

# DENTAL TRAUMATIC INJURIES

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## Predisposing Factors

- ◆ > 90% of All Injuries
  - Protrusion of Anterior Teeth
  - Poor Lip Coverage

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**Mouthguards**

- ◆Girls as Well as Boys
- ◆Off - the - Shelf Vs. Individualized
- ◆Colors
- ◆Neurological Protection

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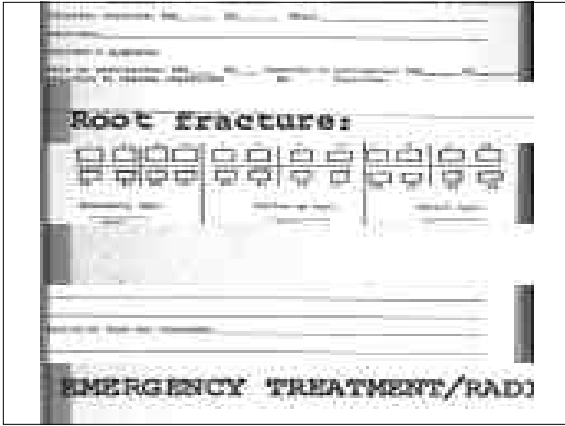
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## Medical Issues

- ◆ Never Treat a Stranger
- ◆ Neurological Assessment
- ◆ Above All Else, Do No Harm

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## Inappropriate Treatments

- ◆ Endo in Hand
- ◆ Snip Root Tip
- ◆ Scrub Root Surface
- ◆ Soak in Fluoride

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# Head Injury

◆ Medical Emergency

◆ Priorities

• Patient before dental!

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# Neurological Assessment

- ◆ Aware X 3 ?
- ◆ Loss of Consciousness?
- ◆ Nausea or Vomiting?
- ◆ P E R R L A ?
- ◆ Drowsy ?
- ◆ Blurred Vision?
- ◆ Highway Patrol...

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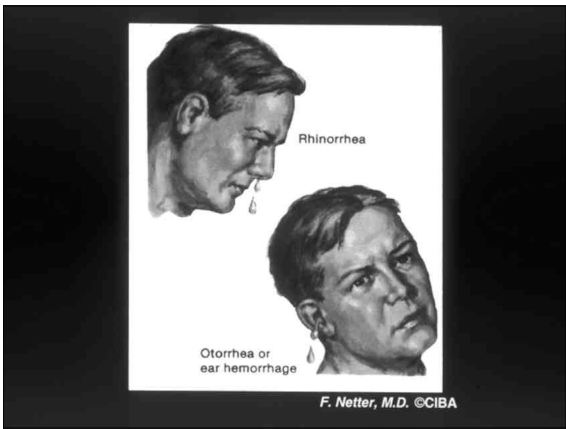
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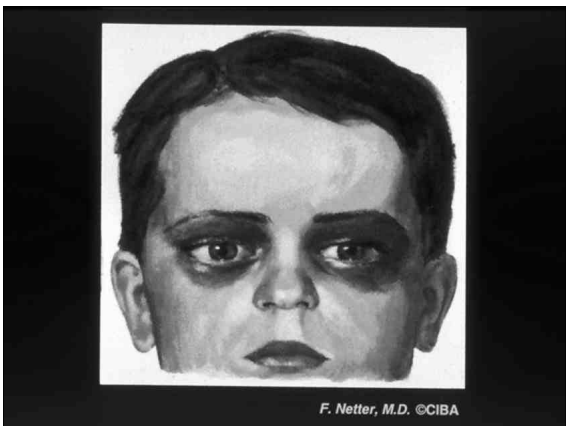
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**Other Medical Issues**

- ◆ **Current Meds?**
- ◆ **Other Pathology?**
- ◆ **Tetanus Status ( DPT)**
  - 10 years...

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## **Antibiotic Necessity**

- ◆ Bacterial Endocarditis Prophylaxis
- ◆ Soft Tissue “Through and Through”
- ◆ Avulsion: Prevent Root Resorption
- ◆ Dentoalveolar Infections Later

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## **Trauma Treatment Priorities**

- ◆ No Further Damage...
- ◆ Save the Tooth
- ◆ Save the Vitality
- ◆ Compromised PDL - Crush Sequellae

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## **Types of Injuries**

- ◆ Concussion
- ◆ Fracture
- ◆ Luxation
- ◆ Intrusion
- ◆ Extrusion
- ◆ Avulsion
- ◆ Root Fracture

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**Fracture Classifications**

- ◆ **A Picture is Worth A Thousand Words**
- ◆ **Class I, II, and III**

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**Locate Fragment**

- ◆ ANYONE SEE IT?
- ◆ IN THE LACERATION?
- ◆ RADIOGRAPHIC LOCATION
- ◆ AVOID PROBING IF POSSIBLE

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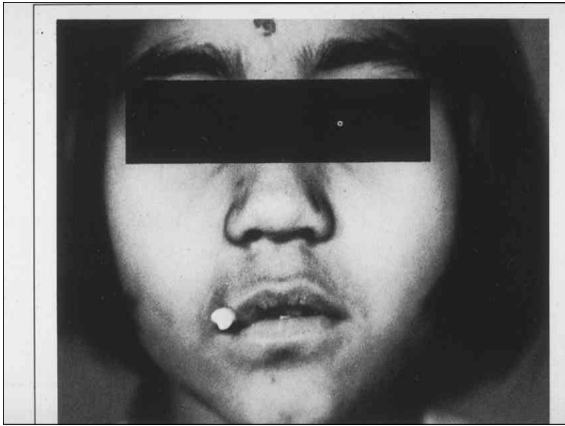
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**Endodontic Considerations**

- ◆ **Direct Pulp Cap**
  - 1 of 2 reasonable applications
  - Mechanical (surgical) exposure
- ◆ **Larger Exposure - Pulpotomy**
  - Primary - Formocresol
  - Permanent - Calcium Hydroxide
  - Partial Pulpotomy?
- ◆ **Necrotic**
  - Complete pulpectomy
  - Obturation
    - Interim
    - Permanent
- ◆ **Apexification**
  - Permanent Dentition
  - Ca(OH)<sub>2</sub>
  - GP Final

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**Radiographic Needs**

- ◆ **Periapical Views**
  - Two Required
- ◆ **Lateral Radiograph**
  - Primary Anterior Intrusions
- ◆ **Panorex**
  - Suspect Major Bony Fractures
    - Subcondylar
    - Mandibular
    - LaFort Types

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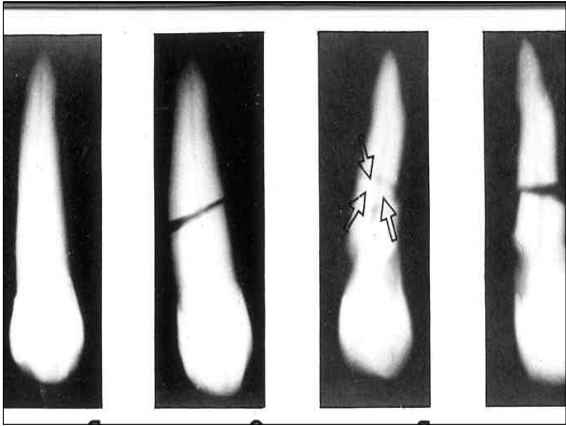
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**Concussive Sequellae**

- ◆ **Fracture Dissipates Energy**
  - Diminished Pulpal Shock
- ◆ **Adjacent Teeth**
  - Future Prognosis
- ◆ **Warning to Patient / Parents**

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## Luxation Injuries

### ◆ Reposition

- Crossbite

### ◆ Potential for Root Resorption

### ◆ Stabilization

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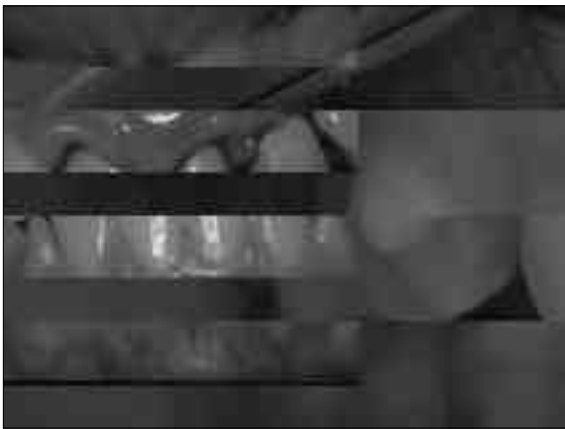
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**Adequate Isolation**

- ◆ **Rubber Dam**
  - no clamp
  - premaxilla
  - contiguous holes
- ◆ **Cotton Rolls and Saliva Ejector**
- ◆ **Dri-Angles**

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### Splints: Appropriate Use

- ◆ Easy to Apply
- ◆ Hygienic
  - Patient can maintain
- ◆ Adequate Stabilization
- ◆ Ease of Removal
  - for doctor
  - for patient

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### Splinting Times

- ◆ Luxations      7-10 Days
- ◆ Avulsions      7-10 Days
- ◆ Root Fractures   3 months
- ◆ All Are Estimates;  
Frequent Revision

- Andreasen & J of Trauma

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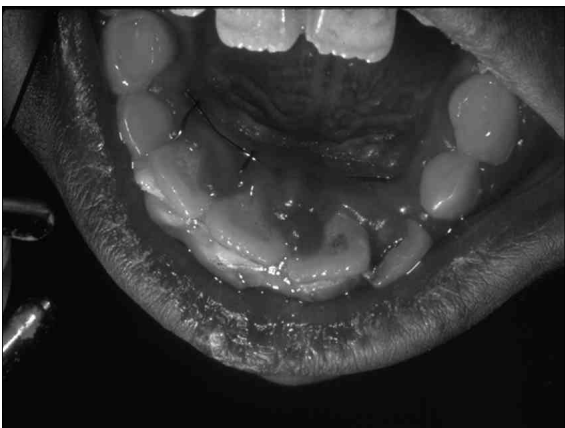
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## Intrusive Injuries

- ◆ Status of Periodontal Ligament
- ◆ Status of Alveolar Bone
- ◆ Status of Pulp
- ◆ Reposition???
- ◆ Orthodontic Repositioning

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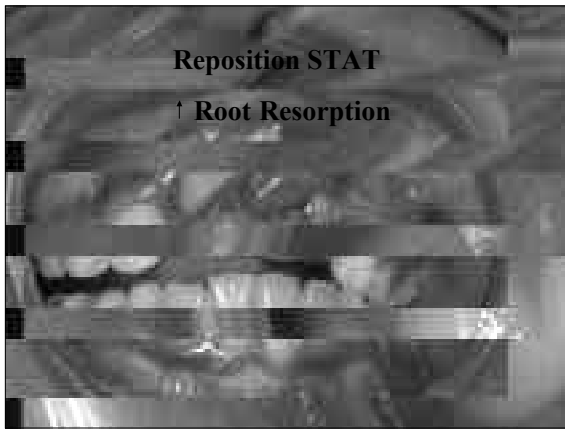
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## Primary Versus Permanent

- ◆ Different Pulpal Prognosis
- ◆ Recovery Likelihood
- ◆ Dangers of Sequellae

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## Primary Anterior Intrusion

- ◆ Into Follicle?
- ◆ Apex Through Cortical Plate?
- ◆ Reasonable Expectation of Re-eruption?

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**Apical Penetration of  
Cortical Plate**

- ◆Reposition?
- ◆Extract?
- ◆Pulpectomy...

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**Primary Anterior  
Intrusions**

- ◆ **Re-eruption Probability**
  - 6-12 months = 50%?
  - Ankylosis....Extract Stat!
- ◆ **Pulpectomy Necessary?**

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## Replantation Protocol

- ◆ On Site
- ◆ 15 Minute Window ... MAX!
- ◆ Clean Gross Debris
- ◆ Hold in Position
- ◆ Seek Dental Care
- ◆ If MUST Transport > Milk

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## Contraindicated

- ◆ Endodontics in Hand
- ◆ Scrape/Scrub Root Surface
- ◆ Soak in 10% SnF
  - Unless exarticulated > 1 Hour
- ◆ Snip Root Tip

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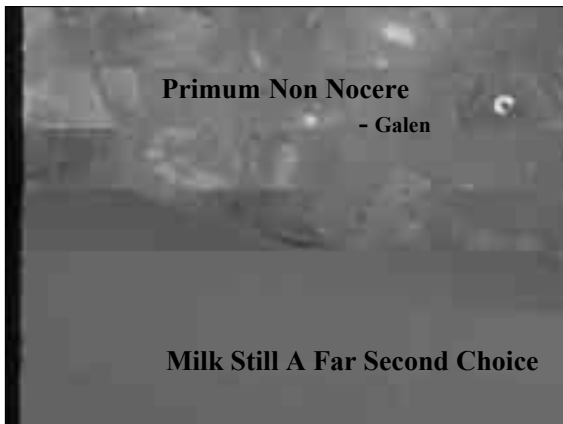
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**Dental Replantation  
Protocol**

- ◆ Check for Full Replantation
- ◆ Occlusion
- ◆ Stabilize
- ◆ Follow-up
  - Short-term
  - Long-term

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## Root Resorption

### ◆ Replacement

- Ankylosis

### ◆ Inflammatory

- Disappearance of root

### ◆ Calcium Hydroxide Temporary Obturation

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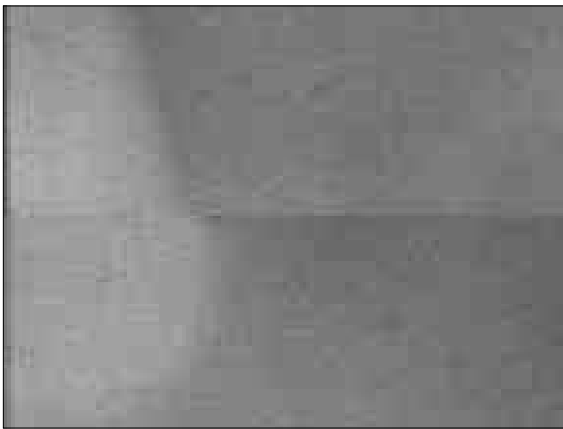
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## Apexogenesis and Resorption Prevention

- ◆ Calcium Hydroxide Obturation
  - 3-10 Day window
- ◆ Instrumentation and Complete Cleansing
  - Critical
- ◆ Replace at 3 and 6 months
- ◆ If No Contradicting Signs/Symptoms - Final Fill
- ◆ Long Term Observation

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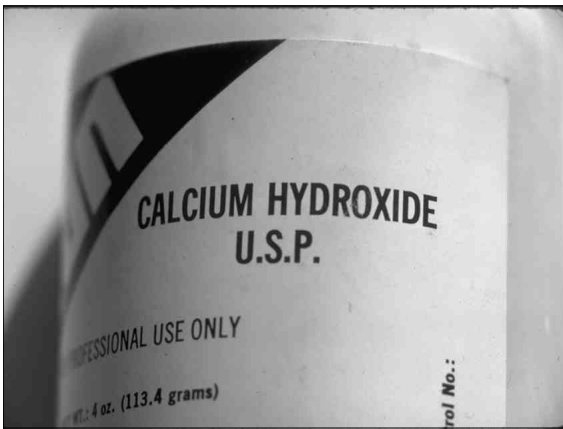
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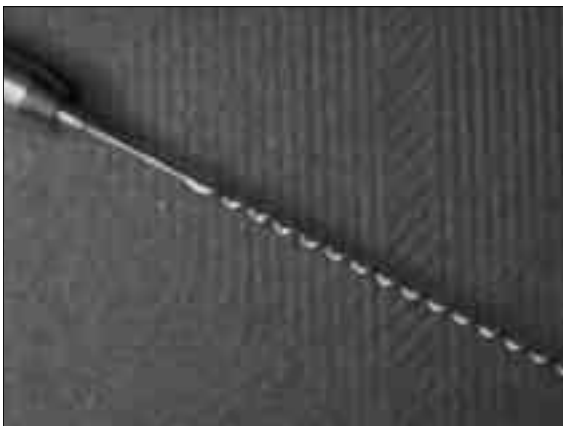
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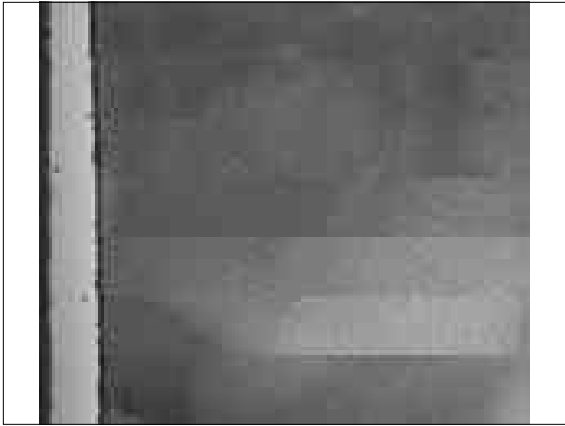
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## Replantation Research

- ◆ Doxycycline soak
- ◆ Hank's Balanced Salt Solution
- ◆ Shortened or No Splint Times

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# Root Fracture

◆ **Prognosis Location Dependent**

- The More Apical the Better

◆ **Long Bone Model of Repair**

- Longer Splint Time

◆ **Endodontics?**

- Complete?
- Partial Coronal Fragment

◆ **Long Term Observation**

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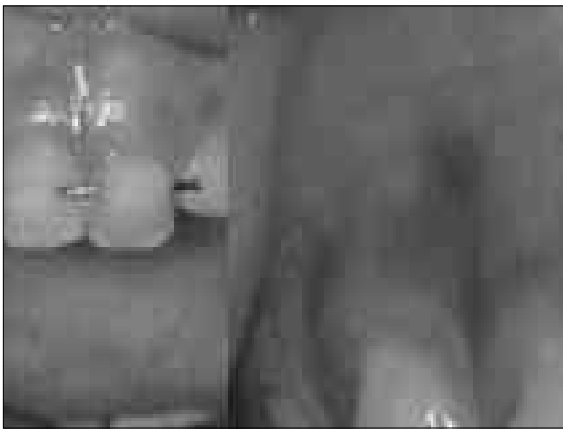
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**Sequellae to Trauma**

- ◆ **To the Involved Teeth**
  - External Resorption
  - Internal Resorption
  - Ankylosis
  - Loss of Vitality
    - Root Dilaceration, Canal Dystrophic Calcification
- ◆ **To Succedaneous Teeth**
  - Damage to Follicle
    - Timing Critical
    - Hypoplasias, Demineralization, etc.
  - Root Dilaceration
  - Loss of Tooth

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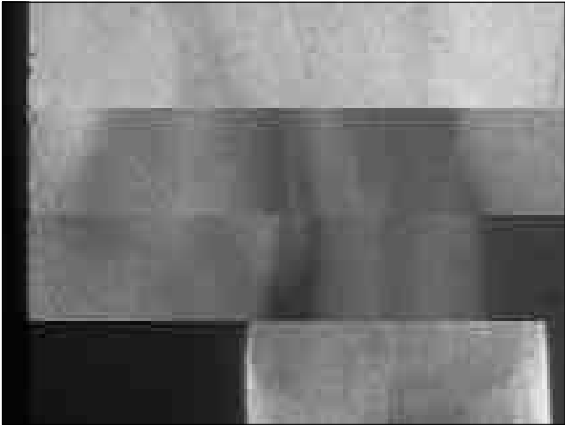
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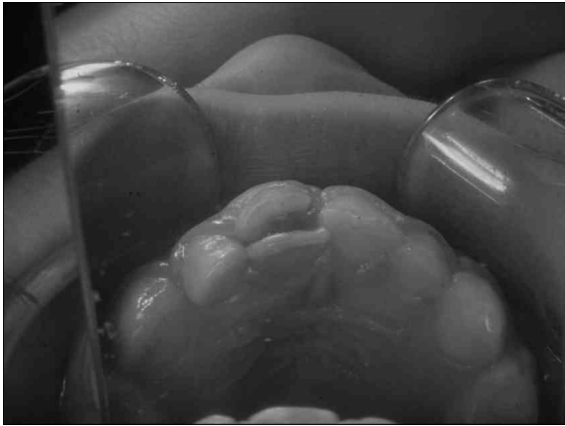
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**Replacement Options**

◆ **Short Term:**

- Removable: "Kiddie" Partial
- Fixed: Orthodontic Band Retained

◆ **Long Term**

- Etch Retained Bridge
- FPD

◆ **Eventual: Implant or FPD**

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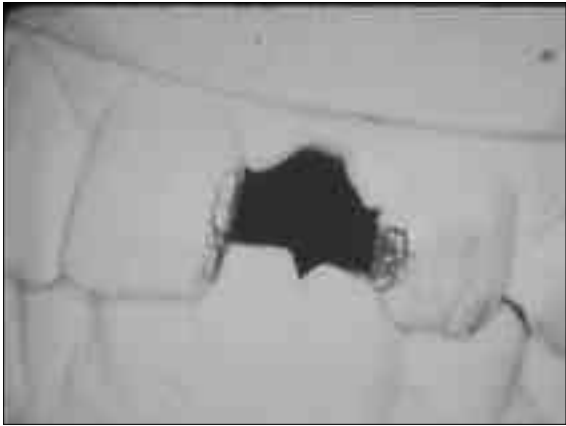
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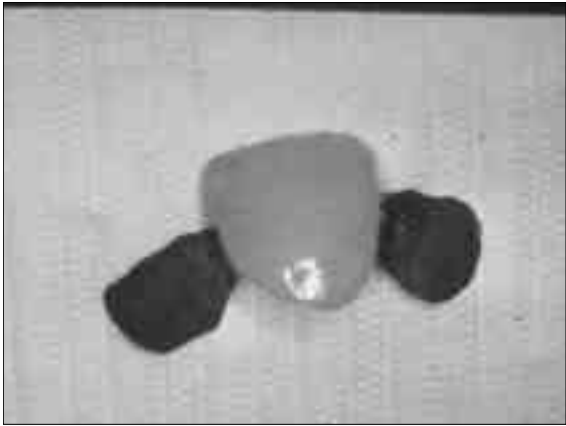
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