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&,

ACCORDING TO ***T.M.GRABER***

LOCAL FACTORS-TOTAL 11

1. ANOMALIES OF NUMBER

A: SUPERNUMERARY TEETH

B: MISSING TEETH [CONGENITAL ABSENCE OR LOSS DUE TO ACCIDENTS, CARIES,ETC.]

2. ANOMALIES OF TOOTH SIZE.

3. ANOMALIES OF TOOTH SHAPE.

4. ABNORMAL LABIAL FRENUM; MUCOSAL BARRIERS.

5. **PREMATURE LOSS.**

6. PROLONGED RETENTION.

7. DELAYED ERUPTION OF PERMANENT TEETH.

8. ABNORMAL ERUPTIVE PATH.

9. ANKYLOSIS.

10. DENTAL CARIES.

11. IMPROPER DENTAL RESTORATIONS.

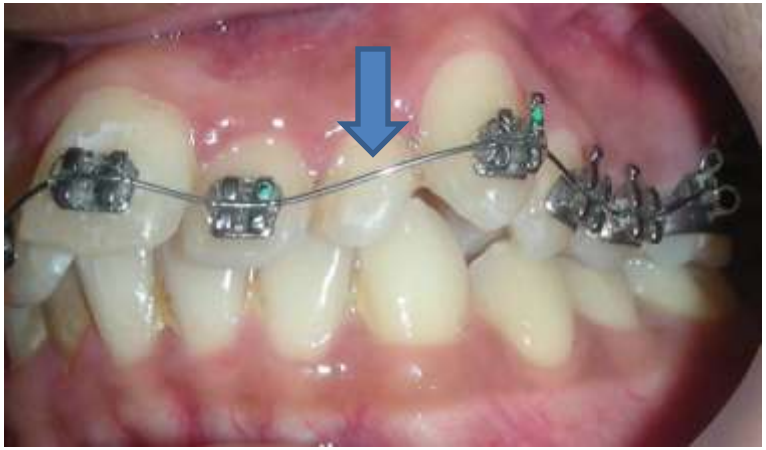
- SUPERNUMERARY & SUPPLEMANTARY TEETH

- MISSING TEETH

✓ CONGENITAL ABSENCE.

✓ DUE TO TRAUMA.

EXTRA LATERAL INCISOR



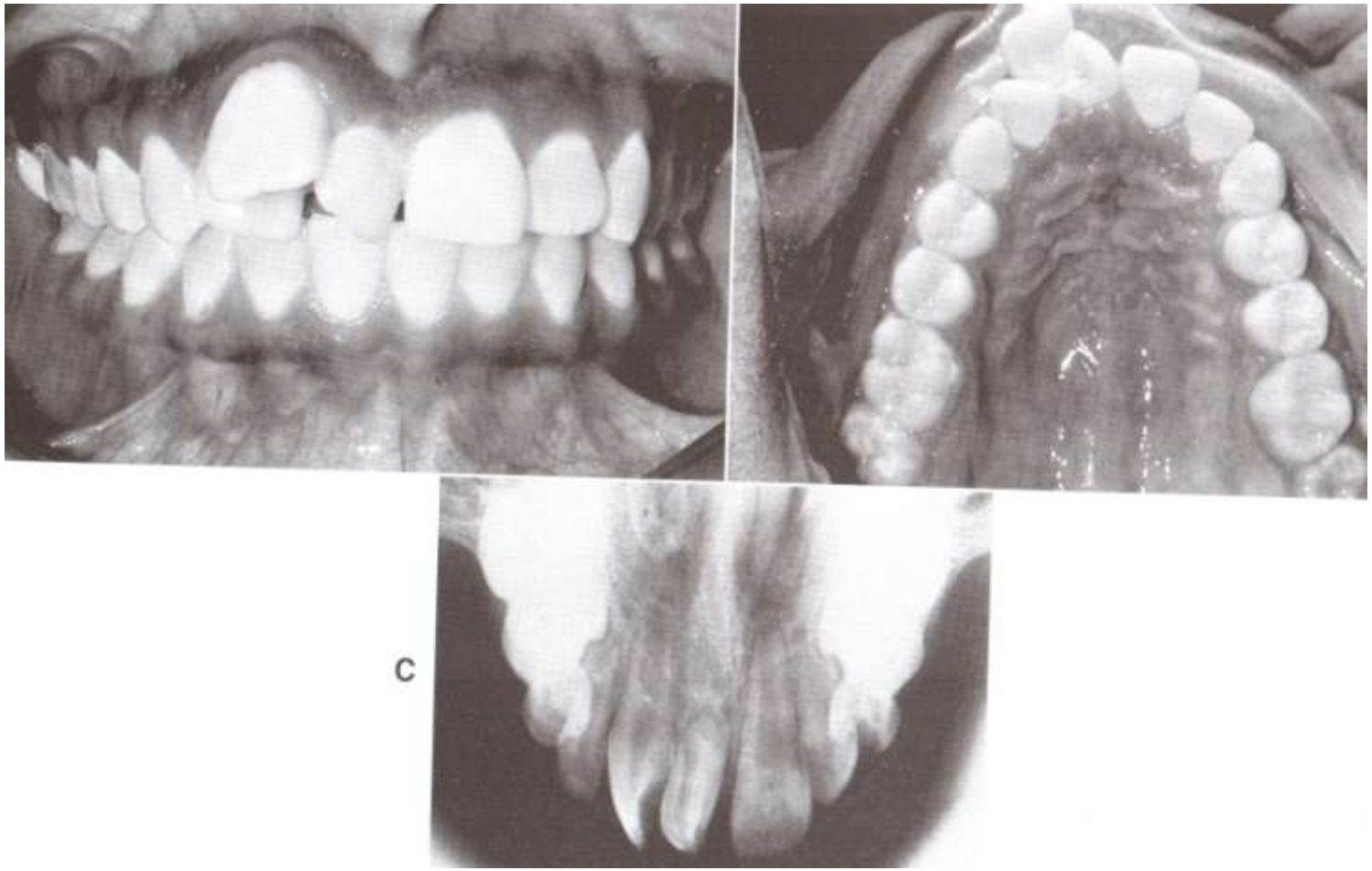
POSSIBLE ETIOLOGY

- Heredity [plays strongest part].
- Left-over character from the primitive anthropoids.
- Associated with congenital deformities [Cleft lip/palate].
- Associated with generalized pathoses [Ectodermal dysplasia, Cledocranial dysostosis]

SUPERNUMERARY TEETH

- It results from disturbances during the initiation and proliferation stages of dental development.

- They are more common in maxilla.

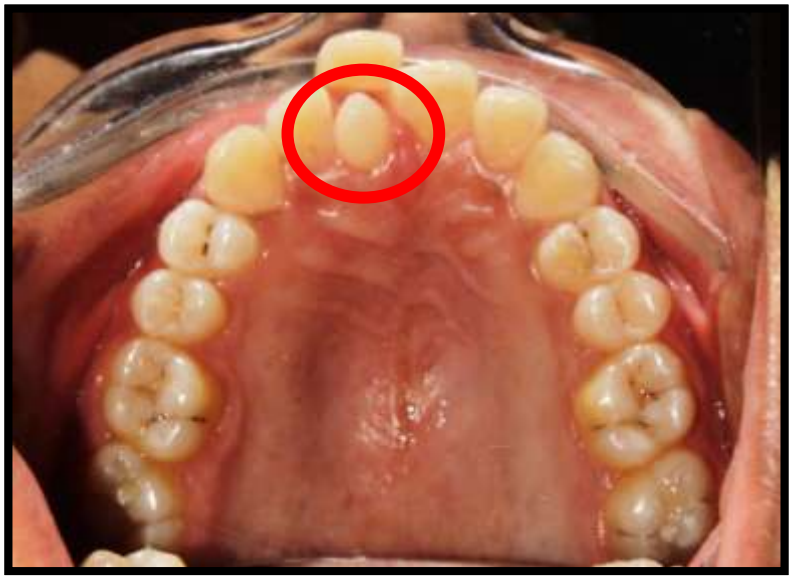


MAXILLARY MIDLINE IS THE MOST COMMON LOCATION FOR SUPERNUMERARY TOOTH, WHICH CAN BE OF ALMOST ANY SHAPE.

- Most frequently seen supernumerary tooth is Mesiodens, which occurs near the midline, palatal to maxillary incisors.

- It is usually conical in shape and occurs most often singly although it may be present in pairs.

Mesiodens



- EFFECTS:

- Non-eruption and ankylosis of permanent teeth.

- Deflection of permanent teeth from their normal eruptive path and position.

- Cystic transformation [Dentigerous cyst].

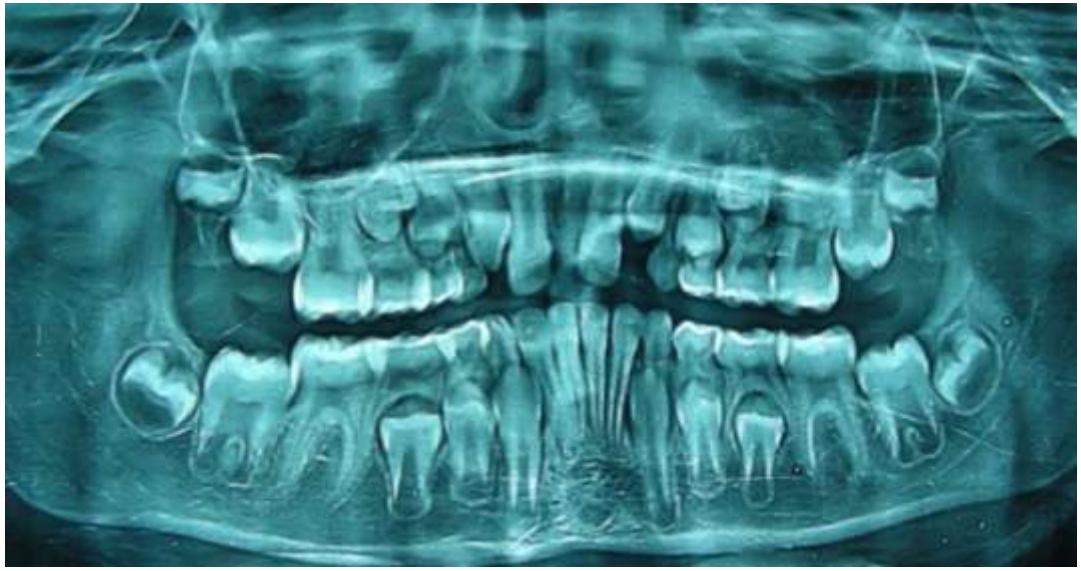
- Transformation into Odontomas.

MISSING TEETH

- They are many times more frequently found than supernumerary teeth.
- More in maxilla.
- Order of frequency of absence is,

1. Maxillary and mandibular third molars.
2. Maxillary lateral incisors.
3. Mandibular second premolars.
4. Mandibular incisors.
5. Maxillary second premolars.

MISSING LATERAL INCISORS



- Congenital absence is more frequent in permanent than in deciduous dentition.

- Heredity plays more significant role for missing teeth than supernumerary teeth.

- Traumatic absence is mainly due to undue prominence.

- Congenital absence of teeth results from disturbances during the initial stages of tooth formation:- initiation and proliferation.

- Examples are,

✓ Anodontia.

✓ Oligodontia

- **RULE OF MISSING TEETH:**
- As a general rule, if only one or a few teeth are missing, the absent tooth will be the most distal tooth of any given type.

- If molar is congenitally missing, it is almost always the third molar; if an incisor is missing, it is nearly always a lateral; if a premolar is missing, it almost always the second rather than the first.

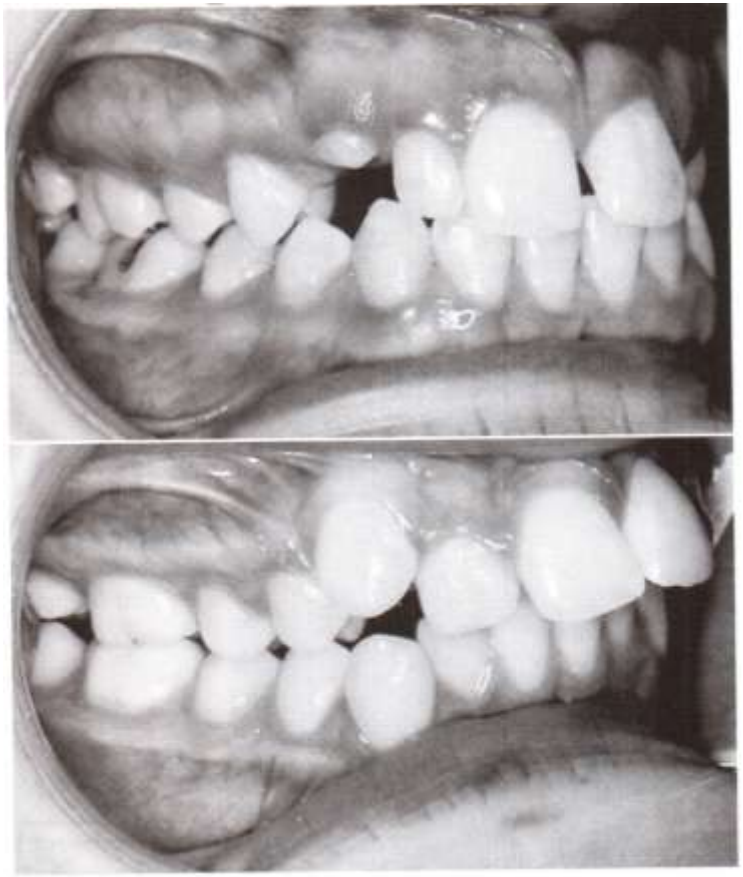
- Rarely is a canine the only missing teeth.

- EFFECTS:
- Drifting of contiguous teeth into the edentulous area.
- Initiating factor for tongue thrust.
- Shortening of arch length.
- Poor esthetic.

- Over-retained deciduous teeth, if permanent teeth are missing.
- Abnormal speech and mastication.
- Cysts appear to occur more frequently in congenital absence problems.
- Over eruption of opposing teeth.
- Knife thin dental ridge due to undeveloped alveolar bone.

- The size of tooth is largely determined by heredity.

- Anomalies of size are relatively frequent in mandibular second premolars and maxillary lateral incisors.

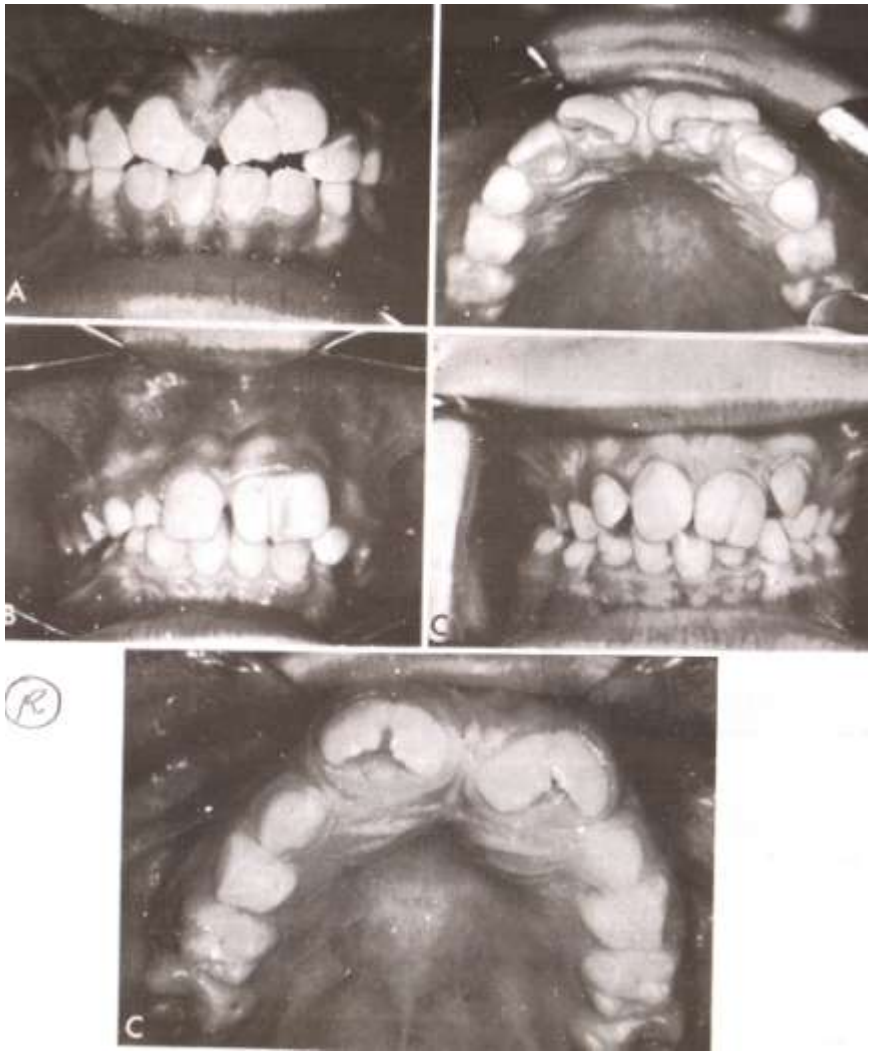


DISPROPORTIONATELY SMALL OR LARGE MAXILLARY LATERAL INCISORS ARE RELATIVELY COMMON.

- Occasionally tooth buds may fuse or geminate [partially split] during their development.
- Fusion results in teeth with separate pulp chambers joined at dentin.
- Gemination results in teeth with common pulp chamber.
- The differential diagnosis is usually by counting the number of teeth in an area.
- Normal occlusion is impossible with geminated, fused or otherwise malformed teeth.

- The most frequent departure from normal is the "peg laterals".

- Because of it's very small size, excessive spacing will often occurs in maxillary anterior segment.

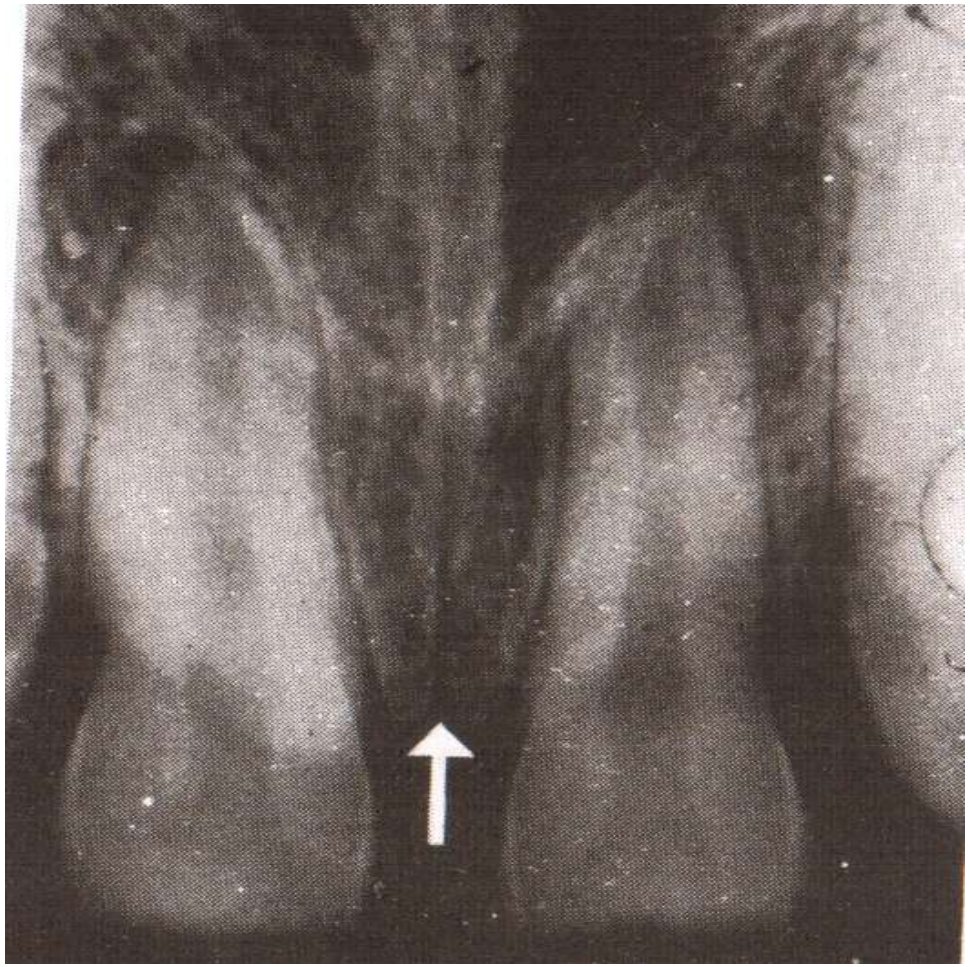


TWINNED MAXILLARY CENTRAL INCISORS

- Other anomalies of shape occasionally occur as a result of developmental defects, such as Amelogenesis imperfecta, Hypoplasia, Gemination, Dens in dente, Odontomas, Fusions and Congenital syphilitic aberrations such as Hutchinson's incisors and Mulberry molars.

- Connection between abnormal labial frenum and the Diastema is a **controversial subject** in orthodontics.

- It provides an excellent **“chicken and egg” example** of controversy that which comes first?



NOTCHING OF INTER MAXILLARY SUTURE IN CONJUNCTION WITH HEAVY AND FIBROUS LABIAL FRENUM.

- Deciduous teeth:

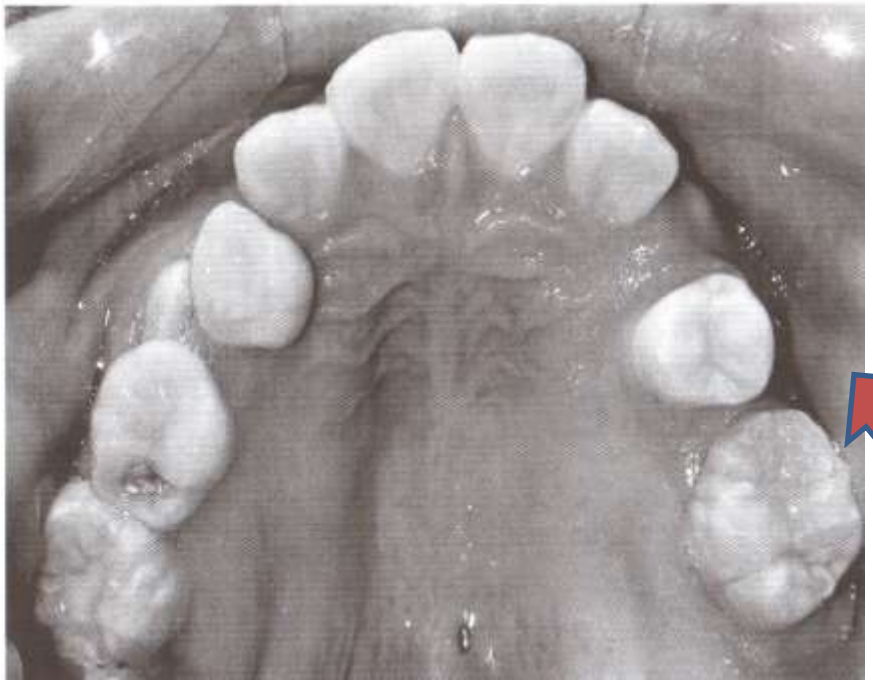
- The deciduous teeth serve not only as organ of mastication, but as **“space saver”** for the permanent teeth.

- They also assist in maintaining the opposing teeth at the proper occlusal level.

- Premature loss of a deciduous second molar will very likely lead to mesial drift of the first permanent molar and blocking of the erupting second premolar.

- Even when the premolar erupts, it is deflected bucally or lingually into a position of malocclusion.

EARLY LOSS OF LEFT SECOND PRIMARY MOLAR.

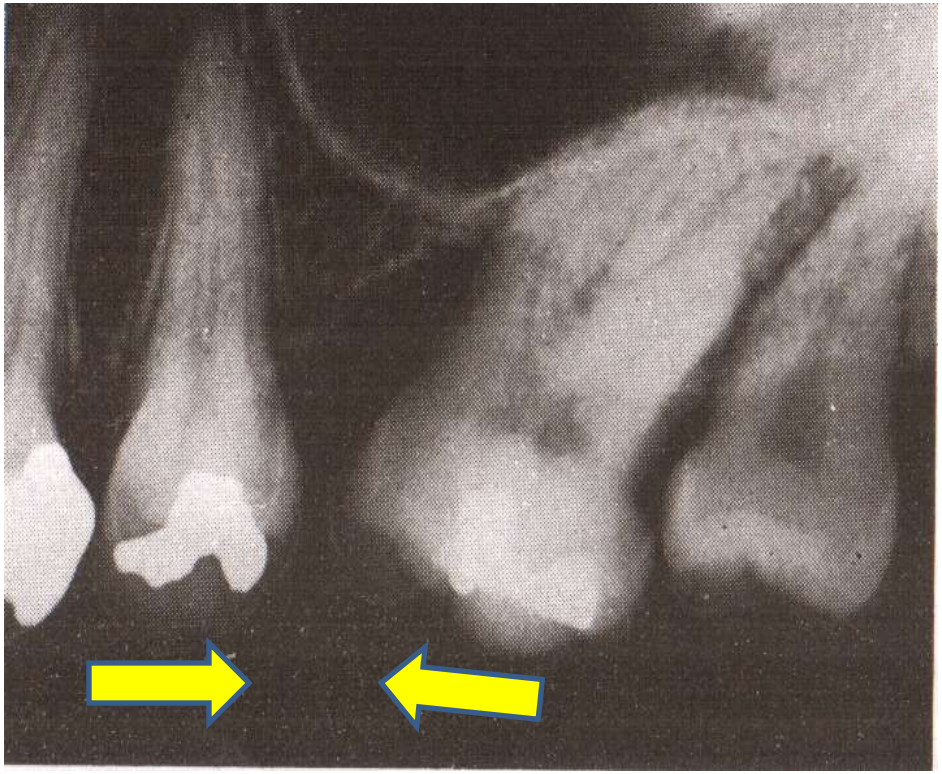


- PERMANENT TEETH:

- The early loss of permanent teeth should be considered as a “malocclusion maker”.

- Too many children lose their permanent first molar because of dental neglect and caries.

Premature loss of permanent first molar



EFFECTS:

- Shortening of arch length.
- Tipping of contiguous teeth.
- Over eruption of opposing teeth.
- Upset the dynamic balance
- Upset in physiologic functioning of dentition.

- One **basic rule** to follow is that the dentist should maintain the tooth shedding timetable at about the same level for each of four quadrants for the individual patient, and not attempt to follow a “normal table”.

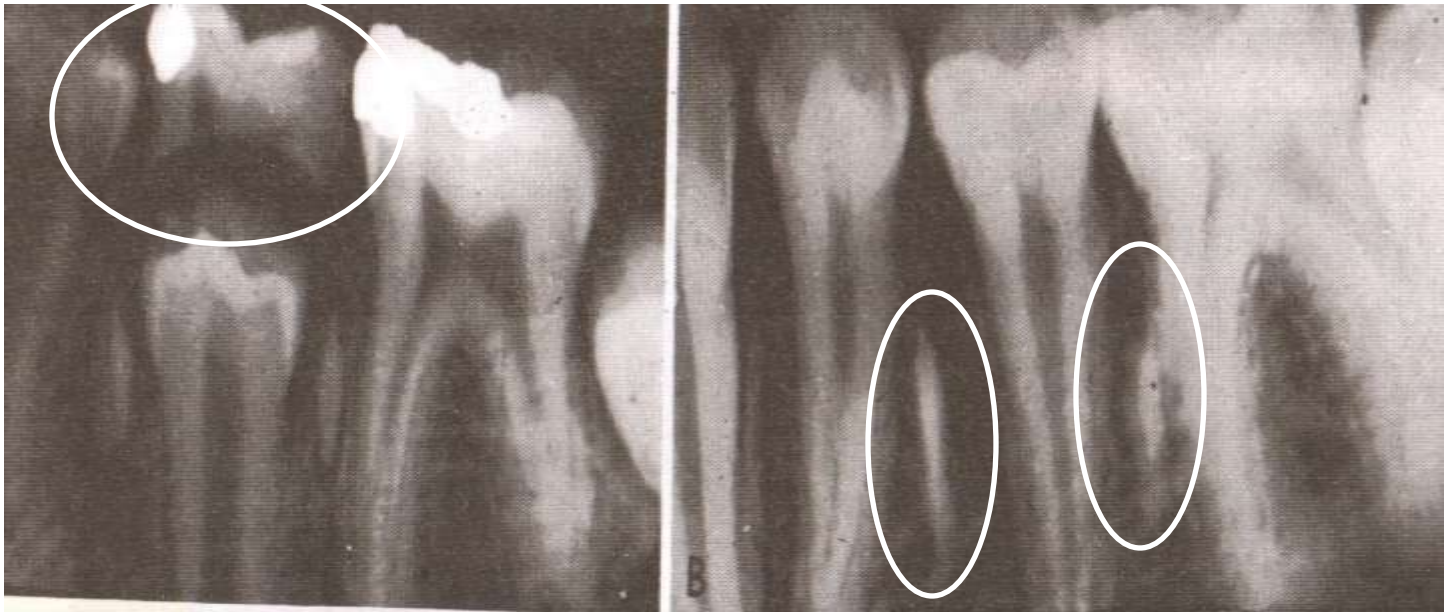
Etiology of prolonged retention:

- Hereditary pattern.
- Endocrine imbalance [hypothyroidism].
- Medication [cortisone and other steroids].
- Ankylosis.
- Abnormal eruptive path of permanent tooth.

EFFECTS

- Non-eruption of permanent tooth.
- Delayed eruption of permanent tooth.
- Deflection and abnormal eruption of permanent tooth.
- Retained deciduous root fragments act as a focus for a cyst.
- Malocclusion.

ABNORMAL RESORPTION OF DECEDUOUS TEETH

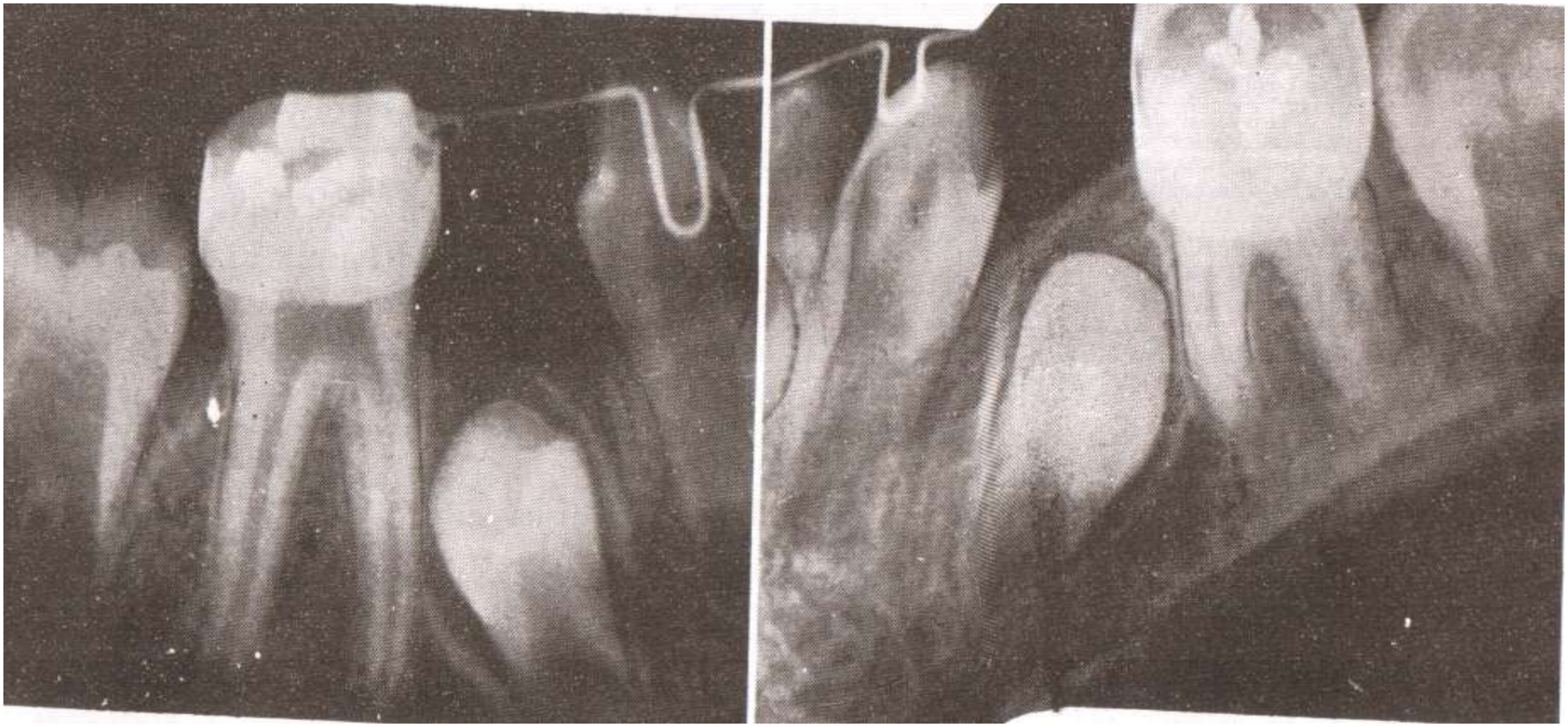


SECOND DECIDUOUS MOLAR ROOTS RESORBING ABNORMALLY. THIS RETAINED ROOT FRAGMENTS OFTEN RETAINED AND ACT AS A FOCUS FOR A CYST.

DELAYED ERUPTION OF PERMANENT TEETH

ETIOLOGY:

- Heredity
- Endocrine disorders [hypothyroidism]
- Congenital absence of permanent teeth.
- Presence of supernumerary tooth or deciduous root [root lock].
- Presence of mucosal barrier.
- Formation of bony crypt in line of eruption of permanent teeth.

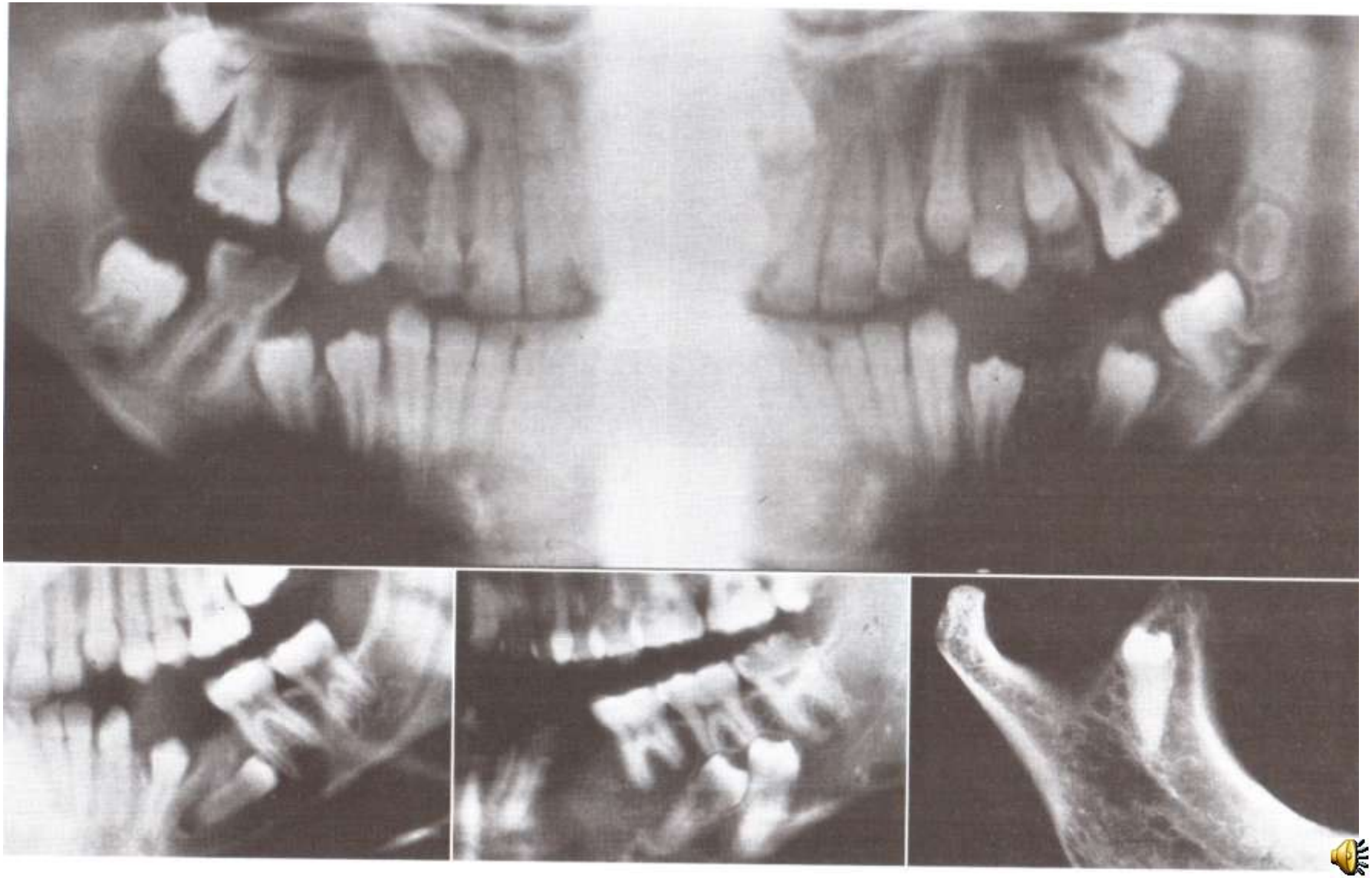


BONY BARRIER PREVENTING MAN. SECOND PREMOLAR FROM ERUPTING SO, SURGICAL UNCOVERING OF CROWN FROM OCCLUSAL IS INDICATED.

- Effects:
- Tipping of contiguous teeth.
- Over eruption of opposing teeth.
- Shortening of arch length.
- Chances of non eruption, abnormal eruption and ankylosis.

- Heredity
- Inadequate space
- Trauma or blow
- Presence of Supernumerary tooth
- Retained deciduous tooth or root fragment
- Bony barrier
- Physical barrier
- Coronal cysts
- Idiopathic [unknown] origin.

Ectopic eruption of mandibular second premolars



BEFORE

AFTER

Effects of abnormal eruptive path:

- Non eruption
- Abnormal eruption
- Root resorption of contiguous deciduous or permanent tooth.
- Arch length deficiency.
- Dentigerous cyst.
- Impaction.
- Ankylosis.

- Ankylosis is probably due to an injury of some sort, as a result of which a part of periodontal membrane is perforated and a bony bridge forms, joining the lamina dura and cementum.

- Types: Partial or complete

Etiologic factors for Ankylosis are,

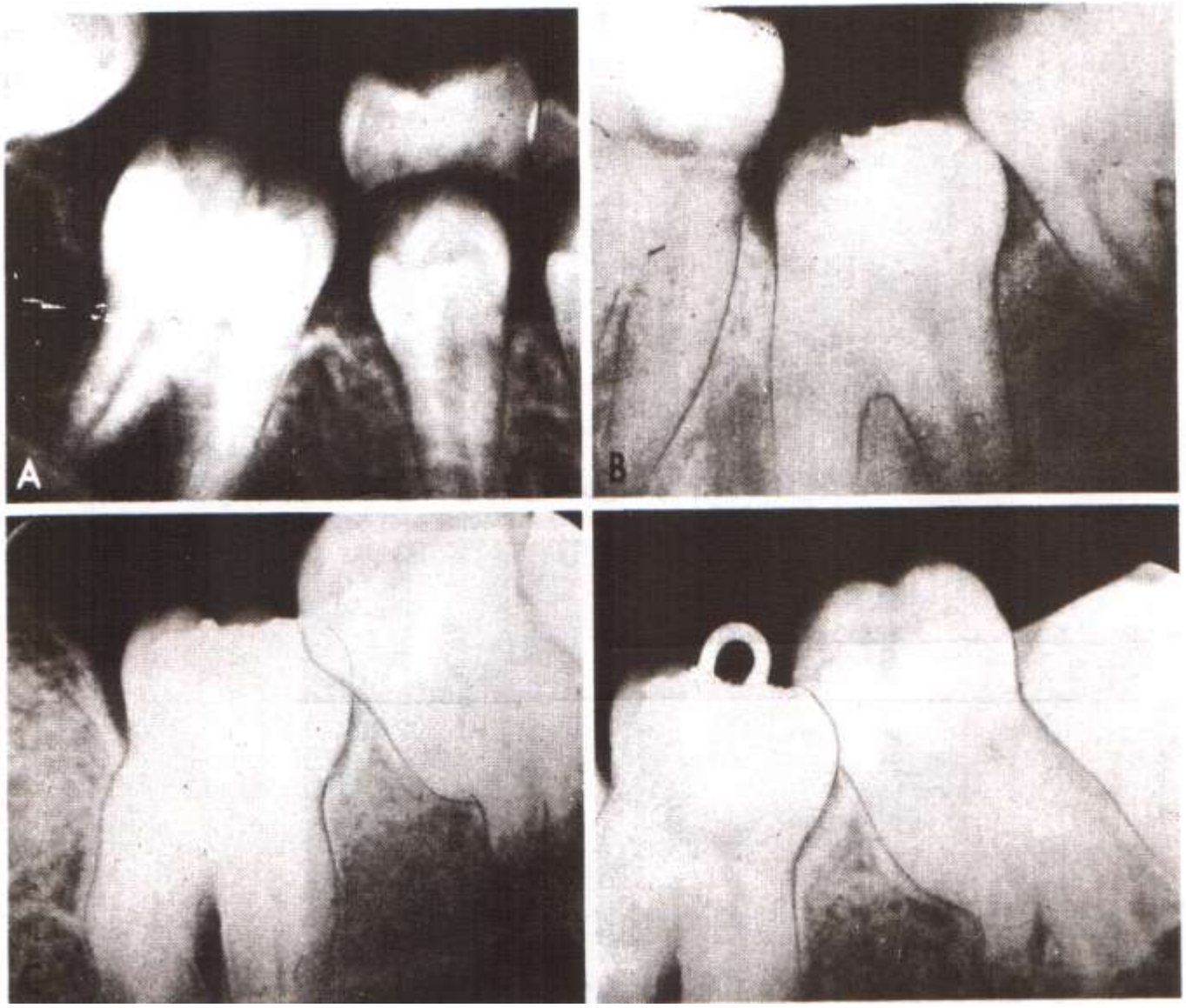
- Trauma or accidents.
- Certain endocrine disorders [Hypothyroidism]
- Congenital diseases like Cleidocranial Dysostosis.
- Idiopathic.

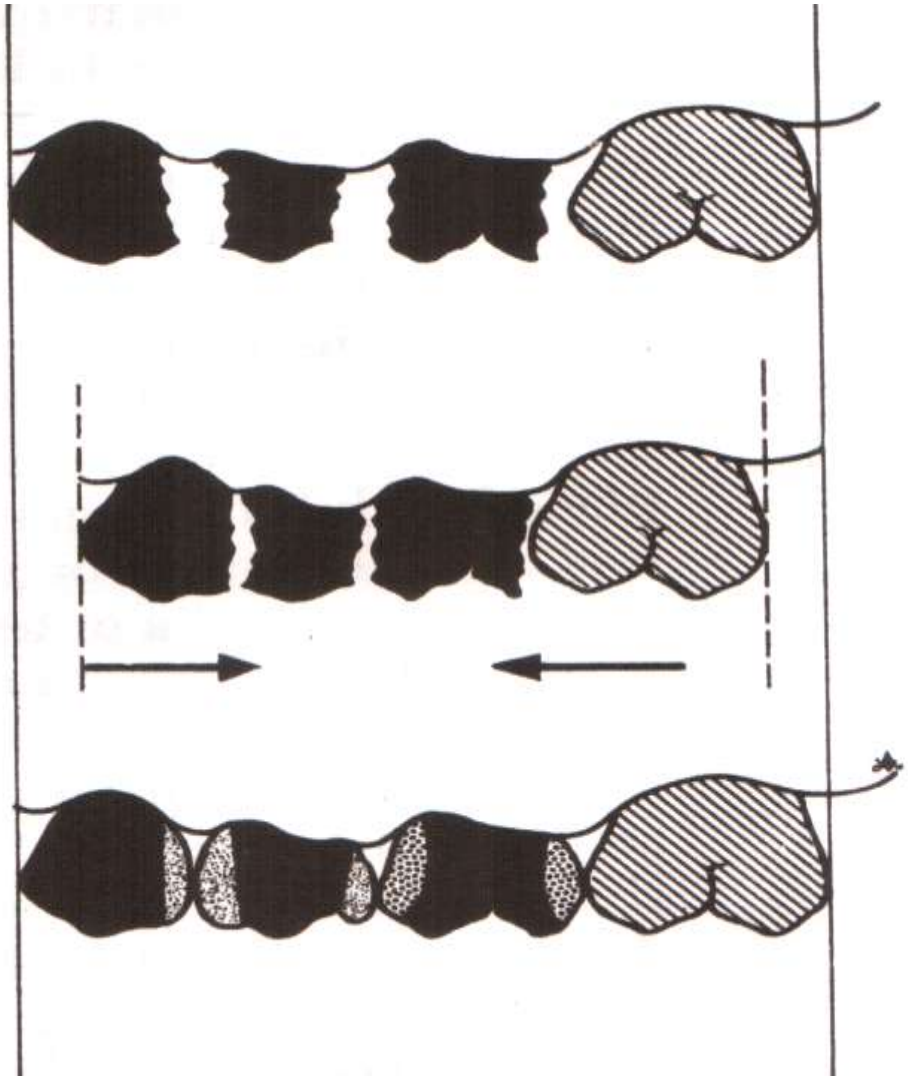
CLINICAL IMPLICATIONS:

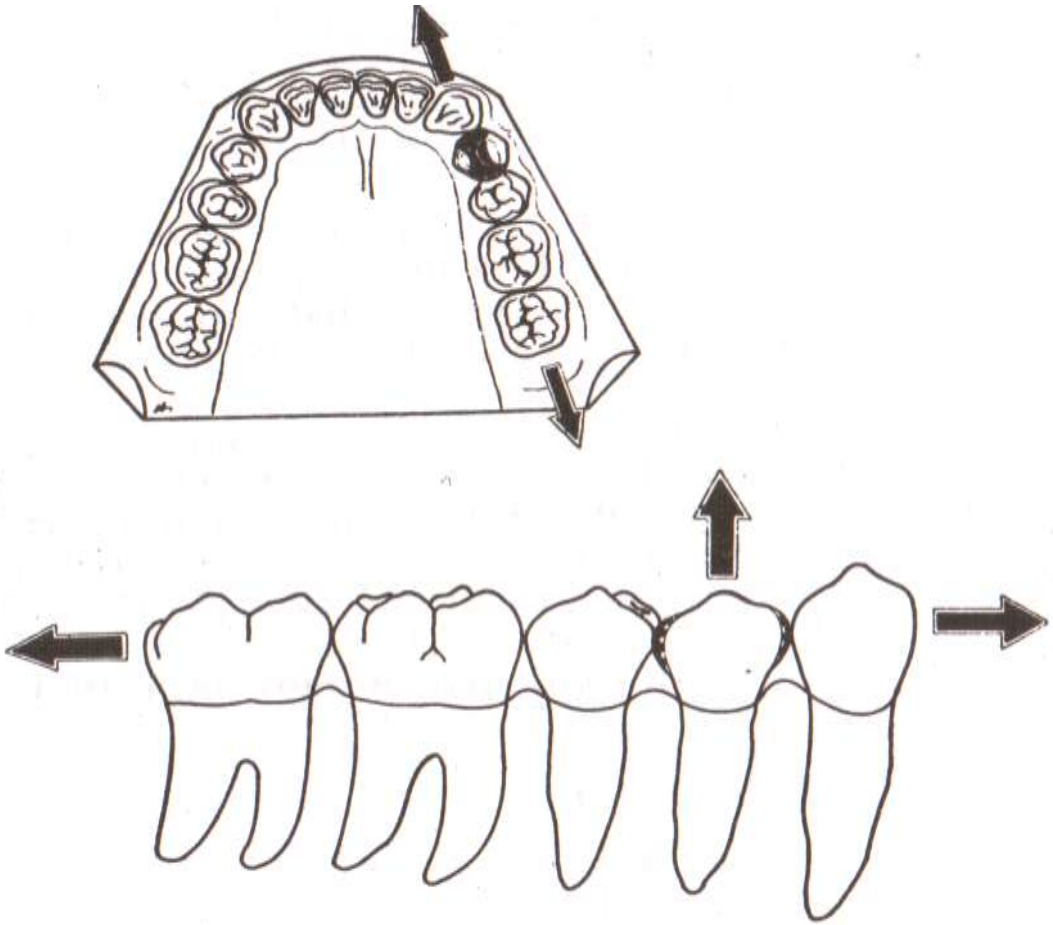
- If ankylosed tooth is deciduous, it can deflect the path of its successor permanent tooth, so **extraction** of deciduous tooth is must.

- In **Partial ankylosis** of permanent tooth, hook is placed in occlusal to attempt to elevate molar in to occlusion by inter-maxillary elastics.

- Clinical diagnosis by percussion: **“cracked pot sound”.**


A
B

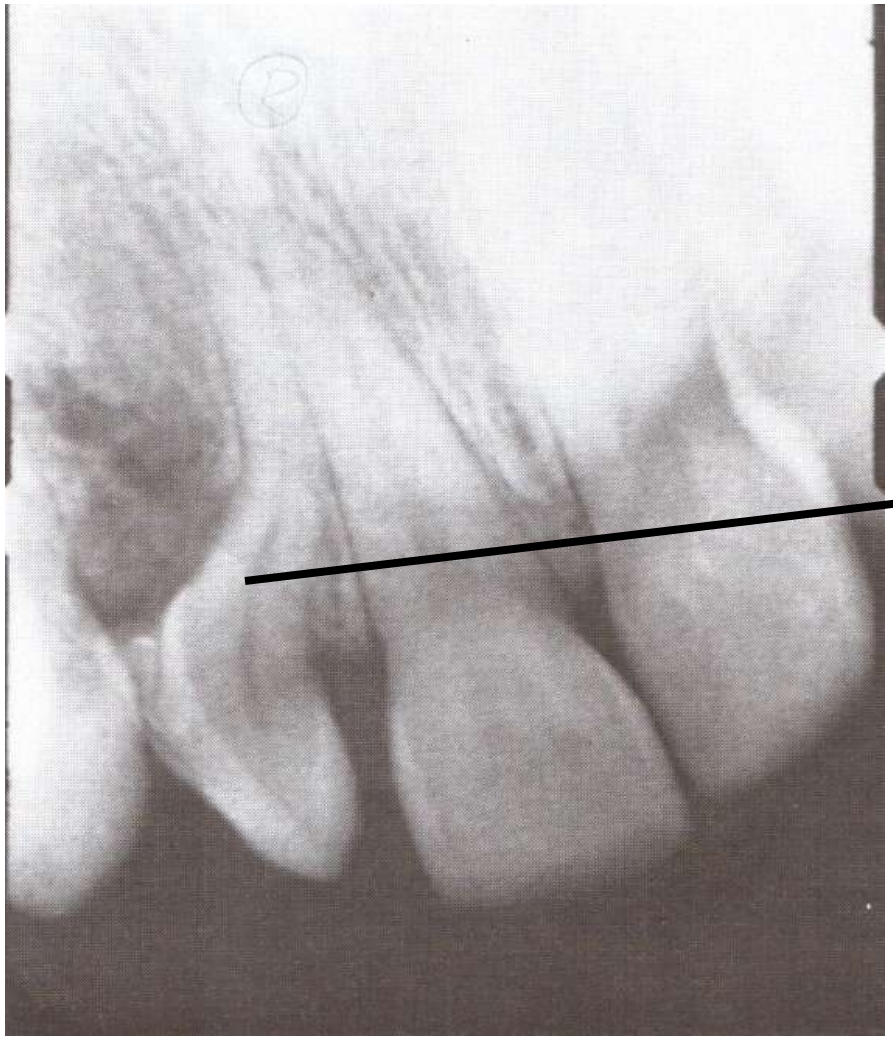




OVER EXTENDED PROXIMAL RESTORATION

—— ORIGINAL MESIODISTAL DIMENSION

—— RESTORED MESIODISTAL DIMENSION



Dilacerations

- ***REFERENCES:***

1. ORTHODONTICS PRINCIPLES AND PRACTICE BY T.M.GRABER.
2. TEXTBOOK OF ORTHODONTICS BY ROBERT E. MOYERS.
3. CONTEMPORARY ORTHODONTICS BY WILLIAM R. PROFFIT.
4. TEXTBOOK OF ORTHODONTICS BY SAMIRE BISHARA.
5. ORTHODONTICS, THE ART AND SCIENCE, BY BHALAJHI

THANK YOU……………………

ASSIGNMENT

MCQS

1. Following is not a local etiological factor of malocclusion

- A - Posture
- B- Ankylosis
- C- Dental Carries
- D- Anodontia

2. Following is not a congenital defect

A. Cerebral palsy

B. Torticollis

C. Cleidocranial dysostosis

D. Ankylosis

3. Following is not an effect of congenital syphillis

A. Mulberry molars.

B. Enamel deficiencies.

C. Extensive dental decay.

D. High frenal attachment

4. Faulty utilization of nutritional factors is not due to

A. Hormonal imbalance.
B. Beri-Beri
C. Enzymatic imbalance.
D. Chronic alcoholism.

5. Following is not an effect of clinching and bruxism :

A. Attrition.

B. TMJ problems.

C. Reduced free-way space.

D. Root resorption.

KEYS

- 1: A
- 2: D
- 3: D
- 4: B
- 5: C