The Hall Technique: The novel method in restoring the carious primary molar that is challenging old concepts.
A new tool in the general dentist’s toolbox?

By Dr. Iyad Hussein

Introduction
Primary molar dental caries in childhood is a disease of epidemic proportions that affects all modern societies. Despite a World Health Organization (WHO) pledge in 1981 to render 50% of 5-6 year old children caries free by 2000 (1), many developing countries remained off target to date. In the UAE, a survey showed that less than 18% of 5 year old children were caries-free (2). In comparison, 45% of 6 year-old and 60% of 3 year-old children in Sweden were noted to be caries-free (3, 4) and recent surveys in England showed that 88% of 5 year olds were free from obvious caries (5). The size of decay as a problem in a society is often expressed as “dmft” (decayed, missing & filled teeth) and is well established as the key measure of caries experience in dental epidemiology. The UAE regions dmft index ranged from 3.8 in Ajman to 6.0 in Dubai (2) whilst the England dmft figure average was a mere 0.48 (5). This highlights countries/social inequalities where primary dental cares is concerned.

Conventional management of the carious primary molar
Primary tooth decay management represents a challenge for those who dentally care for children, whether they are general dental practitioners (GDPs) or specialists in paediatric dentistry. For the past 5 decades, the dental literature in the USA and Europe had advocated treating the deep carious primary molar using the conventional “drill and fill” philosophy. That is, give local anaesthesia (LA) to the child by injection to anaesthetise the tooth, drill the carious tissue out (often after placing a rubber dam-Figure 1) using a high and slow speed drill (Figure 2), or specialists in paediatric dentistry are often required to achieve such treatment. It is well known that the larger proportion of child patients are seen in the general dental practice (GDPs) services (8). Whilst there may be GDPs with a special interest in children’s dentistry, many find managing such young children a major challenge, and many patients go untreated (8). Whilst all paediatric dentists agree that SSCs are the restorations of choice for multi surface caries in the primary molars (7), the conventional doctrine of their placement (i.e., using LA and drills) has been challenged by less invasive techniques such as the “biological approach” which is embodied by the “Hall technique” (8-10). The Hall technique: “Sealing in” the caries
In 2007 a new technique took the paediatric dentistry world by storm. It recommended a simple way in managing early enamel and dentinal decay in the primary molar using a SSC; it was named the Hall technique (8). This technique involved no local anaesthesia, no rubber dam, no drilling and took place in a child friendly play manner. In essence there was no dental caries removal at all from the carious lesion. The technique relied on sealing the caries lesion in situ cutting off its supply of sugary substrate, thus altering the lesion’s bacterial plaque ultimately leading to the arrest of the caries process in the tooth. The Hall technique involves the

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The Hall technique: Two SSCs on tooth 54.

- **Removal of separators:** After approximately 1 week. The SSC is level with the occlusal plane and 0.5 mm above/below the gingival margin.

- **Placement:** The SSC should not be too loose but not completely tight.

- **Joint:** The SSC should be level with the occlusal plane and 0.5 mm above/below the gingival margin. It is possible to place two SSCs on the teeth involved.

- **Removal after orthodontic separation:** The SSC should then be cemented onto the tooth at this stage. After crown preparation and the subsequent crown installation, the SSC is fully cemented on the tooth. The excess cement is removed. Some blanching is noticed buccally and palatally. This disappears within the hour.

- **Appointment following simple steps that are usually carried out over a couple of 5-minute appointments**

- **A - Hall technique:**
  - **Appointment 1:**
    1. Case selection: Diagnosing asymptomatic early enamel and dentine caries in a primary molar, clinically and radiographically (using bitewings). Bitewings may typically show approximal lesions that are not visible clinically but are diagnosed radiographically (Figures 4 a & b). There should be a clear radiolucency between the carious lesion and the pulp of the tooth intended to be restored with the SSC Hall technique. There should be no signs or symptoms of pulpal pathosis; the lesion should be detected prior to the development of symptoms (See Table 1).
    2. Fitting orthodontic separators: Placement of two elastic orthodontic separators mesially and distally on tooth intended to be restored with the SSC Hall technique. There should be a clear radiolucency between the carious lesion and the pulp of the tooth intended to be restored with the SSC Hall technique. There should be no signs or symptoms of pulpal pathosis; the lesion should be detected prior to the development of symptoms (See Table 1).

- **B - Hall technique:**
  - **Appointment 2:**
    1. Removal of separators: After 5-3 days after the first appointment, the patient returns for the removal of the orthodontic separators. Space is created mesially and distally that will negate the need for crown preparation (See Figure 6).
    2. Stainless steel crown selection and placement: The patient is sat up in the supine position and the operator selects the correct SSC in terms of tooth number and size. After selecting the correct SSC, it is tried passively on the tooth to ensure that it fits with gentle pressure applied to the SSC over the contact points but not completely through. For safety purposes the crown is stuck to the operator’s finger, while trying out the size, using an adhesive tape/elasticplast. The SSC should not be too loose or too tight. The crown should “spring back” from the contact points while trying it on the tooth at the time of selection. Once crown selection, the crown should then be filled with a self curing glass ionomer cement and positioned over and on the tooth. The operator then digitally presses the crown through the contact points so that the crown flexibly “clicks” on the tooth and fits snugly. The patient is then asked to bite on a cotton wool roll to finish off its correct positioning (see Figure 7). The excess of the glass ionomer cement is wiped off. The crown should be level with the occlusal plane and blanching or signs of pulpal pathosis. One lesion was randomly treated using the SSC technique and the other was randomly treated conventionally (mostly by glass ionomer cements). Seventeen GDPs treated these patients under the auspices of the paediatric dentistry team at Dundee University.

- **Discussion:**
  - The hallmark of this technique is the minimal intervention and no preparation to the development of symptoms. The technique was named after Dr. Norna Hall, a Scottish dentist who worked as a salaried GDP in a remote high dental caries area (Scottish Wester Ross) north west of the UK. As she faced a high proportion of children with dental caries (drought of Scotland was around 2.54 at the time), and was not a specialist in paediatric dentistry, she thought “outside the box” and used SSCs to “seal in” dental caries with no preparation and no LA. This technique caught the attention of the team of paediatric dentists/clinical researchers at Dundee Dental School in Scotland (11). They took an interest in Dr. Hall’s novel work (she had audited her own work) as they were facing very high levels of dental caries themselves. Subsequently a pilot trial by Evans et al was published online in 2000 (11). This prospective case controlled study assessed 49 patients who were fitted with SSC crowns using the Hall technique from the patient, caregiver and dentist point of view. It was deemed a success as the study reported very high levels of satisfaction. In addition, the team of Dundee Dental School researchers shared their findings with The British Society of Paediatric Dentistry UK national conference meeting in Edinburgh (UK) in the same year (2000) to the astonishment of its audience (the author of this paper was present that day and recalls the reaction). Because of its importance of this study, it will be discussed further below.

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The results were an outstanding success rate of 98% for the Hall SSCs when compared to the control restorations 85% (in terms of major failures, pain due to pulpal disease). Furthermore, it was conclud-
ed that “The Hall Technique was preferred to conventional resto-ation by 48% of parents, carers, dento-alveolar com-
n services in 15 out of 16 den-
tal schools in the United King-
dom (19) and more than half of
European paediatric dentists
postgraduates will consider us-
ing this technique in managing
child patients (20). There had been concerns that Hall SSCs
may open the bite after place-
ment by 1 mm on average, but
there is clinical evidence that
the bite remains stable with
self-levelling composite app-
lication. The Hall technique
is now becoming more
popular, and the Hall Tech-
nique is now becoming more
popular, and the Hall Tech-
nique can be used in general
dental practice by GDPs, where
defaults in carious primary molars. A user manual. Free
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Dental Tribune Middle East & Africa Edition | January-February 2015

The authors of the study compared the success rates of Hall SSCs (30-year period) to conventional restorations and concluded that the Hall Technique was preferred by 48% of parents, carers, and dentists who used it in their practice. They observed that the Hall Technique was more effective in preventing complications and achieving better outcomes in the long term compared to conventional restorations. It is recommended for managing carious primary molars in general dental practice as it offers better acceptance and is easier to use compared to conventional methods.

Figure 10 (a & b). A patient treated by the author received 7 SSCs using the Hall technique. No. LA, rubber dam, caries removal or drills were used. They remained free from clinical and radiographic signs and symptoms of pain or sensitivity.

Comparison with figures 3 (a & b). Teeth 74 was extracted as it was not restorable.

Table 1. Indications and contra-indications of the Hall technique.

<table>
<thead>
<tr>
<th>Indications</th>
<th>Contra-indications</th>
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<td>Class I lesion, non-cavitated, if patient unable to accept fissure sealant, or conventional restoration</td>
<td>Small cavity, treated carious lesion</td>
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<tr>
<td>Occluding in edentulous space</td>
<td>Complicated pulp, exposed tooth</td>
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| Active caries (diagnosis only) | Excessively high pulpal 

Dental caries is an episodic disease of childhood. While pre-
vention is of essence, in a society where dental caries is rampant,
the Hall technique may be a feasible, effective, and efficient
alternative to conventional methods. The Hall Technique can be
considered as an alternative to conventional methods for
managing carious primary molars.

Conclusion
Dental caries is an epidemic disease of childhood. While pre-
vention is of essence, in a society where dental caries is rampant,
the Hall technique can be considered as an alternative to con-
ventional methods for managing carious primary molars.