



# Top tips for paediatric dentistry – Part 3: operative care, stainless steel crowns and management of molar incisor hypomineralisation

In Part 3 of this series, David Baldwin,<sup>1</sup> Anne Williams<sup>2</sup> and Ewen McColl<sup>3</sup> expand on elements of operative care essential to optimising outcomes for paediatric patients.

## Operative management

### How to give effective LA

Effective anaesthesia is essential to ensure successful operative treatment when considering intra-coronal restorations or tooth extraction.

Use age-appropriate explanations and continually talk through sensations being felt whilst administering both topical and local anaesthetic. Reassure the patient that the sensations they feel are what is expected and are entirely normal. Develop your own specific script for this kind of scenario that you can become comfortable with repeating each time you give topical/local anaesthetic to a child. Remember as previously mentioned to vary the tone and speed of your voice as you give this information; young children respond to the speed and pitch of the voice often more than the words that are used.

Always use topical anaesthetic before giving local anaesthetic.

You need to apply topical anaesthetic to dry mucosa for at least three minutes for it to be effective. By doing this, even keratinised mucosa on the palate can be anaesthetised at least enough to help reduce the sensation when administering local anaesthetic.

### Other local anaesthetic considerations

- For the majority of infiltration anaesthesia, an ultra-short purple needle is all that is required
- Restoration of a single tooth – buccal infiltration can be effective; for lower teeth, articaine is more effective than lidocaine
- Quadrant dentistry – consider if attempting to treat lower canine and both primary molars in one visit that block anaesthesia may be a more effective approach than infiltration anaesthesia
- Extraction of a tooth – a painless infiltration technique – takes time:
  - Apply topical anaesthetic for a minimum of three minutes, administer buccal infiltration, wait, administer intra-papillary infiltration from buccal aspect through already anaesthetised mucosa chasing anaesthetic through to palatal/lingual aspect of tooth, wait, perform direct lingual/palatal infiltration through already anaesthetised mucosa to complete anaesthesia.

### The use of dental handpieces

When considering handpieces, use relevant child-friendly terms to describe them such as ‘fast and slow electric toothbrushes’; remember a child is unlikely to have ever experienced anything like this before. Therefore, it is important to first show them and explain their use using the tell-show-do approach.<sup>1</sup> Explain the

different noises they produce, get the child to hold out their hand to feel air (and water) coming out of the handpieces, allow them to feel the roughness of a diamond bur (to polish and clean the teeth), explain the ‘bumping’ sensation of the slow-speed handpiece, all before even starting work in the mouth. Before touching a tooth, switch on the fast handpiece and hold it in the mouth with suction so the child is aware of the sensation of water cooling and suction. When working on a particular tooth, give regular breaks or use a countdown technique from 10–15 seconds to zero; give stop signals ‘hand up’ to patient; make them feel like they are in control of the appointment; always explain what is happening and how well the patient is doing.

### Composite restorations

Use the same principles you do when restoring permanent teeth. Consider how you will achieve effective moisture control. However, primary tooth enamel is thinner and has a lower mineralised content than permanent teeth – composite bond strengths will be reduced.

### Preformed metal crowns

With the advent of the Hall Technique,<sup>2</sup> fitting stainless steel crowns to deciduous molars has become technically much easier than the alternative multi-surface composite restoration.

Glass ionomer cement restorations should only ever be considered as stabilising or temporary restorations, and thus a five-year-old child presenting for definitive treatment of a decayed primary molar tooth does not need a temporary restoration, but one that will last until the tooth exfoliates, 5–7 years later, such as a stainless steel crown.

Placing crowns using the Hall Technique usually involves no local anaesthetic and no tooth preparation, so is better tolerated by the children.

The Hall Technique guide<sup>2</sup> is highly recommended as additional reading: [https://upload.wikimedia.org/wikipedia/commons/9/91/HallTechGuide\\_V4.pdf](https://upload.wikimedia.org/wikipedia/commons/9/91/HallTechGuide_V4.pdf).

There are three ways to fit a Hall Technique stainless steel crown:

- Using orthodontic separators to create space for a few days before the crown is fitted. This is the best way as it avoids any tooth preparation
- By slicing through the contact points mesially and distally to create space
- By getting the child to bite the crown into place if there is enough space naturally. ▶▶

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« Placing crowns by fitting spacers first is often the preferred method – this will, however, require two short visits: one to fit the spacers and another to remove the spacers and place the crown. Explain the technique to the parents and the child; it helps to have a model to show them so there is no misunderstanding as to what the spacers are and what the crown will look like once placed (Fig. 1).

### Spacer placement

Placing spacers is best done using two pieces of non-waxed floss threaded through to stretch the spacer. Waxed floss can be too slippery. Wind the floss round your middle fingers and use your index fingers and thumbs to apply pressure to literally floss the spacer through the contact point. It's often easier to start on the buccal side rather than trying to go straight down from the occlusal surface. When correctly seated, the spacer should fit around the contact point, not completely below it.

It's fine to crown more than one tooth in each appointment, although it is preferable to avoid placing crowns on opposing or adjacent teeth at the same time as this opens the bite too much, or risks not having enough anterior-posterior space.

Leave the spacer in for a few days (up to a week is fine); explain that initially there will be some tightness as if a piece of food is stuck between the teeth – simple analgesia can be given if required. At the fit appointment, size up the crown before removing the bands, which should only be removed at the last minute to prevent loss of space. The crowns are very small and slippery, so positioning the patient in a sitting up position protects the airway should you drop the crown. Using Pic-n-Stics (Pulpdent), or other adjuncts can help when trying in the crown (Fig. 2).

The crown should fit both mesio-distally and bucco-palatally. If it feels very loose, try a smaller size. If fitting crowns on second deciduous molars, or when planning to place stainless steel crowns on adjacent teeth, it's a good idea to flatten the mesial and distal surfaces with crimping forceps to reduce bulbosity and shorten the length of the crown. You may also need to reshape the crown buccolingually if interproximal caries has resulted in tooth surface loss and a shortening of the anterior-posterior length of the tooth (Fig. 3).

When you're happy that you have the correct size, remove the bands, try the crown one more time and then cement into place with a glass ionomer luting cement. Seat firmly and ask the child to bite on a cotton wool roll and check the gingival margins are blanched. Remove any extra cement and reassure the child and the parent that their crown will feel big to begin with but that the bite will quickly settle.

### Common problems

We would encourage you to practise modifying the circumference of the crown to adjust the fit to teeth where there has been space loss due to interproximal caries. Stainless steel crowns can be quite forgiving, and with practice and the careful use of crimping pliers the mesio-distal length and bucco-lingual width can be adjusted.

Lower first primary molar crowns are commonly the most difficult crown to fit, especially when there has been space loss due to caries. In addition to advice given in the Hall Technique guide<sup>2</sup> regarding crown modification, we recommend using a contralateral upper crown (ie ULD to fit LRD) which are often shorter and fatter than the lower first molar crowns and will fit the affected tooth better.



Fig. 1 Model showing both separators and crowns on primary and permanent molars

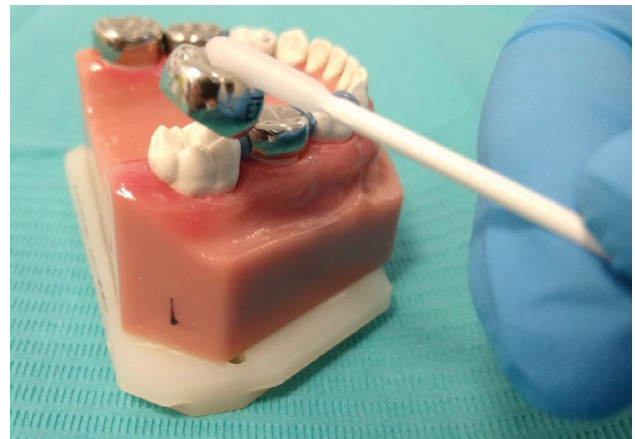


Fig. 2 Model showing the use of Pic-n-Stics (Pulpdent) to help when trying in the crown

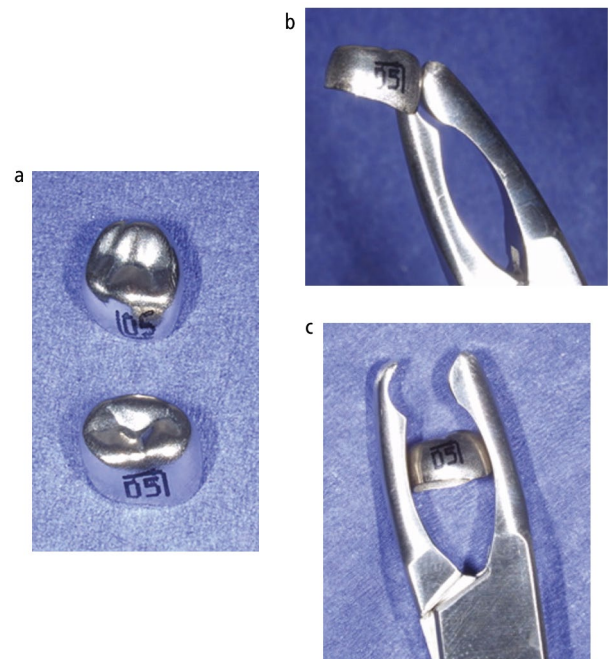


Fig. 3 a) Using an upper left (shorter and fatter) for a lower right crown (longer and thinner) when there has been space loss on a lower first molar due to caries. b) Using the crown crimping pliers in reverse to flatten the bulbosity of the crown to manage reduced space requirements. 'HS Pliers No 114 Johnson Contouring'. c) Reducing the anterior-posterior length by applying pressure to the crown between the beaks of the crown crimping pliers

### Molar incisor hypomineralisation

Hypomineralisation occurs commonly; the 2013 Children's Dental Health Survey<sup>3</sup> found that 19% of 12-year-olds had one or more teeth with a well-demarcated opacity. In many cases, this is likely to be molar incisor hypomineralisation (MIH).

Hypomineralisation and hypoplasia are commonly confused. Enamel hypomineralisation is a qualitative defect, with reduced mineralisation resulting in discoloured enamel in a tooth of normal shape and size. Because the enamel is weaker, teeth can undergo post-eruptive breakdown, resulting in missing enamel, which is rough, discoloured and often sensitive. Enamel hypoplasia is a quantitative defect of the enamel, where less enamel forms initially, presenting as pits, grooves, missing enamel or smaller teeth, but often with normal levels of mineral content.<sup>4</sup>

Common presentation in younger children can be post-eruptive breakdown (possibly also with caries) of the second primary molar teeth. Often, this can present in an otherwise healthy mouth with abnormal caries pattern, as second primary molars do not normally become the first carious teeth.

Permanent teeth affected by MIH can include first permanent molars, permanent incisors and in severe cases permanent canines. Opacities are often well defined and can present as white/cream/yellow or brown in colour with increasingly less mineral content (Fig. 4).

Teeth can be more sensitive (hot and cold, as well as touch – even from tooth brushing); patients are less likely to want to brush them as a result, they are more likely to break down, more likely to develop caries, which can pass more rapidly through the tooth, more difficult to anaesthetise, more difficult to bond to due to reduced mineral content, and affected anterior teeth can be unsightly and patients will often complain of teasing at school due to appearance of teeth.

### Management tips

As soon as the teeth erupt and MIH is recognised, it is important to start enhanced preventive measures as advised by *Delivering better oral health*,<sup>5</sup> but also to include:

- Encouraging parents to help younger children brush effectively around affected first permanent molar teeth on a daily basis – if sensitive, these may be being missed
- Apply 22,600 ppm fluoride varnish to affected teeth more than twice a year in the surgery
- When they are able to rinse, prescribe a fluoride mouthwash
- Prescribe 2,800 ppm NaF toothpaste from the age of ten
- Consider brushing a third time during the day or rubbing toothpaste directly over the affected teeth with a finger last thing at night before bed.

### Posterior teeth

Minimally affected first permanent molars (and second primary molars) should be fissure sealed. The strength of the bond may be increased by using an etch, bond, seal technique<sup>6,7</sup> rather than the usual etch, seal.

If moisture control cannot be achieved, then use glass ionomer sealant (GC Fuji TRIAGE) placed over the affected occlusal or buccal surfaces to temporarily stop the sensitivity and protect the tooth.

When local anaesthetic is required for restoration, infiltration of 4% articaine HCL is more effective than 2% lidocaine HCL in achieving the depth of anaesthesia needed for restoration. Lidocaine block

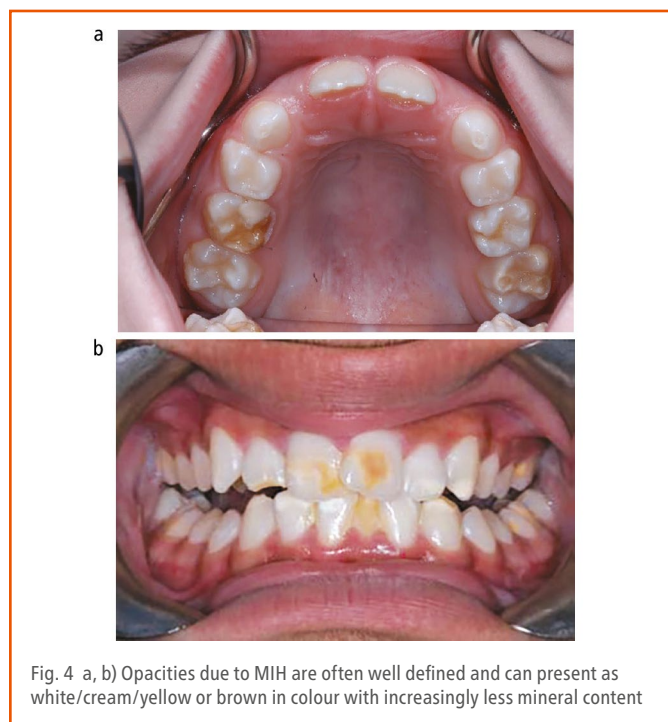


Fig. 4 a, b) Opacities due to MIH are often well defined and can present as white/cream/yellow or brown in colour with increasingly less mineral content

anaesthesia in the mandible can be supplemented with articaine as an infiltration buccally.

Small areas of post-eruptive breakdown on molars can be restored with composite. It is usually better to remove all of the hypomineralised enamel and dentine, cutting back to unaffected tooth tissue, prior to restoration, rather than merely attempting to fill the area of breakdown.

Where posterior teeth exhibit extensive post-eruptive breakdown, long-term prognosis is often poor. Early intervention to extract them is better than attempting to maintain a heavily restored tooth in the longer term. The ideal age to consider loss is around 9½ years old. Glass ionomer sealants or stainless steel crowns can be used to maintain teeth until this time. At this age, specialist paediatric dental and orthodontic opinion should be sought to consider compensating extractions.<sup>8</sup>

### Anterior teeth

Opacities associated with MIH on anterior teeth can often be a source of embarrassment for the patient with regards to their appearance. They can sometimes be sensitive, but only in the most severe cases is there any breakdown which requires management.

Know the options available for aesthetic management in children; these include direct composite restoration to mask the opacity, and minimally invasive techniques such as acid pumice microabrasion Opalustre (Ultradent Products, Inc) and Icon resin infiltrant (DMG) which are useful adjuncts to remove mild-to-moderate opacities.

The aesthetic improvement of the front teeth can be approached in different ways. It's important to take photographs of the teeth before any treatment is commenced.

With younger children (under ten years old), if they are being teased at school regarding the opacity, the simplest option may be to place composite directly over the top of the opacity without doing any treatment of the opacity. This leaves all options open for the future whilst hiding the opacity for the time being. This type of treatment will require maintenance. ▶▶

« There is no one technique that will cover all eventualities and often a combination of methods is required. Be honest with the parents and child about the limitations of treatment from the beginning as it is unlikely you will ever resolve 100% of aesthetic concerns.

### Know your local referral pathways and how you can achieve shared care with specialist services

Paediatric Dental Managed Clinical Networks are either already established or are currently being established around England.<sup>9</sup> Know who your local secondary and tertiary paediatric dental services are and how to refer to them. Many of these services will be happy to help out with treatment planning advice if you are keen to attempt to treat the patient and will want to act in a shared care approach. These services may have access to inhalation sedation (possibly intravenous sedation) and general anaesthetic.

Think what you can do to benefit your patients as part of shared care in the referral process. If your patient won't tolerate local anaesthetic and has grossly carious primary first molars and minimally carious primary second molars, consider what you may be able to achieve before referring for tooth extraction, such as placing Hall crowns on the second primary molars. There is great benefit in maintaining the second primary molars which would otherwise be extracted if no treatment was attempted before referring for GA extractions, including:

- Maintaining posterior occlusion
- Stopping first permanent molars from mesially migrating
- Holding some space for premolars
- Reducing potential future crowding.

We hope these tips will be useful in managing paediatric patients presenting in your practice. As with other dental specialties, there are unique challenges, but the rewards of establishing behaviours and attitudes that will set a child on a path to dental health is extremely rewarding if managed appropriately. ■

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## DLEF launches annual essay competition



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The Dental Law and Ethics Forum (DLEF) is a large group of dentists, lawyers, experts and dento-legal advisers who meet together several times a year. The group hears lectures given by leaders in the dento-legal world and debates topical issues.

The DLEF are delighted to announce that this year, for the first time, the group will be offering two essay prizes worth £250 pounds each to 1) first-year registrants; and 2) other registrants up to five years qualified. In addition to the prize money, the winners will be invited to present their topic at a DLEF meeting in December.

Full details of the prizes, essay topics and how to apply can be found on the DLEF website: [www.dlef.org.uk](http://www.dlef.org.uk).