

Treatment of primary incisors

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- Treatment of Crown Fractures With Pulp Exposure in Primary Incisors
- Simplified primary incisor proximal restoration

Treatment of Crown Fractures With Pulp Exposure in Primary Incisors

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Treatment options:

- direct pulp capping
- Partial pulpotomy (the Cvek pulpotomy)
- Cervical pulpotomy
- Pulpectomy
- Extraction

Purposes

- the indications and contraindications of the various treatment modalities for primary incisors with complicated crown fractures

complicated crown fracture

- defined as a fracture involving enamel and dentin with pulp exposure
- The incidence of complicated crown fractures in primary teeth ranges between 1% to 3% of all injured teeth

Treatment options:

- direct pulp capping
- **Partial pulpotomy (the Cvek pulpotomy)**
- Cervical pulpotomy
- Pulpectomy
- Extraction



Indications

- A small and recent pulpal exposure of up to approximately 14 days in a noncarious primary incisor
- Sufficient tooth structure is present to allow proper restoration and full coverage of the crown with strip crown



Indications

- highly indicated in a very young tooth with a wide-open apex and very thin root dentin walls
- healthy, noninflamed and asymptomatic vital pulp



technique

- Local anesthesia and rubber dam placement
- A no. 330 tungsten bur is used to amputate the pulp close to the exposure site to a depth of 2 mm
- Continuous rinsing of the amputated pulp with saline will assist in achieving hemostasis without blood clot formation within 4 minutes



technique

- A dressing of calcium hydroxide (CH) paste should be placed, followed by a base/liner of glass ionomer such as Vitrebond
- restored using a bonded resin-composite strip crown
- Scheduled follow-ups should be made after 1 month, 3 months, and then every 6 months



A 3-year-old case of PP



3hour



3month



2years



2years



Advantage of PP

- allow the continuation of normal development of the tooth, including further root development and maturation.
- Esthetic: retain its natural color and translucency



Contraindications

- exposure is very large
- > 2 weeks after injury



Treatment options:

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- **Cervical pulpotomy**
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- Extraction



Indications

1. The inflammation does not extend past the coronal pulp.
2. Following coronal pulp amputation, the bleeding appears normal in color, no excessive bleeding is present and good hemostasis is achieved.



choice of pulpotomy agent

- Formocresol (FC)
- calcium hydroxide (CH)
- ferric sulfate
- Glutaraldehyde
- the bone morphogenetic proteins (BMP)
- electrocautery and the use of lasers



- CH would be more likely to cause resorption in carious molar teeth with inflamed pulps, whereas in teeth undergoing crown fracture without luxation, the pulp is expected to be relatively healthy.



- CH would be more likely to have adverse effects in narrow pulp canals of a molar, but not in the wide and open single canal of an incisor.
- extant inflammation amplifies CH failure, but its use may be accepted in mechanical exposures.

- FC presumably fixes affected and infected radicular pulp tissue so that a chronic inflammation replaces an acute inflammation.
- The treated tooth is expected to remain in this state without any further root development or maturation until it is exfoliated.



18 month



18 month



18 month

Contraindications

- when the infection of the pulps extends past the coronal section of the incisors into the canal proper

Signs and symptoms

1. inability to achieve hemostasis after coronal pulp amputation
2. the presence of any swelling (due to infection), fistula, or radiographic evidence of pathological periapical bone resorption.

Treatment options:

- direct pulp capping
- Partial pulpotomy (the Cvek pulpotomy)
- Cervical pulpotomy
- **Pulpectomy**
- Extraction

Indications

- chronic inflammation or necrosis in the radicular pulp.
- Efforts to retain the tooth by endodontic therapy should be made to maintain esthetics and function.

Rationale and choice of pulpectomy agent

- undergo resorption at a pace similar to the physiologic resorption of the primary root
- resorbable easily and nontoxic to the periapical tissues and succedaneous permanent tooth follicle
- antiseptic
- able to fill the root canals easily
- Radiopaque
- not to discolor the treated tooth

- zinc oxide and eugenol
 - resistance to resorption
- iodoform paste
 - resorbable and have long-lasting antibacterial properties
- CH
- CH/iodoform paste (Vitapex, Endoflas)

Contraindications

- extreme loss of coronal tooth structure making future restoration difficult
- advanced internal and/or external root resorption
- periapical infection involving the crypt of the succedaneous tooth
- parental concerns regarding esthetic appearance of a discolored anterior tooth

Treatment options:

- direct pulp capping
- Partial pulpotomy (the Cvek pulpotomy)
- Cervical pulpotomy
- Pulpectomy
- **Extraction**

- should consider the need for space maintenance following extraction of primary incisors
- While space maintenance in the posterior region is an important consideration when there is early loss of primary molars
- the anterior segment appears to be stable from canine to canine

a 27-month-old child case



6 weeks

Discussion

PP

- Advantages :
- The procedure is quick and easy
- maintains the natural tooth color
- preserves tooth structure for better retention of restoration
- maintain its vitality and continue its root development

successful PP

- A successful PP is expressed by a dentinal bridge that forms within a few months
- In young primary incisors, apex formation and thickening of dental walls should occur

successful PP

- No severe discoloration
- If obliteration of the canal occurs resulting in calcific metamorphosis, the tooth may lose its radiolucency and turn yellowish opaque, but in most cases will remain asymptomatic.

Simplified primary incisor proximal restoration

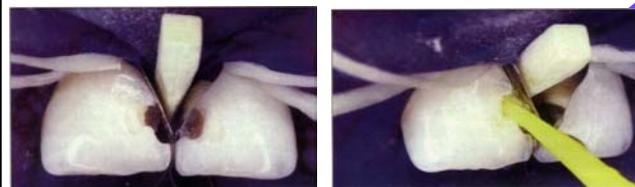
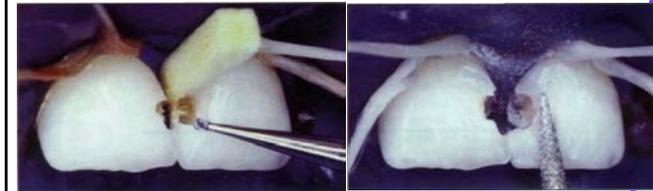
Theodore P. Croll, DDS Joel Berg, DDS, MS
Pediatr Dent. 2003;25:67-70

- describes the step-by-step Class III restoration of 2 carious primary incisors using a self-etching adhesive system and a simplified resin-based composite bonding technique.

A 30-month-old boy



- selected a suitable color-filled resin was
- A wooden wedge was positioned
- Access to the lesion was made from the labial aspect. Debridement of carious substance
- Outline form : included small labial and lingual dovetail preparations
- Peripheral enamel was roughened





Discussion

- a resin-modified glass ionomer liner/base
 - high fluoride content
 - chemical bond to dentin
 - hydrophilic nature,
 - "cushioning" effect from resin polymerization dimension dynamics
 - Biocompatibility

- However, primary teeth with moderate dentin exposure can be restored successfully using a resin-based composite or compomer restorative material directly bonded to enamel and dentin

- Because such teeth will eventually exfoliate, long-term pulpal protection is not of concern like it would be in a permanent tooth restoration
- complaints from children about tooth sensitivity are extremely rare

- Because primary incisors are relatively thin teeth and mechanical interlocking retention form was included in the preparation, the amount of polymerization shrinkage is small enough that the resin mass does not pull away from the tooth structure significantly during the light curing phase.

Thanks for your attention!

- the key to success is the prevention of marginal microleakage and subsequent bacterial contamination.

- future discoloration in the successfully treated tooth
- Another treatment option is the use of stainless steel crowns with tooth-colored resin facings (preveneered) for teeth that had endodontic treatment



6 months

- The self-etching, resin-adhesive agent used in this case saves time.

