

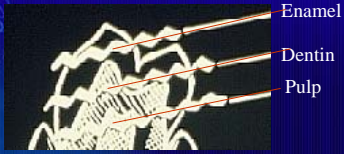
## Dental-Alveolar Trauma Facial Trauma

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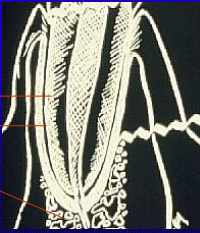
## Dental Anatomy

- Tooth--Crown
  - Pulp
  - Dentin
  - Enamel



## Dental Anatomy

- Attachment Apparatus
  - Root
    - Cementum
  - Periodontal Ligament
  - Alveolar Bone

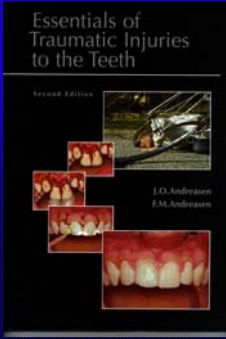


## Fractures of Anterior Teeth

- Descriptive Classification
  - Ron Johnson, DDS (JADA)
- Former Terminology
  - Ellis Classification
  - No longer used

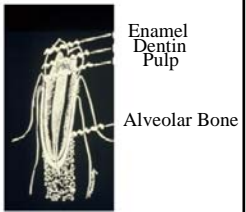
## Fractures of Anterior Teeth

- World Experts
  - Andreasen



## Fracture Classification

- Enamel
- Dentin
- Pulp



### Enamel Fracture

- Smoothe the Edge
- Bonding
- Can be delayed
- Reassurance

### Dentin Fracture

- Tx=f(Age)
- <12yo=Urgent
- >12yo=Delayed
- Standard of Care depends on available resources

### Dentin Fracture

- Calcium Hydroxide Paste
- "Dycal"
- Cover with bonding agent or Root Canal Sealer
- "Cavet"

### Pulp Exposure Adult

- Endodontics
- Extraction
- Dental Block?
- Analgesia?



### Pulp Exposure Pediatric Tooth

- Pulp Capping
- Dycal
- Contamination lessens prognosis for success

### Dental-Alveolar Trauma

## Subluxation

- Diagnosis
  - Mobility
  - Rim of blood
- Treatment
  - Soft Diet
  - Stabilization
- Referral
  - Root Fracture





## Tooth Avulsion

- Over 2 million teeth are knocked out per year!
- Standard Treatment
  - <1% chance of success/minute absent from the oral cavity
- “Save-A-Tooth”
  - Cell Culture Fluid—Hanks Solution
  - Extends window from 4-24 hours

## Tooth Avulsion

- Tearing of the periodontal ligament
- Loss of blood supply to the pulp




## Tooth Avulsion

- Optimum Tx
  - Immediate implantation



## Tooth Avulsion

- Success Rate vs. Time



Time (minutes)	% Success
0	100
30	90
60	75
90	60
120	40

## Tooth Avulsion

- Problems with immediate implantation
  - Pain without local anesthesia
  - Dirty Tooth
  - Improper Positioning
  - Tooth just falls out
  - Hysterical or uncooperative patient
  - More urgent priorities--ABCDE

## Tooth Avulsion

- Pre-Implantation
  - NO Chemical Treatment
  - NO excessive washing
  - NO scraping
  - Gentle treatment
    - Preserve periodontal ligament cells



## Tooth Avulsion

- Storage and Preservation
  - Refrigerated Milk—1-3 Hours
  - Saliva or Saline—1 Hour
  - Hanks Solution—4-24 Hours

## Tooth Avulsion

- “Save-A-Tooth”





## Tooth Avulsion

- Review
  - Find Teeth
  - Put Teeth in Save-A-Tooth Container
  - Don't mix teeth
  - Label Container
  - Bring in teeth regardless of time



## Tooth Avulsion

- Do not implant primary teeth

## Deciduous Tooth Eruption

Tooth	Calcification begins (months in utero/mo)	Crown completed (months)	Date of eruption (months)	Root completed (years)
<b>Upper A</b>	4	4	7	1½ - 2
<b>B</b>	4½	5	8	1½ - 2
<b>C</b>	5	9	16-20	2½-3
<b>D</b>	5	6	12-16	2 - 2½
<b>E</b>	6-7	10 - 12	20-30	3
<b>Lower A</b>	4½	4	6½	1½ - 2
<b>B</b>	4½	4½	7	1½-2
<b>C</b>	5	9	16-20	2½ - 3
<b>D</b>	5	6	12-16	2 - 2½
<b>E</b>	6	10 - 12	20-30	3

From Reynolds & Abrahams: McMin's Interactive Clinical Anatomy: Head & Neck; (c) 1997 Mosby International, unless otherwise stated in the on-line Help

## Permanent Tooth Eruption

Tooth	Calcification begins (months)	Crown completed (years)	Date of eruption (years)	Root completed (years)
<b>Upper 1</b>	3-4	4-5	7-8	10
<b>2</b>	10-12	4-5	8-9	11
<b>3</b>	6-7	6-7	11-12	15-15
<b>4</b>	10-21	5-6	10-11	12-13
<b>5</b>	24-30	6-7	10-12	12-14
<b>6</b>	Bath	2½-3	6-7	9-10
<b>7</b>	2½-3 yrs	7-8	12-13	14-16
<b>8</b>	7-9 yrs	12-16	17-21	18-23
<b>Lower 1</b>	3-4	4-5	6-7	9
<b>2</b>	2-4	4-5	7-8	10
<b>3</b>	4-5	6-7	9-10	12-14
<b>4</b>	30-24	5-6	10-12	12-13
<b>5</b>	27-30	6-7	11-12	13-14
<b>6</b>	Bath	2½-3	6-7	9-10
<b>7</b>	2½-3 yrs	7-8	12-13	14-15
<b>8</b>	8-10 yrs	12-16	17-21	18-23

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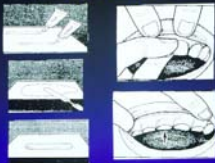
## Tooth Avulsion

- Procedure
  - Rinse Tooth or Save-A-Tooth
  - Local Anesthesia if possible
  - Suction Socket and Replace Tooth
  - Stabilization
  - Tetanus Prophylaxis
  - Antibiotics
  - >30min, Hanks improves cell survival



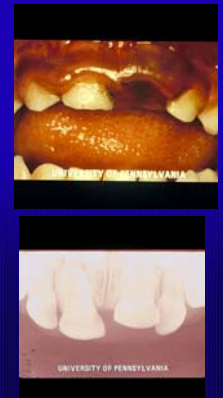
## Coe-Pak Technique

### USE OF COE PAK



## Intrusion


- Primary
  - Re-erupt
- Adult
  - Surgical Extrusion






## Soft Tissue Injuries

- Simple
- Through and Through
- Management of dental-alveolar trauma must **precede** plastic closure



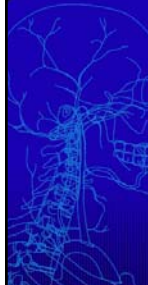
## Gingival Lacerations

- Cover exposed bone




## Through and Through

- Remove Foreign Bodies
- Irrigation
- Close Mucosa
- Irrigation
- New Set-up
- Close Skin

## Maxillofacial Fractures



## Treatment Priorities

- Preservation of Life
  - Airway
  - Hemorrhage Control
  - C-Spine Control
- Form and Function
  - Maintenance of Function
  - Restoration of Appearance



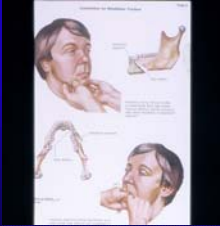
## Treatment Priorities

- Low priority in the multiple trauma patient
- Do not be distracted from other life threats
- Treatment
  - Fracture stabilization at the appropriate time



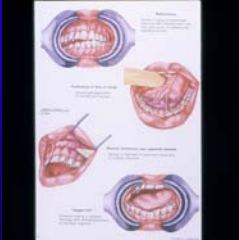
## Mandibular Fracture

- Trauma History
- Malocclusion
- Mobility/Crepitus
- Decreased ROM
- Deviation toward fracture on opening



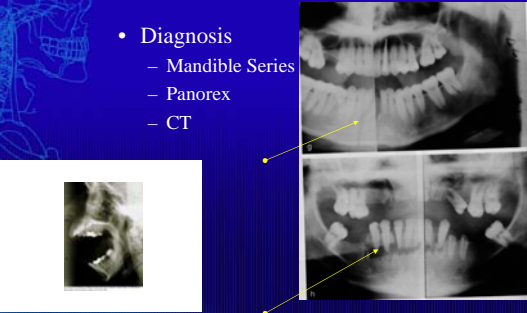
## Mandibular Fracture

- Deformity
- Swelling
- Ecchymosis
- Tenderness
- Mental Nerve Paresthesia




## Mandibular Fracture

- Diagnosis
  - Mandible Series
  - Panorex
  - CT




## Mandibular Fracture

- Types
  - Alveolar
  - Condylar
  - Symphysis
  - Body



## Mandibular Fracture

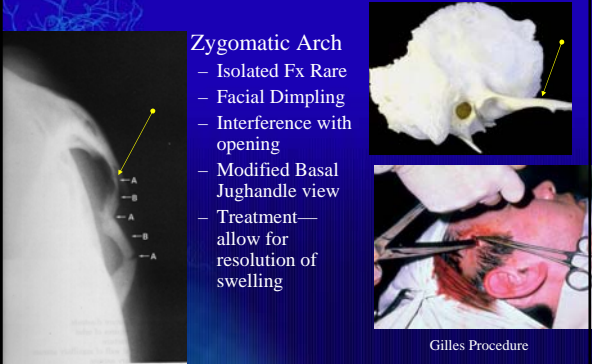
- Treatment
  - Preserve Denition
  - Save Appliances
  - Tetanus Prophyl.
  - Antibiotics
  - Referral



## Midface Fracture

### Zygomatic Arch

- Isolated Fx Rare
- Facial Dimpling
- Interference with opening
- Modified Basal Jughandle view
- Treatment—allow for resolution of swelling



Gilles Procedure

## Midface Fracture

- Zygoma-zygomatic-Maxillary Complex—TRIPOD Fracture
  - Frontozygomatic suture line
  - Zygomaticomaxillary or infraorbital rim
  - Lateral Wall Maxillary Sinus
  - Posterior to Zygomatic Arch

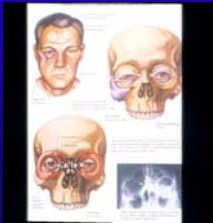

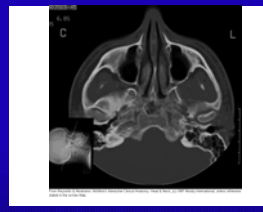

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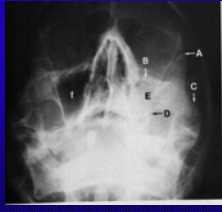
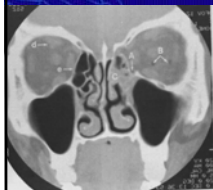
## Midface Fracture

- Tripod Features
  - Edema of cheek
  - Edema periorbita
  - Facial Flattening
  - Subconj.Hemor.
  - Anesthesia Cheek
  - Step Deformity
  - Diplopia
  - Emphysema

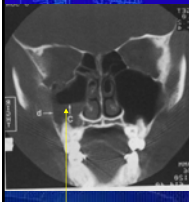


## Midface Fracture

- Radiology
  - Facial Bones and Water's View
    - Fractures
    - Air in Sinus or Orbit
  - CT Scan
    - Becoming gold standard

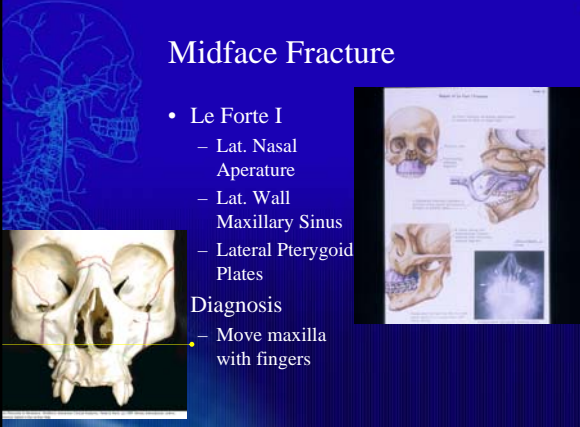
## Midface Fracture

- Orbital Blow-out
  - Diplopia
  - EOMI

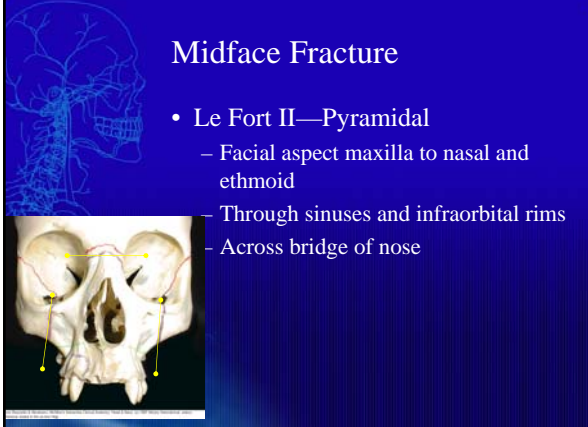
### Midface Fracture

- Le Forte I
  - Lat. Nasal Aperature
  - Lat. Wall Maxillary Sinus
  - Lateral Pterygoid Plates
- Diagnosis
  - Move maxilla with fingers



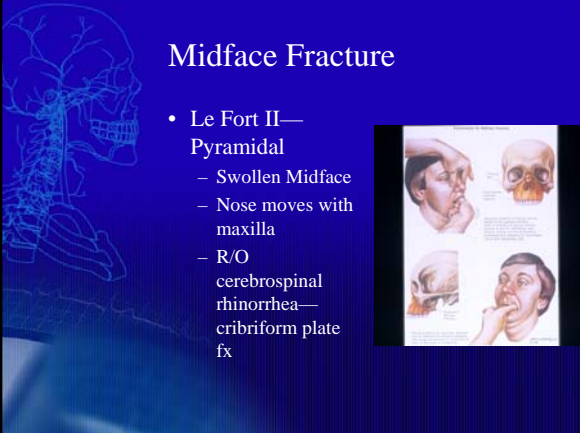
### Midface Fracture

- Le Fort II—Pyramidal
  - Facial aspect maxilla to nasal and ethmoid
  - Through sinuses and infraorbital rims
  - Across bridge of nose



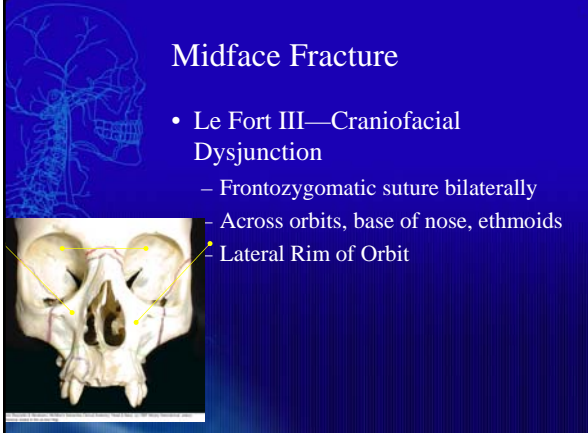
### Midface Fracture

- Le Fort II—Pyramidal
  - Swollen Midface
  - Nose moves with maxilla
  - R/O cerebrospinal rhinorrhea—cribriform plate fx



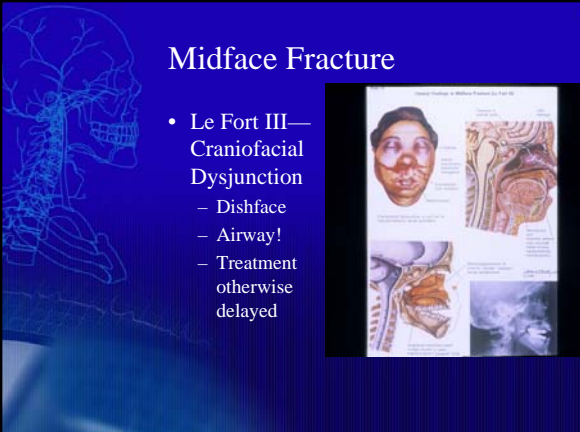
### Midface Fracture

- Le Fort III—Craniofacial Dysjunction
  - Frontozygomatic suture bilaterally
  - Across orbits, base of nose, ethmoids
  - Lateral Rim of Orbit



### Midface Fracture

- Le Fort III—Craniofacial Dysjunction
  - Dishface
  - Airway!
  - Treatment otherwise delayed



### The End

QUESTIONS??

