history of previous post-extraction haemorrhage, it is wise to limit the number of teeth extracted on first visit, to suture the soft tissues and to observe the postoperative progress.

- Management:

➢ Sometimes constant oozing of blood during the operation obscures vision and makes extraction difficult. This can be dealt with by swabbing with gauze packs or by the use of a sucker.

➢ More severe bleeding can be controlled by pressure on a hot (50 degree) normal saline pack held in position for a timed 2 minutes.

➢ If the bleeding is from a large vessel, the vessel should be picked up and clamped with a haemostat.

- After extraction, a firm gauze roll should be placed upon the socket and the patient asked to bit upon it for a few minutes. If the haemorrhage is not controlled within 10 minutes, a horizontal mattress suture should be inserted.

- If these measures fail, either gelatin or fibrin foam may be tucked into the socket and a composition block moulded over the area.
- After the bleeding stops, the oral cavity should be cleaned carefully with gauze soaked in cold water.

14. SUBCUTANEOUS EMPHYSEMA

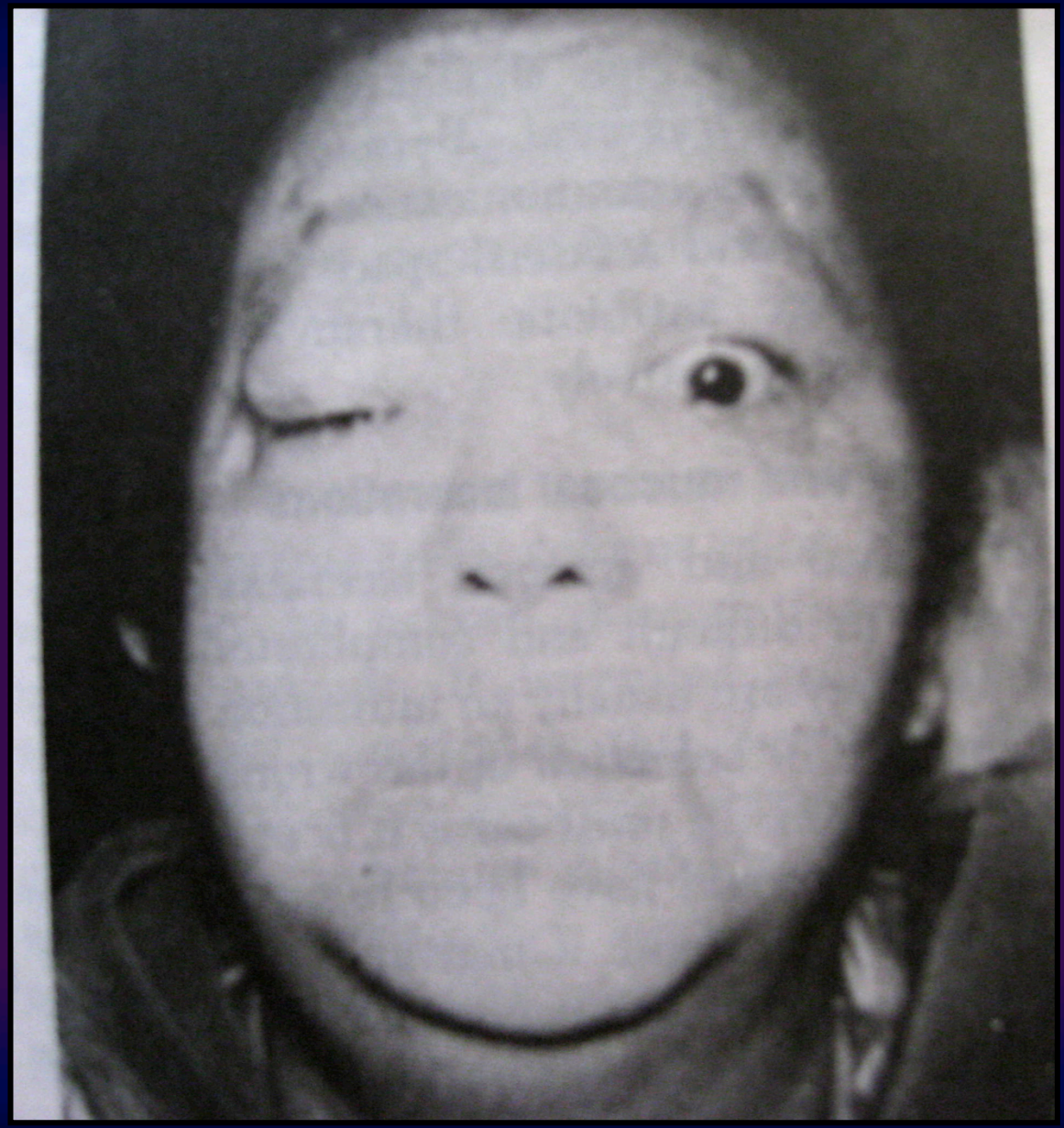
It is an unusual complication reported to occur during surgery in the mouth(cardo,mooney and stratigos, 1972).

It results from air being forced into the connective tissue of intramuscular or facial spaces following the use of air driven dental handpiece or compressed air spray bottle for irrigation.

The swelling is of rapid onset, giving the affected area an elastic consistency.

Air can be felt to crackle under the palpating fingers.

Such air is absorbed, in 1-2 weeks. No treatment is needed.



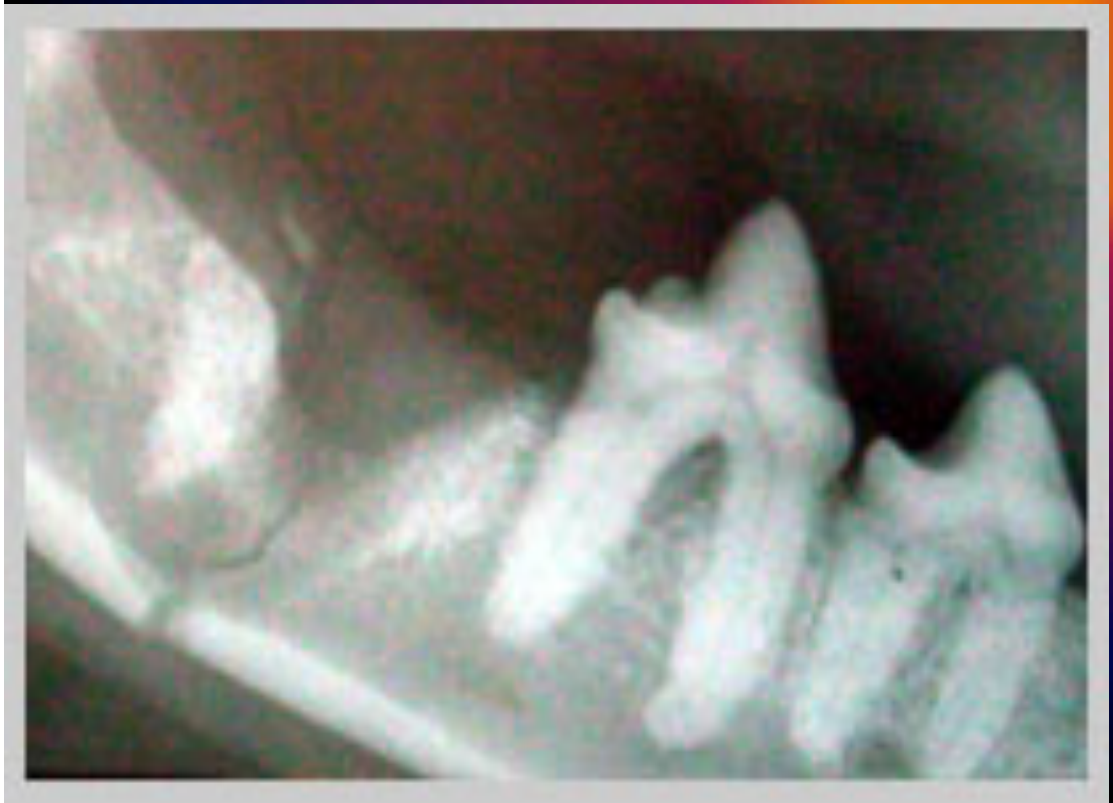
15. DISLOCATION OF TEMPOROMANDIBULAR JOINT

- Causes –
  - It may occur readily in some patients with the history of recurrent dislocation.
  - Injudicious use of gags.
  - Failure to support the lower jaw properly during extraction of lower teeth.

- Management –
  - If dislocation of TMJ occurs, it should be reduced immediately.
  - Method of reduction – the operator stands in front of the patient and places his thumbs intra-orally on the external oblique ridges lateral to any mandibular molars which are present and his fingers extra-orally under the lower border of the mandible. Downward pressure with the thumbs and upward pressure with the fingers reduce the dislocation.
  - The patient should be warned not to open his mouth too widely or to yawn for a few days postoperatively, and an extra-oral support to the joint should be applied and worn until tenderness in the affected joint subsides.

16. FRACTURE OF THE MANDIBLE OR MAXILLA:

- Causes –
- If excessive or incorrectly applied force is used
- Pathological changes have weakened the jaw such as senile osteoporosis and atrophy, osteomyelitis, previous therapeutic irradiation, fibous dysplasia , osteitis deformans, etc.



Fracture of mandible due to excessive forced used while extracting lower first molar

- Prevention –

➢ In the presence of any of these conditions, extraction should be attempted only after careful clinical and radiographic assessment and the construction of splints preoperatively. The patient should be informed before extraction of the possibility of mandibular fracture.

- Management –

➢ If a fracture occurs in the dental surgery, extra-oral support should be applied and the treatment plan for fixation of fracture should be carried out.

17. SYNCOPE:

- Symptoms –
  - The patient complains of feeling dizzy, weak and nauseated and the skin is seen to be pale, cold and sweating.

- Management –
  - First-aid treatment should be instituted at once and at no time should such a patient be left unattended.
  - The head should be lowered by lowering the back of the dental chair.
  - Loosen up his collars and clothes.
  - Care should be taken to maintain the airway and to ensure that the patient cannot fall out of the chair.
  - No fluids should be given by mouth until the patient is fully conscious.

- When consciousness returns, a glucose drink may be given .

- If recovery does not occur within a few minutes of first-aid measures being instituted, the collapse is probably not of syncopal origin and oxygen should be administered and medical aid summoned. Careful note should be taken of both the type and rate of respirations and the rate, volume and character of the pulse. If circumstances permit, the blood-pressure should be recorded at intervals and an intravenous injection of 250mg of aminophylline injection B.P. may be given slowly.

- If respiratory arrest occurs, the skeletal muscles become flaccid and the pupils are widely dilated.

- Management -
- The patient should be laid flat on the floor and his airway should be cleared by the removal of any appliances or foreign bodies and by pulling the mandible upwards and forwards to extend the head fully.
- The patient's nostrils should be compressed between the operator's finger and thumb, and mouth-to-mouth resuscitation should be performed so that the chest is seen to rise every 3 to 4 minutes.

18. CARDIAC ARREST

- **Symptoms** -

- The patient exhibits a deathly pallor and greyness and his skin is covered with a cold sweat.
- The pulse and the apex beat cannot be felt and the heart sounds cannot be heard.

- **Management** -

- Unless the circulation can be restored and maintained within 3 minutes of cardiac arrest occurring, irreversible brain damage may occur due to cerebral anoxia.
- If the patient is a child, the heart will often start beating again if the sternum is tapped slowly.
- When an adult is being treated, the patient should be laid flat on his back on the floor.
- And the operator should simultaneously give cardiac massage and mouth-to-mouth breathing.
- Cardic massage – the operator places his right hand on the back of the heel of his left hand and presses downwards rhythmically at 1 second intervals, with sufficient force to compress the heart between the sternum and the vertebral column.

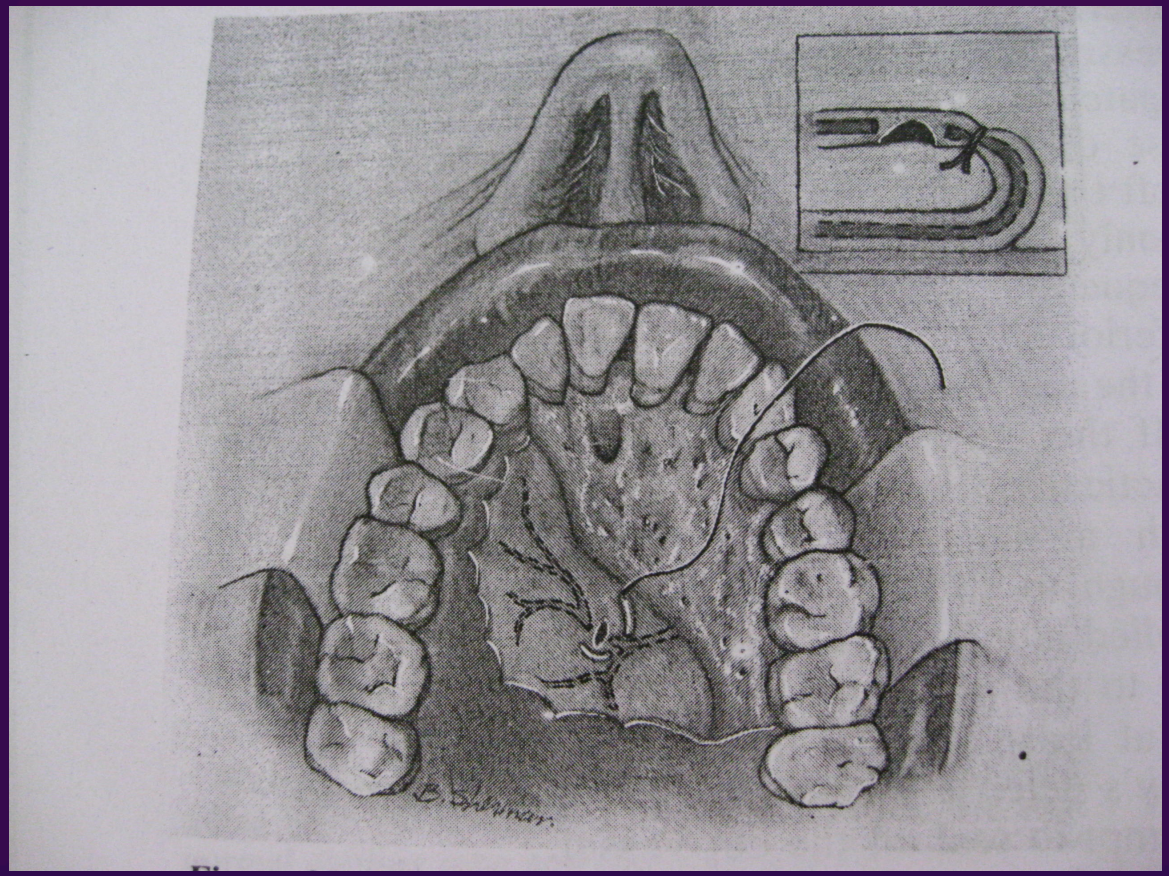
POST-OPERATIVE COMPLICATIONS:

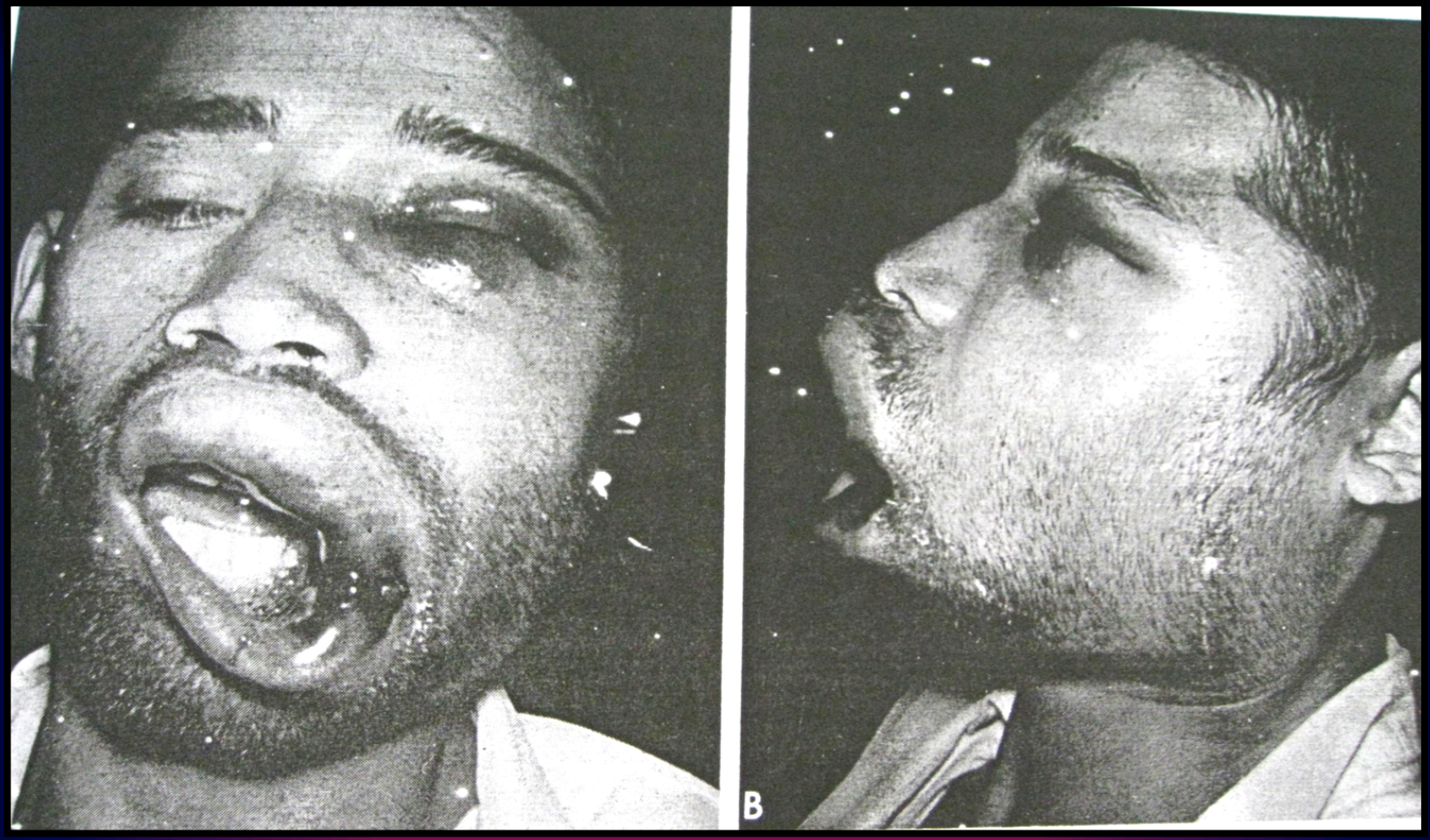
1. HAEMORRHAGE
2. SWELLING
3. PAIN
4. ALVEOLAR OSTEITIS
5. HEMATOMA
6. ECCHYMOSIS
7. OSTEOMYELITIS
8. HERNIATION OF ANTRAL POLYP
9. HERNIATION OF EPITHELIAL LINING
10. INFECTION
11. TRISMUS

1. POST OPERATIVE HAEMORRHAGE:

CAUSES :

1. MECHANICAL BLEEDING: a) primary bleeding, b) intermediate bleeding, c) secondary bleeding
2. Biochemical bleeding.

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POST-OPERATIVE SWELLING

- Post-operative swelling could be due to –
  - Oedema
  - Hematoma
  - Infection
- If the soft tissues are not handled carefully during and extraction, traumatic oedema may delay healing.
- The use of blunt instruments, the excessive retraction of badly designed flaps, or a bur becoming entangled in the soft tissues predispose to this condition.
- If sutures are tied too tightly, post-operative swelling due to oedema or haematoma formation may cause sloughing of the soft tissues and breakdown of the suture line.
- Both these conditions regress, if the patient uses hot saline mouth-baths frequently for 2 or 3 days.

- Infection of the wound

➢ If the infection is mild, it will often respond to the application of heat intra-orally by the use of frequent hot saline mouth-baths.

➢ The patient should be cautioned against applying heat extra-orally because, this increases the size of the facial swelling.

➢ If fluctuation is present the pus should be evacuated before beginning antibiotic therapy

POST-OPERATIVE PAIN

- May be due to

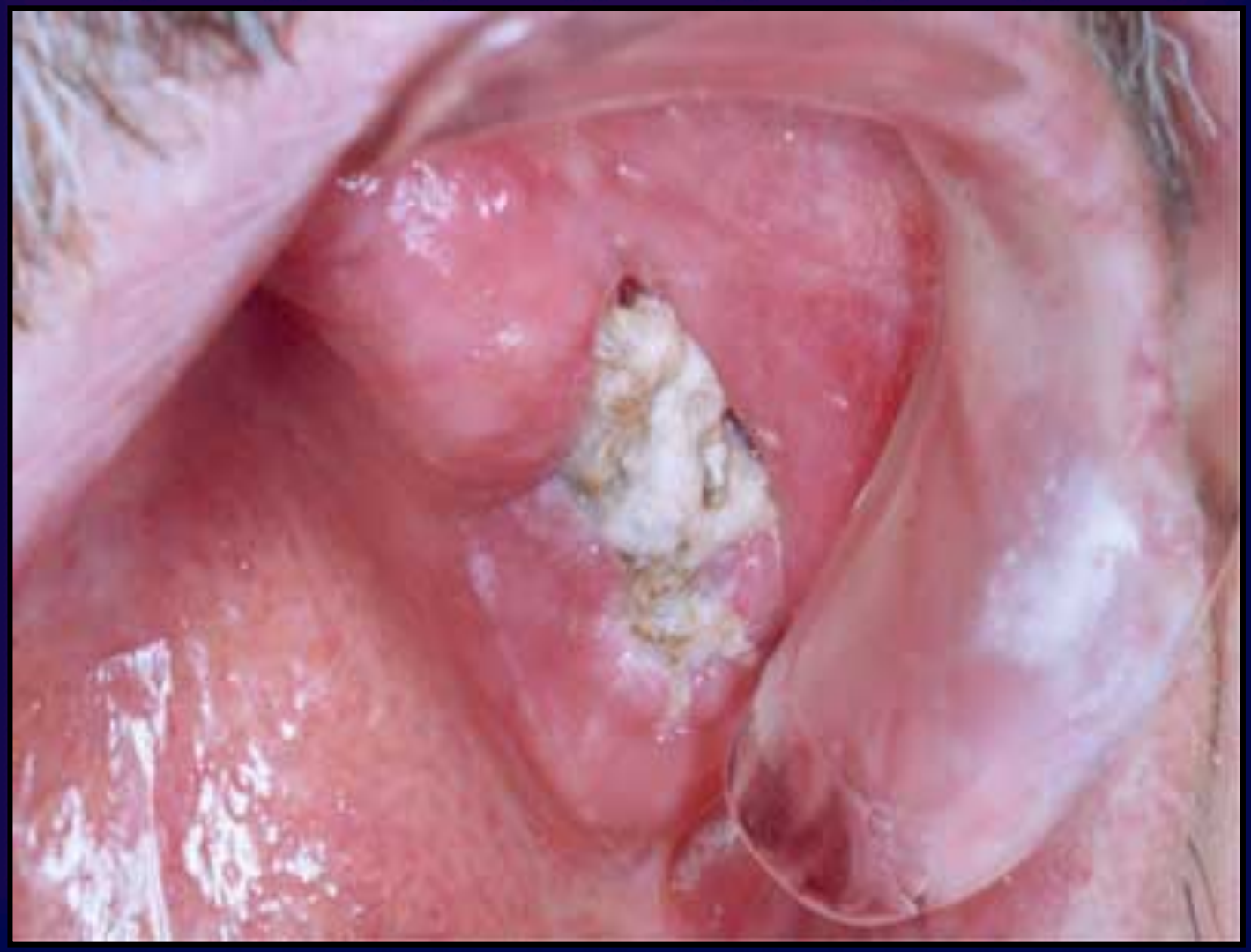
1. TRAUMA TO HARD TISSUES

- May be from bruising of bone during instrumentation or from allowing a bur to overheat during bone removal.
- Avoidance of these errors of technique and attention to the smoothening of a sharp bone-edges and socket toilet eliminate this cause of after pain.

2.TRAUMA TO SOFT TISSUES

- An incision which passes theough only one layer of the gingiva my lead to the mucous layer being separated from the periosteum, with the formation of a ragged flap which heals slowly.
- If a flap is too small, much traumatic retraction may be required to secure access, and if the soft tissues are not properly protected, they may become entangled with a bur.

3. DRY SOCKET



- This is a localized osteitis involving either the whole or a part of the condensed bone lining a tooth socket, the lamina dura.
- Characterised by acutely painful tooth socket containing bare bone and broken down blood-clot.
- Etiology is obscure, but there are a number of predisposing factors.
- Predisposing factors.

➢ Infection of the socket occuring either before, during or after the extraction.

➢ Vasoconstrictors in local anaesthetic solution.

➢ Traumatic extractions

- More common in mandibular extractions because the mandible is made up of dense bone and is less vascular than the maxilla. Lower teeth are usually more difficult to extract than upper teeth. Gravity ensures that mandibular sockets become contaminated with food debris.
- Prevention of dry socket -

➢ The teeth should be scaled and any gingival inflammation treated at least 1 week before the extraction of teeth.

➢ Only the minimum of local anaesthetic solution necessary should be administered.

➢ The teeth should be as atraumatically as possible.

- Treatment of dry socket –

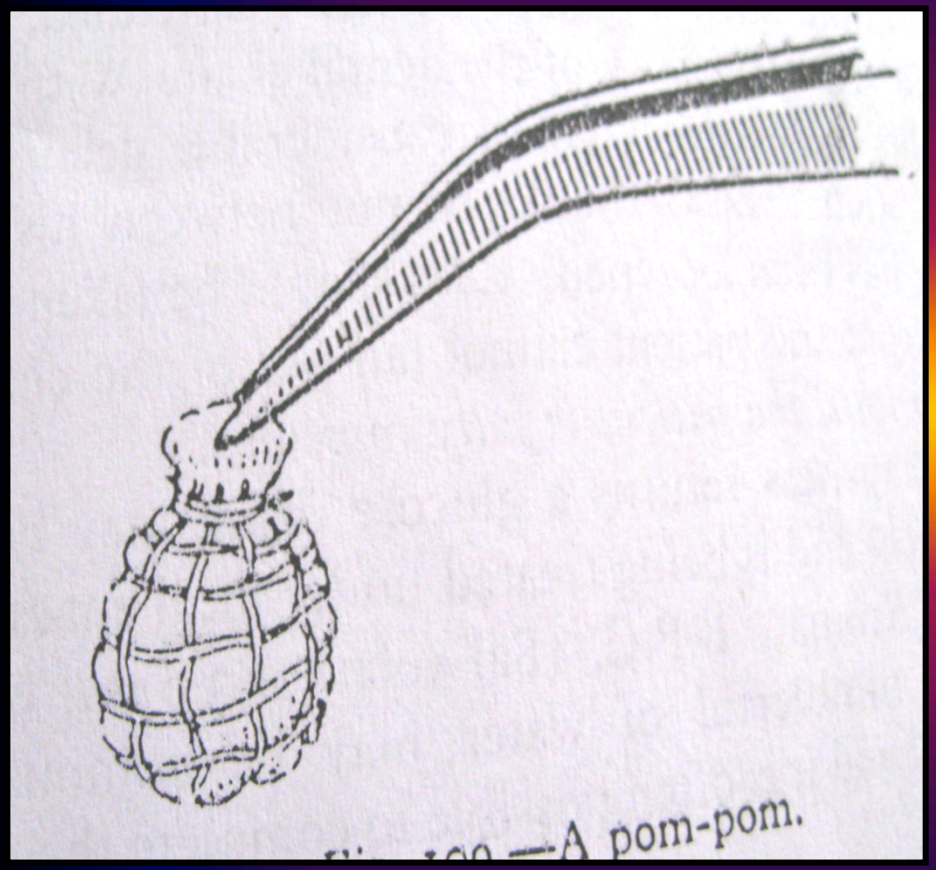
➢ The aim of treatment should be the relief of pain and the speeding of resolution.

➢ The socket should be irrigated with warm normal saline and all degenerating blood clot removed.

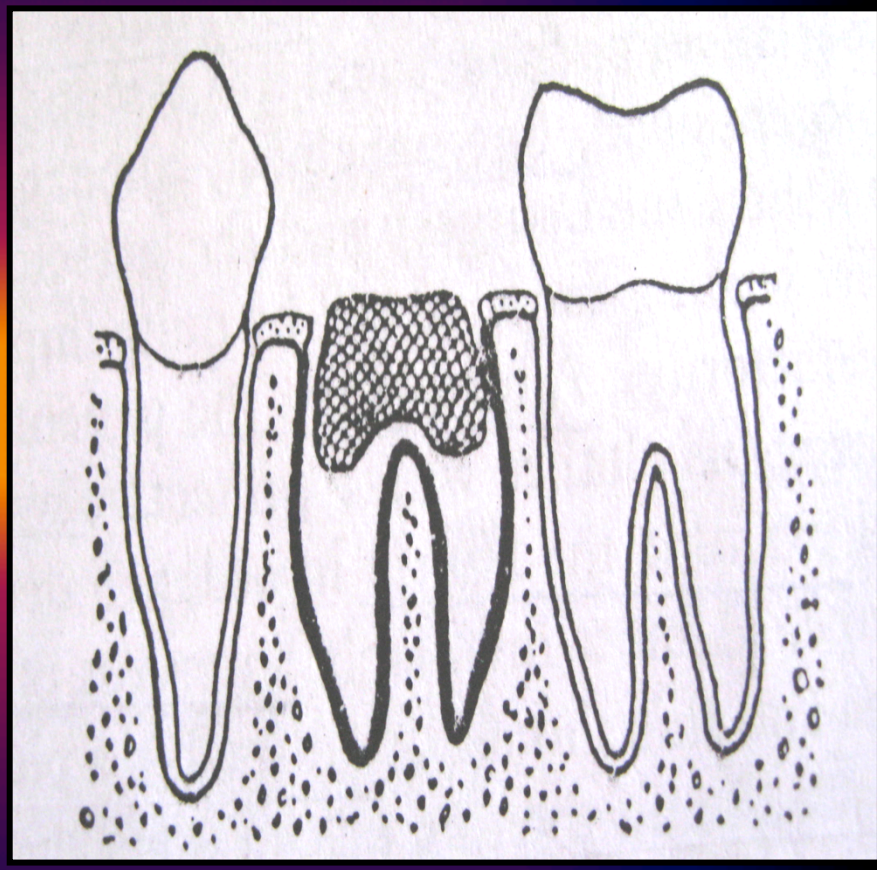
➢ Sharp bony spurs should be either excised with rongeur forceps or smoothed with bone file.

➢ A loose dressing composed of zinc oxide and oil of cloves on cotton wool is tucked into the socket.

➢ Analgesic tablets and hot saline mouth-baths are prescribed and recall the patient after 3 days.



—A pom-pom.



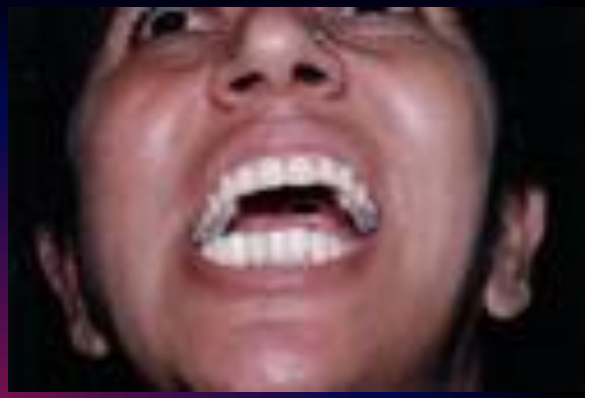
4. ACUTE OSTEOMYELITIS OF THE MANDIBLE

- Symptoms -
- In this condition, there is marked pyrexia and pain is very severe.
- Often the mandible is tender on extra-oral palpation and the onset of impairment of labial sensation, some hours or even days after the extraction, is very characteristic of acute osteomyelitis of the mandible.

- Predisposing factor – traumatic extraction of a lower molar under local anaesthesia in the presence of acute gingival inflammation (e.g. pericoronitis or acute ulcerative gingivitis)

- Management – treated as a case of osteomyelitis.
- Antibiotic coverage, analgesics, liquids
- Plan the surgery.

TRISMUS



- Definition - it can be defined as inability to open the mouth due to muscle spasm or other causes and may complicate dental extractions.

- Causes -

➢ Oedema, haematoma formation or inflammation of soft tissues.

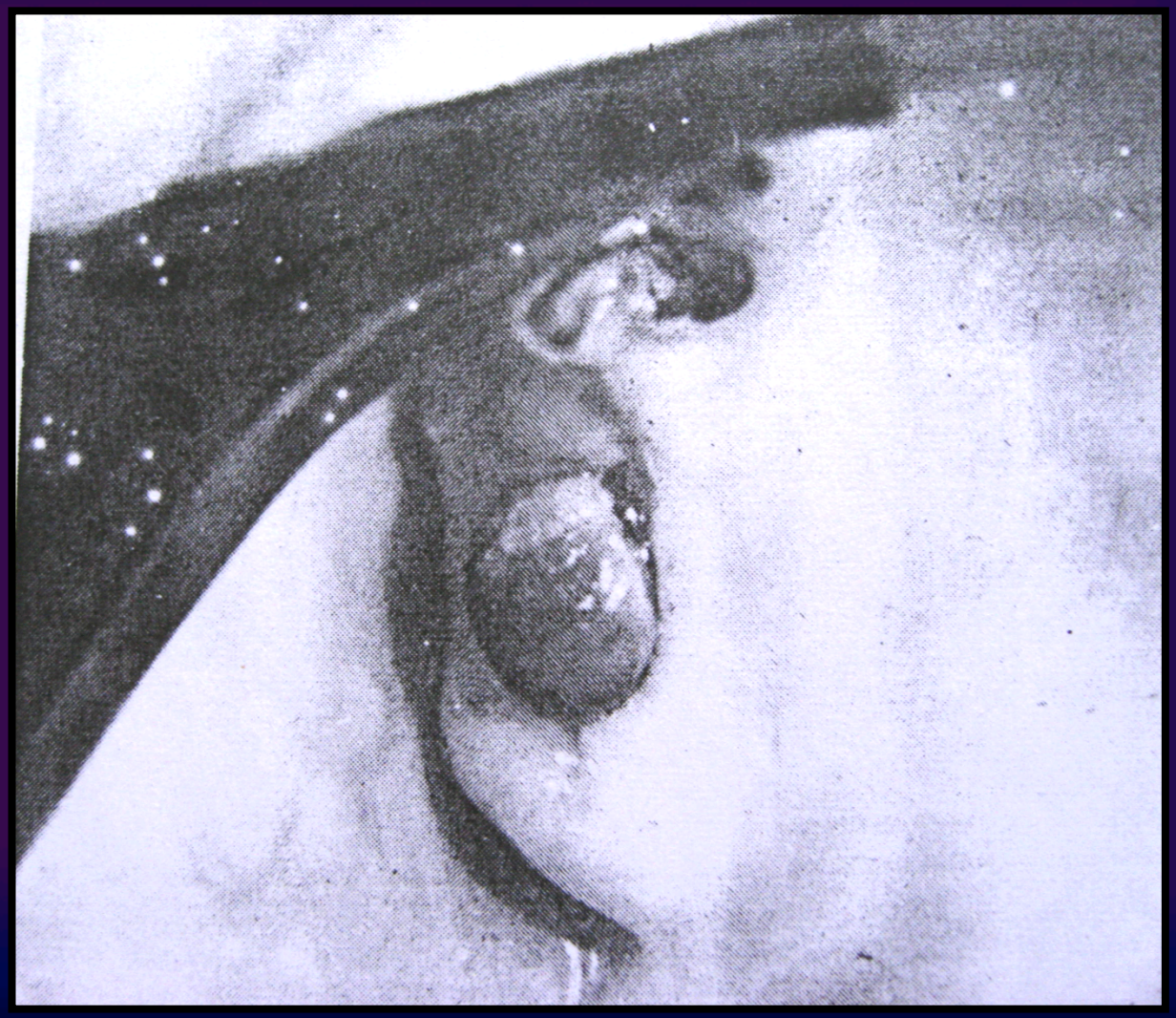
➢ Traumatic arthritis of the temporomandibular joint

➢ Mandibular block injection may be followed by trismus

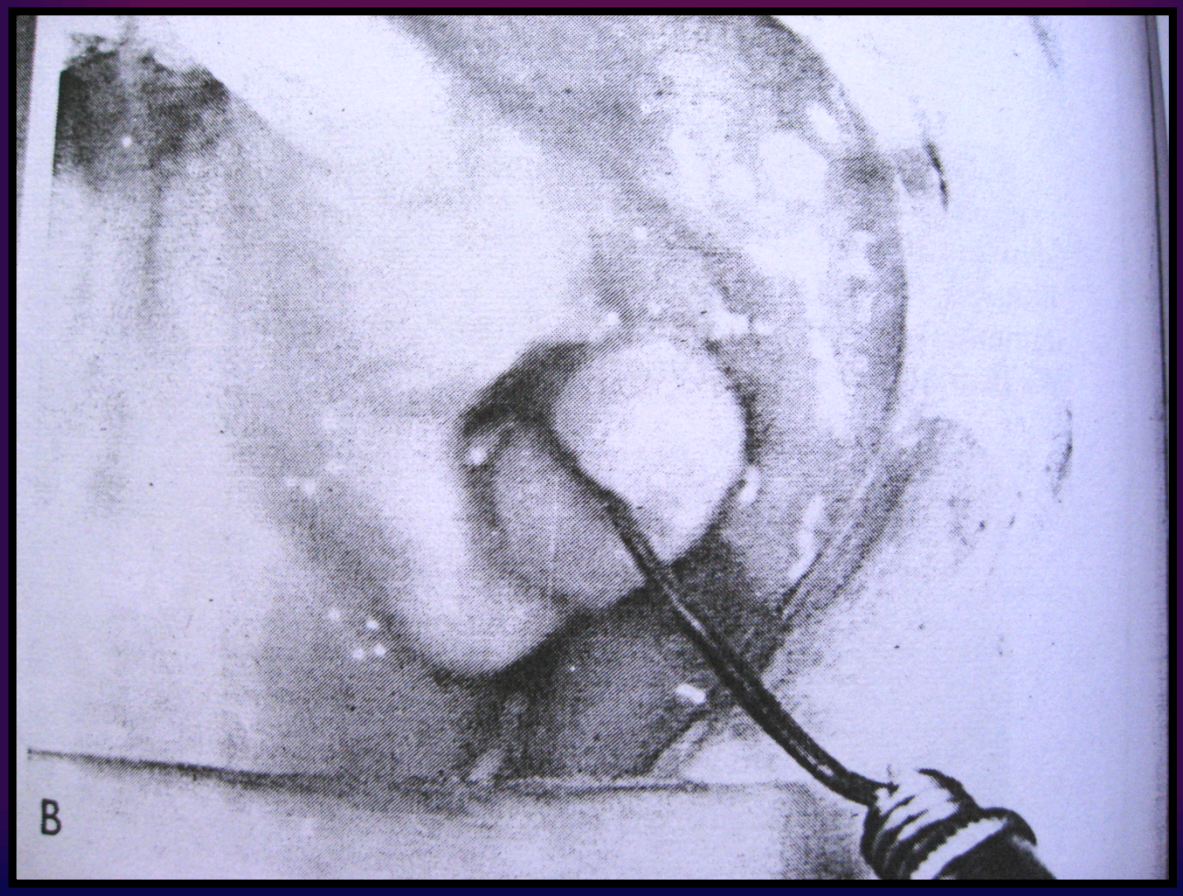
- Treatment of trismus

- Varies with the underlying cause.
- The application of short-wave diathermy or the use of hot saline mouth-baths gives relief in mild cases.
- In cases of infection, antibiotics need to be given.
- Analgesics and muscle relaxants are required.
- Mouth opening increasing exercises need to be done.

HERNIATION OF ANTRAL EPITHELIAL LINING



HERNIATION OF ANTRAL POLYP



ECCHYMOSIS