Dental Trauma in Young Children

If It’s Broke—Fix It!!
Emergency! Emergency! Everyone Run Around!

- Don’t panic!!!
- Triage Mentality... First things first.
- Clean up! Clean up! What are we looking at??
- Leave options open... Look at positive possibilities.
- Think NOW...... but think of future too.
The Mission

• The Healing Touch... care with a dose of caring.
• Eliminate Pain...... *Try not to cause any.* *(iatrogenic)*
• Restore esthetics and function and maintain pulp vitality.
• Promote healing of PDL and Re-vascularization.
• Preserve integrity of dental arches and alveolar bone.
• Always treat in the present. **BUT picture the future.**
• Never Say Never! Weigh the possibilities... It’s worth a Try!

6/29/2013
Berman/Kollmann Trauma Course
# Emergency Dental Trauma Form

## Emergency Dental Trauma Record

<table>
<thead>
<tr>
<th>Field</th>
<th>Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient</td>
<td>____________________________</td>
</tr>
<tr>
<td>Birth Date</td>
<td>____________________________</td>
</tr>
<tr>
<td>Gender</td>
<td>____________________________</td>
</tr>
<tr>
<td>Date</td>
<td>____________________________</td>
</tr>
<tr>
<td>Address</td>
<td>____________________________</td>
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<tr>
<td>City</td>
<td>____________________________</td>
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<tr>
<td>State</td>
<td>____________________________</td>
</tr>
<tr>
<td>Zip code</td>
<td>____________________________</td>
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<tr>
<td>Name of Guardian(s)</td>
<td>____________________________</td>
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<tr>
<td>Address (if not the same as above)</td>
<td>____________________________</td>
</tr>
<tr>
<td>Phone</td>
<td>____________________________</td>
</tr>
<tr>
<td>E-Mail Address</td>
<td>____________________________</td>
</tr>
<tr>
<td>Cell Phone</td>
<td>____________________________</td>
</tr>
<tr>
<td>Dental Insurance: Yes No Name of Insurance Company</td>
<td>____________________________</td>
</tr>
<tr>
<td>General Medical History: (allergies to foods or medications... existing medical conditions like diabetes, seizures or asthma)</td>
<td>____________________________</td>
</tr>
<tr>
<td>Dental History:</td>
<td>____________________________</td>
</tr>
<tr>
<td>Regular check up visits to dentist? Yes No</td>
<td>____________________________</td>
</tr>
<tr>
<td>History of cavities in teeth</td>
<td>____________________________</td>
</tr>
<tr>
<td>Local anesthesia</td>
<td>____________________________</td>
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<tr>
<td>Put to sleep</td>
<td>____________________________</td>
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<tr>
<td>Positive feelings about dental experience? Yes No</td>
<td>____________________________</td>
</tr>
<tr>
<td>Previous dental injuries (if yes, describe)</td>
<td>____________________________</td>
</tr>
<tr>
<td>Date of Injury</td>
<td>____________________________</td>
</tr>
<tr>
<td>Describe what happened</td>
<td>____________________________</td>
</tr>
</tbody>
</table>

### Present Situation

- Did the accident occur inside or outside? Describe type of surface (e.g. dirt, sand, grass, wood, carpet).
- Pain: (Describe with: cold, throbbing, sharp, constant, dull etc.)
- Trouble Breathing? Loss of consciousness at any time?
- Do you think a tooth or piece of tooth got knocked out? Yes No Not sure
- Did you bring the tooth or piece of tooth with you? Yes No
- Have you already visited a hospital or Emergency Care Center in connection with this situation? Yes No
- If yes, please describe services provided
- X-rays Prescription for medications Specific treatment to wound area (e.g. cleansing, stitches)

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### Objective Examination:

- **Bleeding**: Where Dizziness Feeling Faint
- **Alert** Crying Reluctant Apprehensive Cooperative

### Other behavioral observations

- Palpable signs of facial fracture
- Mandible deviation on opening and closing
- Palate intact or cleft
- Lingual and maxillary labial frenum
- Lacerations, Contusions, Abrasions, skin perforations (lips, tongue, skin, cheeks, gingiva etc.)

### General Condition of Dentition:

- Minor caries
- Extensive caries
- Evidence of regular dental care (filling, stainless steel crowns, sealants and composites, space maintainers, orthodontic appliances)

### Photographic and Radiographic records: Periapicals and Occlusals

- Tooth discoloration
- Tenderness to percussion
- Pulp test (ice, electronic)

<table>
<thead>
<tr>
<th>Specific Injury</th>
<th>Teeth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concussion</td>
<td></td>
</tr>
<tr>
<td>Uncomplicated crown fracture (pulp not exposed)</td>
<td></td>
</tr>
<tr>
<td>Complicated crown fracture (pulp exposed)</td>
<td></td>
</tr>
<tr>
<td>Uncomplicated crown/root fracture (pulp not exposed)</td>
<td></td>
</tr>
<tr>
<td>Mobility</td>
<td></td>
</tr>
<tr>
<td>Root Fracture (cervical 1/3)</td>
<td></td>
</tr>
<tr>
<td>Root Fracture (middle 1/3)</td>
<td></td>
</tr>
<tr>
<td>Root Fracture (apical 1/3)</td>
<td></td>
</tr>
<tr>
<td>Alveolar Fracture</td>
<td></td>
</tr>
<tr>
<td>Mandibular Fracture</td>
<td></td>
</tr>
<tr>
<td>Maxillary Fracture (zygoma, etc.)</td>
<td></td>
</tr>
<tr>
<td>Infraction (cracked)</td>
<td></td>
</tr>
<tr>
<td>Subluxation (loosened, not displaced)</td>
<td></td>
</tr>
<tr>
<td>Lateral Luxation (loosened &amp; displaced) (not axially)</td>
<td></td>
</tr>
<tr>
<td>Extrusion (pushed incisally out of socket)</td>
<td></td>
</tr>
<tr>
<td>Intrusion (pushed up into socket)</td>
<td></td>
</tr>
<tr>
<td>Avulsion (Exarticulation (Tooth knocked out completely)</td>
<td></td>
</tr>
<tr>
<td>How long out of mouth?</td>
<td></td>
</tr>
</tbody>
</table>

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We propose to do a thorough hand-eye and radiographic (x-ray) examination of your child in an effort to determine and provide the most appropriate emergency treatment in your child’s best interest.

Permission Granted: ____________________________ Date: ____________________________

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Emergency Dental Trauma Treatment Plan

Patient Name_______________________________ Age________ M___ F___ Date__________

Treatment Plan (Sample)
1. Radiographs and photographs.
2. Repair (restore) fractured maxillary incisors #8 and #9 with composite material.
3. Pulpotomy treatment #8 (Ca(OH)$_2$)
4. Place flexible bonded wire splint to immobilize loose #8 and #9.
5. Sutures to repair tear in surrounding gingiva.
6. Prescribe Amoxicillin 500mg for 10 days.
7. Prescribe Ibuprofen.
8. Dietary instructions and precautionary.

Treatment Fees $1180.00
Insurance Pays 300.00
Balance Due $880.00

Signature (Patient or Guardian)_________________________________________

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Emergency Dental Trauma Treatment

No Treatment Necessary_________________________________________________

Local Anesthetic (Type and amount)______________________________________

Bonding (teeth, fracture classification, size, restorative material, shades__________

Pulp Therapy: Rx and Materials (pulp cap, pulpotomy, pulpectomy)___________________

Splinting (which tooth to which tooth)_____________________________________

Re-implantation: Primary (position of developing successor) or Permanent (condition and maturity of root, fluoride, rinse of socket, apex alteration, etc.)__________________

Soft Tissue Treatment: Re-positioning, sutures (how many, resorbable?)___________

Antibiotic Rx: Drug___________________________ Dosage____________________

Pain Medication Rx: Drug___________________________ Dosage____________________

Other Post-Operative Instructions:_________________________________________

Scheduled Follow Up Visit: Days_____ Weeks_____ Months_____

Doctor’s Signature________________________________________ Date__________
Negative Behavior Does Not Determine Quality of Treatment
Local Anesthesia: The Moment of Truth

- Defines the dentist-patient relationship
- Show... tell... do. Yes it works!
- The painless injection.
  
  You can do it if you try!

- Gauge anesthetic dose to estimated length of procedure.
- Careful post-op instructions in regard to numb feeling.
The Root of All Evil

- The stage of root development is a major factor in determining ultimate treatment success with any tooth injury.

- Open apices

- Closed apices
Assessing Extra-oral Injuries
To Treat or Not to Treat

- Abrasions, contusions, lacerations.
- Lips, cheeks, nose, chin, eyebrows, eyelids, forehead area etc.
- Clean area to assess damage. (tetanus shots?)
- Consider referral to plastic surgeon before suturing extra oral wounds.
- Remember to take photographs.
- Follow up call after referral.
- Concussion symptoms. (loss of consciousness, headache, dizziness, nausea, throwing up)
Facial Abrasions
abrasions

laceration

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Abrasions
**Trauma Triage**

**First Things First**

Lacerations and abrasions

Clean up!

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Soft Tissue/Lip Trauma
LIP TRAUMA
FRAGMENTS?
**Intra-Oral Soft Tissue Injuries**

- Torn or stripped gingiva
- Torn maxillary frenum
- Damaged oral mucosa of the cheeks
- Puncture wounds in the palate
- Lacerations of the tongue
- Lacerations of the lips
- Bites on lips... tooth fragments embedded
- Damage to floor of mouth
SOFT TISSUE MANAGEMENT
SUTURES/NO SUTURES

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Hello Mr. Pulp! Are you alive?

- Percussion sensibility... Owie!
- Listen to the sounds
- Finger Manipulation
- Tooth Discoloration
- Electronic Sensitivity
- Temperature... hot/cold/immediate/delayed, NONE?
- Ice cube
Pulp Test. . . How?
Percussion... listen for sound
Pulp Fiction

- Pulp Cap....... A Wing and a Prayer*
- Complete Pulpotomy
- Partial Pulpectomy (a little pregnant)
- Complete Pulpectomy
- Apexification???? When & Why?
- Revascularization
Desirable Properties For Pulp Therapy Medicaments

• Not biologically toxic when used correctly.
• Superior sealing qualities.
• Bacteriocidal characteristics a bonus.
• Durable ...will not dissolve leaving voids.
• Stimulates odontoblastic activity.
• Easy to manipulate and clean up.
• Radiopaque on radiograph.
• Not cost prohibitive.
YOUR FAVORITE PULP DRESSINGS

• Calcium Hydroxide: (Dycal) Bactericidal (short term... but don’t leave in long term... voids)
• Zinc oxide & Eugenol: The good and the bad!
• MTA: (75% Portland cement, 20% Bismuth oxide & 5% Calcium Sulfate... Hydrophilic. A very expensive driveway... ...but the current favorite.
• Triple Antibiotic Paste (TAP)
  ➢ Glass Ionomer Cement: A little fluoride can’t hurt!
  ➢ Zinc OxyPhosphate Cement: Old Reliable.
  ➢ Dentin Bond: Could be more than enough!
  ➢ Gluma: Dentinal De-sensitizer.
MTA
Mineral Trioxide Aggregate

- 75% Portland Cement ...... Mn. Fe.* Cu. V. Ni .Ti
- 20% Bismuth oxide
  (low thermal conductivity, radiopaque and mildly germicidal)
- 5% Calcium Sulfate... Gypsum (faster setting)
- White or Gray (Fe$_2$O$_3$)
- Hydrophilic (sets with water)
- Radiopaque on radiograph
- Especially effective for preventing internal root resorption
- Pro-Root... Dentsply (packets...vials)

* (Excluding Fe results in white MTA)
Pulpotomy... MTA

Pre-op

1 month

1 year

2.5 years

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Pulp exposure... pulp cap Ca(OH)$_2$

- Ca(OH)$_2$
- Glass Ionomer
- MTA
- Zoe and Zinc OxyPhosphate Cement

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PARTIAL PULPOTOMY?
PARTIAL PULPOTOMY...RADIOGRAPHS
PULPOTOMY / PULPECTOMY
Calcium Hydroxide Apexification

Open Apex

Closed Apex

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Functional Pulpal ReVascularization

Indicated for Immature Permanent teeth with incomplete roots and necrotic pulps

- Elimination of bacteria from canal system
- Creation of a scaffold for ingrowth of new tissue
- Prevention of re-infection (bacteria-tight-seal)
- Achieve root completion and long term function
- Prevention of re-infection (bacteria-tight-seal)

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Pulpal Revascularization

Methodology

• 1st visit:
  • Local anesthesia
  • Remove coronal pulpal tissue...do not invade area beyond open apex
  • Apply NaOCl anti-microbial...then irrigate with saline (NaOCL can be cytotoxic to stem cells)
  • Dry with paper points
  • Place TAP (metronidazole, ciprofloxacin, minocycline paste)
  • Temporary seal with IRM or cavit
  • Next appointment in two weeks

• 2nd visit:
  • Any negative symptoms?
  • Local anesthetic (no epinephrine)
  • Irrigate with saline and EDTA only to remove antibiotic paste
  • Lacerate apical pulp tissue just below cemento-enamel junction to achieve bleeding and stimulate granulation tissue.
  • When clot forms....place MTA or glass ionomer to prevent discoloration
  • Final restoration?

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PULPAL REVASCULARIZATION
FOLLOW UP
Clinical and radiographic Evaluation

• Any negative symptoms?
  *(Pain on percussion, sinus tracts, abnormal radiolucency?)*

• Resolution of periapical radiolucency if one was present pre-treatment?

• Increase in width of root walls?

• Increase in root length?

• Histologic outcomes variable...
  *(Pulpal tissue regeneration, obliteration of pulp between plug and apex, ingrowth of cementum and PDL and bone). Etc.*

• Prognosis... 90% survival.... comparable with apexification with CaOH or MTA (Study 14 mos.).. a stop gap before implants.
Primary Tooth Trauma

- Age of patient
- Condition of root (resorption)
- State of development and calcification of successor
- Relationship of primary tooth to new tooth bud (radiograph)
- Long term concern for preservation of alveolar bone
- Long term concern for soft tissue contours
- Cosmetic issues caused by missing teeth
- Speech problems related to multiple missing teeth
- Psychological ramifications
A Primary Tooth Tale

Pulpotomy
Splint
File
Pulpectomy
Bad Things Happening

- Pain
- Discoloration
- Infection
- Apical root resorption
- Internal root resorption
- External root resorption
- Subsequent trauma
Concussion

- PDL absorbs the shock
- No displacement
- Tender to percussion
- Radiograph appears normal
- Usually no mobility
- No sulcular bleeding
- Tender to pressure

- No infection = no pulp Therapy.
- Optimize comfort, healing and pulp vitality = Splint
- Watch for pulpal necrosis especially in teeth with completed roots.
- Discoloration
- Radiographs at checkup visits
Infraction

- Incomplete fracture of enamel
- Cracks or craze lines with trans-illumination
- Radiographs may reveal crack lines
- Possible tenderness to percussion
- Possible sensitivity to hot or cold

- Generally no treatment
- Follow up to maintain structural integrity and pulp vitality
- Watch for onset of any untoward symptoms
- Usually no long term complications
- Smooth or bond chip
- Possible splint for patient comfort.
Crown Fracture Uncomplicated

- Enamel-Dentin Fracture
- No Pulp Exposure
- Radiographs of lips may show fragments of tooth
- Radiographs verify fracture enamel/dentin
- Surrounding soft tissues, lips, etc. may be damaged.

- Radiographs of teeth & photos.
- Radiographs of lips to check for tooth fragments.
- Small fractures... smooth.
- Larger fractures... seal and bond.
- Prognosis good.
- Follow up visits to check for pulp vitality, discoloration or discomfort.
Crown Fracture/Uncomplicated
Crown Fracture... Uncomplicated
Horizontal Crown Fracture
Bonding of uncomplicated fracture
Crown Fracture Complicated

- Enamel/dentin fracture
- Pulp exposed
- Radiographs show fracture details with pulp exposure
- Radiographs of lips may show tooth fragments
- Possible laceration of soft tissues/bite-marks etc.

- Repair broken teeth (bond) to restore function and esthetics.
- **Primary teeth**
  - Treat pulp exposures (pulpotomy, RCT or extract)
- **Permanent teeth**
  - Treat pulp exposures (pulp cap, pulpotomy, ReVascularization or RCT)
- **Soft tissue treatment... PRN**
- **Prognosis:** Good but depends on dentin exposed & stage of root development. Follow up check ups.
CROWN FRACTURE (COMPLICATED)
Complicated Crown Fracture
(Frank Pulp Exposure)
CROWN/ROOT FRACTURE

- Enamel/dentin/cementum fracture (usually oblique)
- Pulp may or may not be exposed
- Radiographs show fractured areas of tooth/root fracture not obvious.
- Possible soft tissue lacerations and tearing

- **Primary teeth**: Restore or extract/age/root resorption
- **Permanent teeth**: Restore to normal esthetics and function/try to maintain coronal fragment
- **Pulp treatment alternatives**: - pulp cap/pulpotomy/RCT/ReVasc
- **Prognosis**: good/checkups for pulp vitality and future definitive restoration (root fracture area problems, cervical area)
**Crown/Root Fracture**

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CROWN ROOT FRACTURE (1A)

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CROWN ROOT FRACTURE (1b)
Severe root/crown fracture
PAPER CLIPS... PAPER CLIPS
DON'T GET CLIPPED BY PAPER CLIPS
FIBER POSTS?

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Root Fracture / Apical 1/3
Root Fracture

- Cementum/dentin...horizontal fracture
- Pulp involvement
- Coronal fragment usually mobile and sometimes displaced
- Radiographs reveal separation between apical and coronal portions of tooth
- Soft tissues often damaged
- Pain symptoms variable

- Radiographs -Photo -Assess levels of fractures... apical 1/3, middle 1/3 or cervical 1/3
- Re-position and splint coronal fragment... 4 weeks
  - (primary teeth too?? Or just extract?)
- Allow for spontaneous healing.
- Watch for pulpal necrosis and/or discoloration at checkups... RCT
- Re-evaluate for eventual post-core crown
Root Fracture (middle 1/3)
Root Fracture/Middle 1/3

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Root Fracture
Extrusion coronal portion
Primary Root Fractures

0 days

0 days

1 month

2 months

16 months

29 months

6 yrs

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**Subluxation**

- Tooth slightly loose.
  - (Widened PDL)
- Tender to percussion.
- Sulcular bleeding possible.
- Pulp test variable....transient pulp damage.
- Radiographs negative.
- Soft tissue damage.
- No Treatment or flexible splint for 2 weeks for comfort. (analgesics)
- Follow up pulp tests and radiographs at check up visits.
- Watch for discoloration, pulp necrosis, ..root resorption....pain.
- Prognosis good for root completion.
- Antibiotics (soft tissue damage).

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**Subluxation/Splint**

1. Pre-Op
   - Open apices

2. 1 month

3. 2 months

4. 2 years
   - Closed apices

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**Sub-luxation / Incomplete roots**
Primary Subluxation

4 years 11 months old
Primary Sub-Luxation

“Let Nature take its course”

Pre-Op  2 months  5 months  3 years 3 months

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Lateral Luxation

- Tooth displaced labio-lingually or mesio-distally... not axially.
- PDL torn... alveolar bone usually fractured.
- Crown pushed backed palatally... root apex tilted labially.
- Notable patient distress.
- Tooth usually locked in displaced position. Not mobile.
- Radiographs show widened PDL
- Soft tissue injuries variable.

- **Permanent teeth**... Reposition and splint for 2-4 wks.
- **Primary teeth**... allow for spontaneous resolution... or gently reposition and splint.
- Treat soft tissue injuries PRN.
- Frequent checkups for pulpal necrosis, pulpal obliteration or root resorption, possible RCT later.
- Prognosis better for teeth with open apices.
- Radiographs at checkups
Primary Lateral Luxation

Accident 2 weeks 5 weeks

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LATERAL LUXATION (PRIMARY TEETH-B)
Primary Lateral Luxation
Hold 'em or Fold 'em?
LATERAL LUXATION
Lateral Luxation/Intrusion Combo

We’re not in Kansas Anymore

Hang In!
Ankylosis

• Stuck in a bad place?
• Happy in a good place??
Intrusion

What If??

7mm Rule?

- Primary tooth re-erupts....Yeah!!
- Primary tooth doesn’t re-erupt....extract.
- Permanent tooth re-erupts......watch for pulpal necrosis....pulpectomy.(RCT)
- Permanent tooth not re-erupting (darn!) Reposition and splint.....RCT
- Follow-up radiographs in all instances
- Positive prognosis better with open apices
**Intrusion**

**Primary**

- Tooth driven apically into socket... Sometimes not clinically visible.
- Usually no mobility... Pulp test inconclusive.
- Intra oral soft tissues often sustain damage.
- Extra-oral abrasions and contusions common.
- Pain?

- Radiographs and Photos
  - (occlusals too)
- Primary tooth
  - (90% erupt spontaneously)
- Relationship to permanent tooth bud.
  - Labially or palatally?
- Clean area thoroughly and tend to soft tissue issues
- Allow 2-4 wks. for tooth to spontaneously erupt... no movement? Extract!
  - To prevent Ankylosis.
Intrusions

Permanent

Perhaps the most Serious Injury!!

Tooth pushed axially into socket... Apical Bone Crushed... PDL damaged...
Tooth not usually mobile or sensitive to percussion
Radiographs: Level of root completion (open or closed apices?)
Labially intruded. (Roots fore-shortened) / Palatally intruded. (Roots lengthened)

Open Apices

• Partially intruded... Allow to spontaneously erupt for 1 week. (90% chance of survival)
• 7mm or Greater (may appear missing)...
  – Reposition orthodontically or surgically (splint)
  – Possible RCT
    • First CA(OH)2 for root completion.
    • Gutta Percha RCT
  – Follow up at checkup intervals for ever!!!

Closed Apices

• Partially intruded... Allow to spontaneously erupt for 1 week (50% chance of survival)
• 7mm or Greater (may appear missing)...
  – Reposition orthodontically or surgically (splint) (4 weeks)
  – Possible RCT
  – Gutta Percha RCT
  – Follow up at checkup intervals for ever!!!
PARDON THE INTRUSION

2 YEARS OLD

INTRUSION

LIP BITE

0 MONTHS

1 MONTH

4 YEARS

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Intrusion
Primary teeth

Where Are You?

I’m coming!

2 mos

Almost there

1 year

New guys

3 mos

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Primary Intrusion

Roots driven labially (foreshortened)

2 weeks later
Infection

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Permanent Intrusion Protocol
Surgical Repositioning

1. Reposition tooth (root complete)
2. Splint (4 weeks)
3. Gutta Percha RCT (after 1 week)
4. Follow Up
5. Hope & Pray!!!
**Extrusion**

- Partial axial avulsion.
- PDL torn.
- Sometimes sulcular bleeding.
- Alveolar crest sometimes broken.
- Tooth mobile... of course
- Radiographs show elongated tooth...
  - PDL space widened.

- Primary teeth... Allow spontaneous resolution or reposition and splint... Rx depends on age, position and degree of root resorption.
  - (Behavior should not be an issue.)
- Permanent Teeth... Gently reposition and splint (STAT)... Enhance PDL healing and neurovascular supply (2 wks.)
- Frequent checkups... Monitor for discoloration, pulp necrosis, canal obliteration & root resorption.
Extrusion Series
Extrusion "Coming Out"

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Avulsion

- Tooth completely out of socket.
- Radiograph reveals missing tooth unless intruded.
- Soft tissue injuries may or not be an issue.
- Tooth avulsed cleanly... very little damage to alveolar bone
- Retrieved tooth... stored in liquid... dried out....
- Length of time since avulsion incident.

- Primary teeth... To Re-implant or not? That is the question. We do!!
- Permanent teeth... Re-implant as soon as possible and splint for 2 weeks.
- If Dry tooth... Wash with Fluoride. Removes remaining PDL and prevents ankylosis or root resorption.
- Teeth out for several hours... Curette socket and irrigate with sterile saline. Reduce apical tip of tooth and re-implant and splint.
- RCT after 2 wks.
  - Open Apices (Ca(OH)2... Then RCT 4 months
- Follow-up visits.
AVULSION (PRIMARY TOOTH)
Avulsion (Permanent)
Avulsion / Closed Apices

Wire Splint from Cuspid to Cuspid?
Avulsion / Incomplete Apices

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Avulsion

Closed Apices
Re-Implant... Rct... Splint

0 months 0 months 0 months 1 month 2 months

9 months 2 years 4 years 4 years 4.5 years

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ATTACHING FRAGMENT PROTOCOL

Test the pulp.

Fit Fragment.

Vertically score fragment and tooth for easy positioning.

Cover exposed dentin with MTA.

Scoop out fragment for room for MTA.

Acid Etch fragment and tooth.

Rinse and dry thoroughly.

Bond tooth and fragment.

Place flowable composite in fracture area.

Bevel or chamfer in fracture line.

Etch Bond and place composite over label surface.

Finish and polish.

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ATTACHING FRAGMENT (1a)
Attached fragment (1b)
Attaching fragment /pulp cap
AGD - Fragment

Presented by:

Dr. Marvin Berman
Dr. Kirk Kollmann