Restoration and pulp treatment of the primary molar

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Overall learning outcomes

- Understand when and how to use stainless steel crowns
- Understand some of the principles behind successful pulpotomies in primary molar teeth

Reading List

http://www.mendeley.com/groups/486021/reading-list-restorative-dentistry/

http://www.mendeley.com/groups/1533433/reading-list-caries/

What’s the point?

Not restoring means
- Pain and infection
- Loss of general health and well being
- Space loss
- Damage to underlying successor

Stainless Steel Crowns for primary molars
Why stainless steel crowns?

- Easy to place
- Durable
- Long lasting

Nickel chrome stainless steel crown, 3M

When stainless steel crowns?

- Large carious lesion
- Following pulp treatment
- Children with high caries rate
- Generalised local or developmental enamel/dentine defects

How?

- Biological approach – Hall technique
- Conventional

The “Biological approach” - Hall technique

- SSC “pushed” onto primary molar crown
- Less demanding for patients
- Less demanding for dentists

The “Biological approach” - Hall technique

- Significantly fewer “major” failures in Hall group (3 vs 22)
- Hall crowns preferred by GDPs and patients

- SSC “pushed” onto primary molar crown
- Consider separators
  - NO Removal caries
  - NO Preparation
  - NO LA
  - NO Rubber dam
- Warn about disturbance to occlusion
The Hall technique

(www.scottishdental.org/index)

Images from ‘The Hall technique, users manual’ Dundee University

Conventional approach

- Removal enough tooth to make space for crown (occlusal/mesial/distal)
- Relies on bucco/lingual convexity for retention
- Weak evidence base
- Commonly used by paediatric specialists

Conventional approach

How?

- Will need LA
- Do not need rubber dam
- Remove caries and ensure tooth is restorable
- Restore tooth
- Occlusal reduction maintaining surface contours - 1 to 2 mm
- Approximal reduction - no ledges

Approximal reduction

Clinical procedure

- No lingual or buccal reduction is necessary
- Line and restore large cavities
- Choose a crown of correct mesial/ distal dimension that ‘snap’ fits
- Occasionally trimming and contouring may be necessary

Authors’ conclusions

Implications for practice

No randomised controlled trials (RCTs) were available for approval. While this technique is recommended by the British Society of Pedodontic Dentists (BSPD) for use in clinical practice, the evidence to support this is not strong, consisting mainly of case reports and case series. The lowest levels of evidence that have been produced, however, have some strength that the clinical outcome is consistently in favor of prefabricated metal crowns (PMCs). Thus, many of the studies placing PMCs on the test. It is important to the absence of evidence for PMCs is not undermined as evidence for their lack of efficacy.

Implications for research

There are no prospective RCTs or high-quality prospective controlled clinical trials (PCTs) comparing outcomes for PMCs with plastic restorations in carious primary teeth. There is a strong need for prospective RCTs comparing PMCs and fillings for managing decayed primary molars.

Innes NPT, Ricketts D, Evans DJP. Preformed metal crowns for decayed primary molar teeth. Cochrane Database of Systematic Reviews 2007, Issue 1
Clinical procedure

- Cement with Aquachem or equivalent
- Clear all margins of excess cement with probe and floss
- Advice to parent and child

The finished article

Common mistakes
Hall vs conventional

- No evidence yet comparing Hall with high quality restorations (including SSC’s)
- What about difficult patients?
  - Teeth near exfoliation
  - Avoidance GA
- Hall technique definitely has a place
- But do conventional if possible

Pulpotomy for primary molars

Pulpotomy How?

- Need to consider morphology primary teeth
- Thin spindly roots
- Multiple accessory canals
- Porous pulpal floor
- Primary teeth are different

Pulpotomy How?

- Conventional concepts obturation will not work
- Pulpotomy means leaving vital pulp in the roots
- WILL NOT WORK if loss of vitality
- Good assessment is key
  - Radiographs
  - Signs and symptoms
  - Vitality tests of no use

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Formocresol
Glutaraldehyde
Paraformaldehyde
Beechwood creosote
Calcium hydroxide
Ferric sulphate
Electrosurgery
MTA
Nadin G, Goel BP, Yeung A, Glenny AM. Pulp treatment for extensive decay in primary teeth. Cochrane Database of Systematic Reviews 2003, Issue 1

**Authors' Conclusions**

Implications for practice

Based on the available results of randomized controlled trials (RCTs), there is no reliable evidence supporting the superiority of one type of treatment for pulps involved primary teeth, i.e., pulpotomy investigated only, ferrum, zinc oxide-eugenol, glass ionomer, and rubber dam. There are many more pulpotomy and pulpotomy techniques currently in use, for which no evidence is found. The options of pulpotomy and the decision regarding the type of treatment are based on the clinical judgment of the clinician. Overall, the success rate of all techniques investigated appears good, but the predictability of the outcome depends on the condition of the tooth and the skill of the operator. The options of pulpotomy are effective in the majority of cases.

**Pulpotomy – clinical procedure**

Rubber Dam!

• LA and rubber dam
• Removal of caries

Images courtesy of B. Scheer

**Pulpotomy – clinical procedure**

• ZnOE, Stainless Steel Crown

Images courtesy of B. Scheer

**Summary**

- Stainless steel crowns are easy
- Hall technique shows promise
- Good case selection essential for a successful pulpotomy

Images courtesy of J. Roberts