# Pulpectomy In Primary Teeth

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- Indication
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- The main objective of **pulp therapy** in the **primary dentition** is to retain every primary tooth as a fully functional component in the dental arch to allow for:

Proper_mastication

swallowing

phonation

preservation of the space

psychological_effects

# Definition

**Pulpectomy**

is the technique to gain an access to the root canals , remove as much as possible inflamed and or infected tissues and fill the root canals with a suitable material

- It is **unwise to maintain untreated infected primary teeth in the mouth.** They may be opened for drainage and often remain asymptomatic for an indefinite period. However, they are a source of infection and should be treated or removed

# Indications (Total Pc)

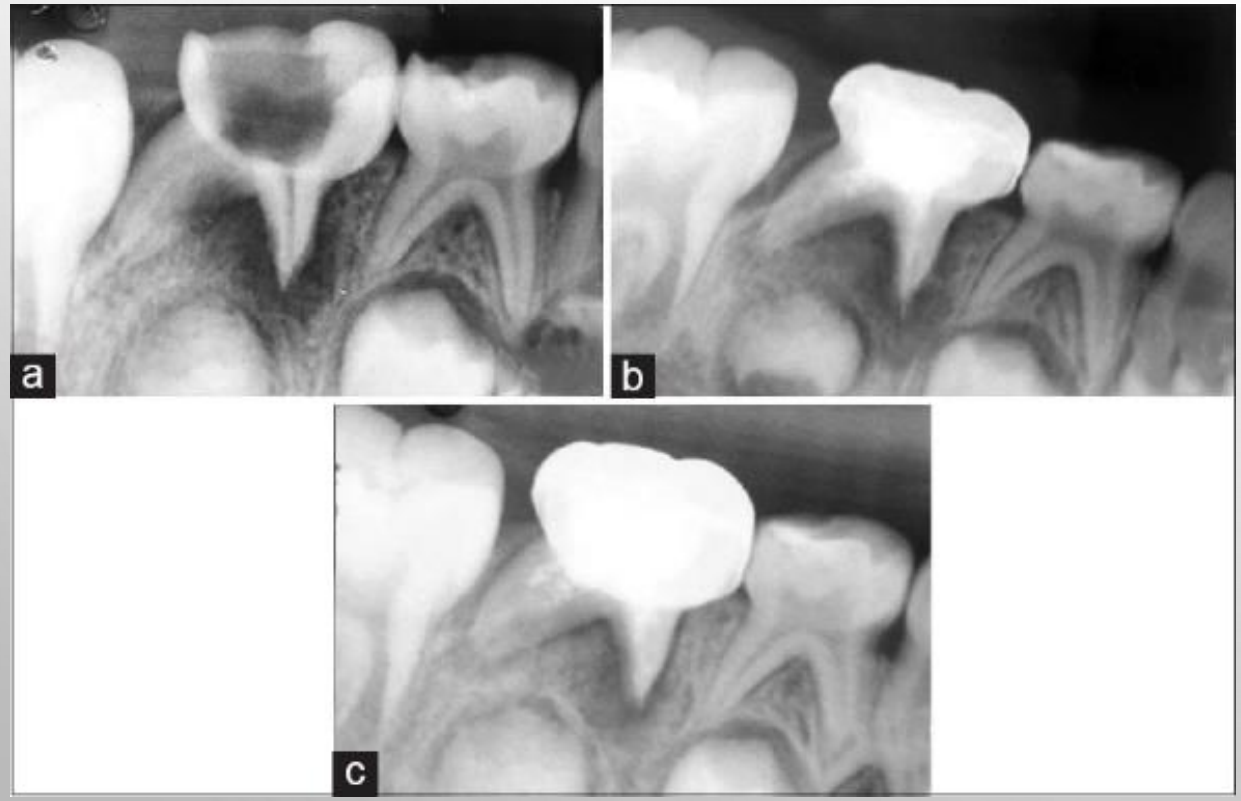
- Irreversible inflammation extending to the radicular pulp
- Incipient internal root resorption in the occlusal portion of root canal
- Necrotic pulp
- Pulpless primary tooth without permanent successor
- Traumatized primary incisor with pulp exposure, acute or chronic abscess
- Pulpless primary tooth in hemophilias
- Pulpless primary molars holding orthodontic appliance

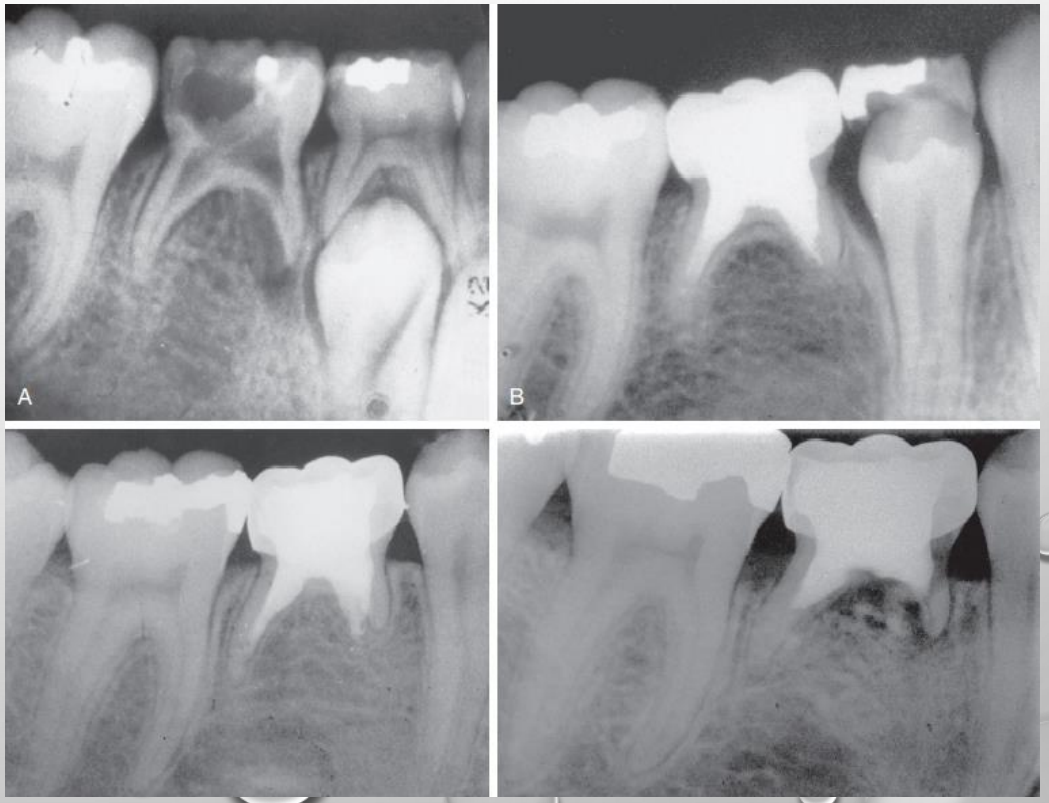
# Contra-indications

- Excessive tooth mobility
- Periapical pathology involved permanent tooth bud
- Communication between oral cavity and area of furcation
- Insufficient tooth structure to allow isolation and crown restoration
- Excessive external root resorption involving more than one-third of the root(s)
- Radicular cyst , dentigerous cyst… in association with the primary tooth
- Immionosuppressive disease

- Special effort should be made to treat and retain the second primary molar before the first permanent molar eruption or when the succedaneous second premolar is congenitally missing,

Even if it has a compromised condition



# Complete Pulpectomy

- This procedure refers to the **complete removal of irreversibly inflamed or necrotic** pulp tissue in the canals, followed by filling using a resorbable paste in either single or double appointments

# Partial Pulpectomy

- “Partial pulpectomy” is widely used to refer to “an apical extension of the pulpotomy procedure” in which the coronal portion of the radicular pulp is amputated, leaving vital tissue in the canal that is assumed to be healthy.(Incompletely formed root and an open apex)

- The decision to implement partial pulpectomy is made after removing the coronal pulp and encountering difficulty with hemorrhage control from the radicular orifice( no evidence of necrosis or suppuration)

- Endodontic broaches or files are the most commonly used instruments in partial pulpectomy
- One-third to one-half of the coronal portion of the radicular pulp tissue is removed from the canal(s)
- Irrigation and then dried with cotton pellets
- If hemorrhage cannot be controlled, the remaining radicular pulp tissue is removed and a complete pulpectomy is indicated

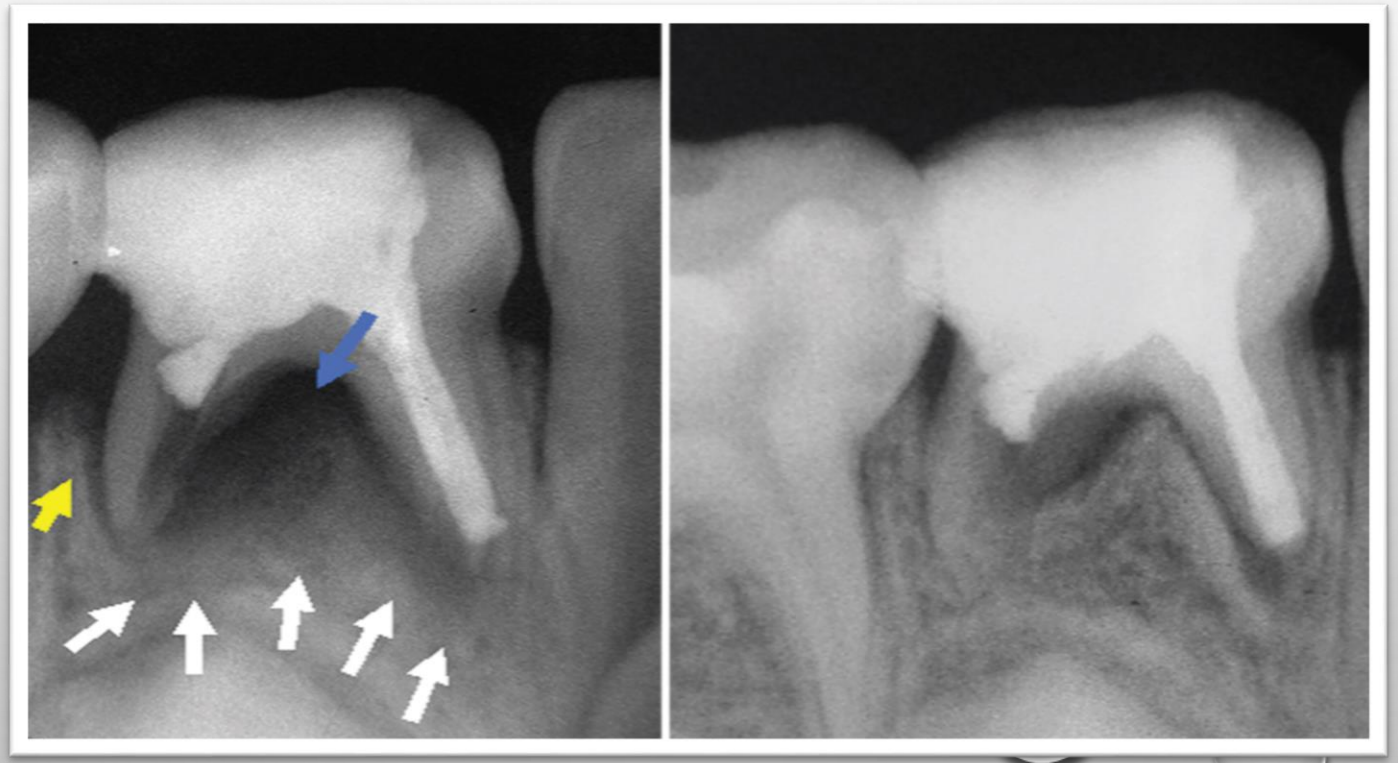
- After a successful hemorrhage control, a cotton pellet with formocresol is placed in the pulp chamber for 1-5 mins
- The pellet is removed, and the root filling paste is packed into the chamber and canals
- The quality of filling is evaluated using a periapical radiograph
- The tooth is restored with the stainless steel crown

# Partial/Total Pulpectomy Instead Of Extraction

- Internal root resorption visible on radiographs and excessive external pathologic root resorption involving more than one-third of the root are usually reported as contraindications for total pulpectomy in primary teeth.

- However, in deciduous molars far from their shedding time, partial/total pulpectomy can be an alternative approach instead of extraction when a pathologic root resorption affects only one of the molar roots and the other root remains intact

- In such cases, the affected root can be treated by partial pulpectomy up to the level of resorption, and the intact root is treated normally via total pulpectomy.



# Guidelines For Pulpectomy Procedures

- **Pre-operative assessment**

Dental practitioners should be aware of:

1. Accurate pulp assessment is essential.

2. The root and root canal morphology of deciduous molars shows wide anatomical variations, either in number or in shape

3. The complex pulp and periodontal tissues inter-relationship in primary molars may result in the occasion of bone radiolucency any where along the root or in the furcation area.

# Root Canal Preparation

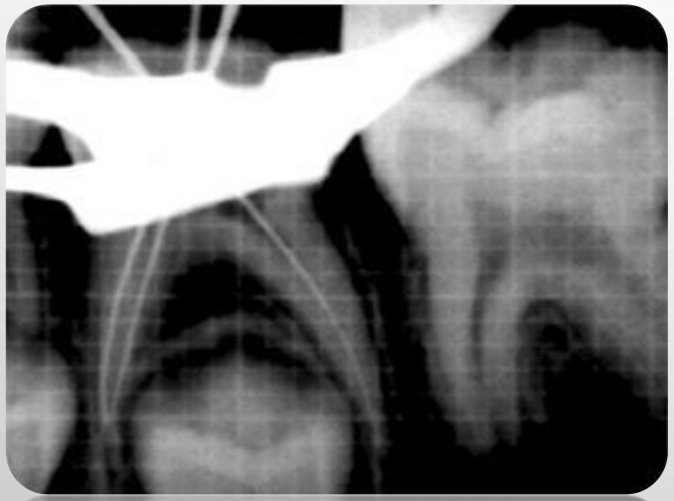
- Rubberdam or equally effective isolation technique

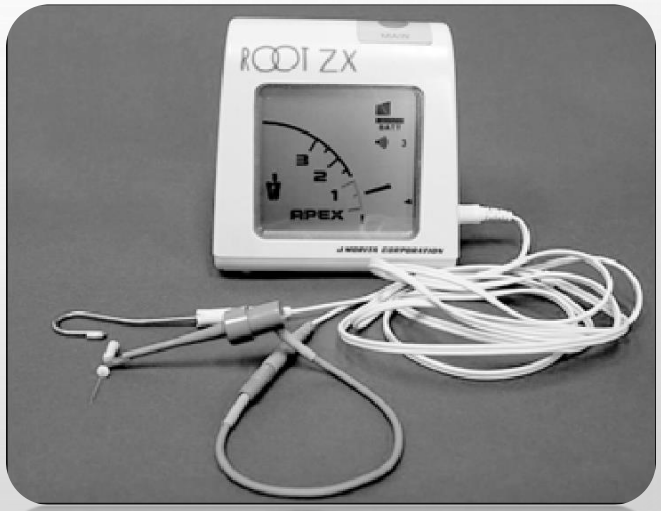
- Adequate extension of the access cavity and thorough exploration between the root canal orifices

❖The quality (color) and the Amount of bleeding from a direct exposure of the pulp tissue must be assessed; profuse Bleeding or purulent exudate indicates irreversible pulpitis or pulpal necrosis

- Accurate determination of the working length

(radiograph/ apex locator…)





- **Chemo-mechanical preparation**

(canals generally enlarge three sizes past the initial file)


✓ Stainless steel hand files and barbed broachs **(esp in ant teeth)**


✓ Flexible files (curved and s shaped canals)

✓ Rotary files(significant reduce instrumentation time)


complete extirpation of pulp remnants almost impossible and mechanical preparation increase the potential of root perforation during canal instrumentation

# The Optimal Root-filling Material For Primary Teeth

- not irritate the periapical tissues
- stable disinfecting power
- Excess pressed beyond the apex should be resorbed easily
- It should be inserted easily into the root canal and removed easily if necessary
- adhere to the walls of the canal and should not shrink

- It should be radiopaque
- It should not be soluble in water
- It should not discolor the tooth
- harmless to the adjacent tooth germ
- not set to a hard mass, which could deflect an erupting succedaneous tooth

# Zinc Oxide Eugenol (ZOE)


- Zinc oxide eugenol (ZOE) has been the conventional root canal filling material used for primary teeth pulpectomy since 1930

- ZOE has several disadvantages:

| | | | |
|---|---|---|---|
| low resorption rate | irritation to the periapical area | necrosis to bone and cementum | deflection of the permanent tooth bud |

- Success rate : 65% to 86%

- Deflection of permanent tooth eruption in 20% of pulpectomized tooth
- Malformation of successor : cytotoxic and neurotoxic nature of eugenol
- Eugenol is said to have anti inflammatory and analgesic properties that are very useful after a pulpectomy procedure(but reaching zero after one month)

# KRI Paste

- The primary components of KRI paste are iodoform , camphor,para-chlorophenol and menthol

- The main advantages of KRI paste over ZOE are that KRI paste:

resorbs in synchrony with primary roots

less irritating to surrounding tissues if a root is inadvertently overfilled

More antibacterial effect

- Success rate : 84%

# Calcium Hydroxide Combinations Pastes

- Iodoform has been added to Ca(OH)2 due to its:

✓ Antibacterial effect

✓ Ability to be resorbed when in excess (within 8 weeks )

✓ Radiopacity

○ Negative effect on the succedaneous tooth

- Success rate for the combined Ca(OH)2/Iodoform paste :84% to 100%

# Calcium Hydroxide Combinations

- Metapex (South Korea) and Vitapex (Japan) are available in preformed syringes


- Addition of polysiloxane oil in vitapex: enhances fluidity and permeability

- The fast resorption of metapex and vitapex, causes voids in the canal leading to formation of hollow tube


Antibacterial activity: zoe>vitapex>metapex

# Endoflas

- Incorporation of three materials ZOE, Ca(OH)2 and Iodoform

✓Endoflas has the advantage of having the resorption limited to excess material(not within the canal), which has been extruded periapically within 7 days

✓Microleakage is prevented

✓high antimicrobial activity : iodoform (an oxidizing agent) and eugenol (protein denaturation)

- Success rate : 70%

# Follow-up

- Clinical follow-up : one periapical radiograph on a yearly basis

- The following clinical and radiographic parameters can be taken as indications of success:

**Clinical :**

✓ improvement of acute symptoms

✓ tooth free from pain and mobility

**Radiographic:**

✓ improvement or no further deterioration of bone condition in the furcation area.

# Thanks For Your Kind Attention