The “All Hall” case: A case report of maximum capacity use of the Hall technique in a single child patient

By Dr. Batool Ghaith, Dubai & Dr. Iyad Hussein, Dubai

Abstract

Managing the carious primary molar in children using the “Hall Technique” is a controversial but acceptable novel method. Restoring all eight carious primary molars in a single child by using this technique, however, has not been reported by those who advocate its use. We report a case in which the Hall technique was employed to maximum capacity, out with normal practice, to restore all es and ds in a three year old child (hence the name All Hall). Follow up showed no clinical or radiographic complications. This negated the need for unnecessary invasive treatment under local anaesthesia or general anaesthesia. In this article the concept of “All Hall” is introduced as a convenient and cost effective tool in the management of all carious primary molars in a single child. It is relevant to GDPs, working in busy practice environments, to avoid child labelling and referring children to specialists or GA referrals. The reader should understand that it is possible to restore eight carious primary molars in one child using the HT.

Introduction

The carious primary molar is a clinical problem reported, in the paediatric dental literature, to have several solutions. These management options range, historically starting from conventional surgical treatment involving the excision of caries (under local anaesthesia) and restoring the tooth and ending simply by managing the plaque’s biological environment employing minimal interventional techniques. One example of the latter is the “Hall Technique or HT” which entails entombing the carious lesion by sealing it from the oral environment using a preformed metal crown (the stainless steel crown or SSC). The HT is usually prescribed to manage carious primary molars according to clear selection criteria and was developed in the UK as a child friendly treatment modality.

Although conventional restoration of all primary molars using SSCs has been the norm for many years, this had not been the same when using the HT. The operating manual of the HT stated that “Hall crowns are not a universal answer to managing all carious primary molars and the Hall Technique does not suit every carious primary molar in that child”. Therefore it became current acceptable clinical practice, by those who advocate the use of the HT, not to restore all the primary molars in one child using this technique. In other words, restoring all carious Ds and Es in one single child, using the HT, was inadvisable. The reasoning behind this had not been clarified, but it may possibly be due to perceived concerns about the occlusion. The effect of the HT on the occlusion had been previously studied. The occlusion tended to suffer opening of the bite by 1.5mm on average, which later resolved due to possible dento-alveolar compensation or intrusion of the crowned tooth. The effect was studied when one or two crowns were placed, however no study had shown the effect of restoring all Es and Ds in one child, on the occlusion.

We report a case whereas the HT was deployed to maximum capacity, contrary to the usual clinical doctrine, to restore all eight primary molars in one child. There were no known complications and the occlusion was deemed satisfactory. This case had been labeled the “All Hall” case.

Case report

A fit and healthy three year old boy (MF) attended with his father to the Department of Paediatric Dentistry at Hamdan Bin Mohammed College of Dental Medicine (HBMCMD) in Dubai Healthcare City, Dubai (UAE). The father was concerned

Figures 1 (a, b, c, d & e) are showing typical dental caries in a 3 year old. He had no symptoms whatsoever. In Figures 1 b-d an orthodontic separator can be seen fitted distally to 64.

Figures 2 (a & b): Bitewing radiographs showing caries on all Ds and Es. There were clear bands of dentine between the carious lesions and the pulp. There were no radiographic signs of interradicular pathology. Although the furcation areas of upper Es were not visible, no further x-rays were justified as the upper Es had shallow radiographic lesions.

Table 1. Treatment plan

<table>
<thead>
<tr>
<th>Step 1: Placement of preformed stainless steel crowns (SSCs)</th>
<th>Step 2: Restoration of primary molars using the Hall Technique</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Pre-treatment care plan</td>
<td>a. Remove the pre-treatment teeth with stainless steel crowns using the Carl Fehrenbacher (Carl Co) crowns (Fig. 3). The outer surface of the crown was made smooth and polished.</td>
</tr>
<tr>
<td>2. Anaesthesia and preparation of the tooth</td>
<td>b. The crowns were placed on the two lower primary molars</td>
</tr>
<tr>
<td>3. Local anaesthesia with 1% lidocaine and 1:8000 epinephrine</td>
<td>c. The crowns were placed on the two lower primary molars</td>
</tr>
<tr>
<td>4. Forming of the crown</td>
<td>d. The crowns were placed on the two lower primary molars</td>
</tr>
<tr>
<td>5. Finalization of the crown</td>
<td>e. The crowns were placed on the two lower primary molars</td>
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- 1. Pre-treatment care plan
- 2. Anaesthesia and preparation of the tooth
- 3. Local anaesthesia with 1% lidocaine and 1:8000 epinephrine
- 4. Forming of the crown
- 5. Finalization of the crown

2. Restoration of primary molars using the Hall Technique:
- a. Remove the pre-treatment teeth with stainless steel crowns using the Carl Fehrenbacher (Carl Co) crowns (Fig. 3).
- b. The crowns were placed on the two lower primary molars.
- c. The crowns were placed on the two lower primary molars.
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- e. The crowns were placed on the two lower primary molars.
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about ‘holes in his son’s teeth’. The father reported that MF suffered no pain whatsoever. After clinical and radiographic examination, MF was found to have many asymptomatic carious primary molars and incisor teeth fitting with the diagnosis of Severely Early Childhood Caries (SECC). Interestingly, MF’s eight carious primary molars (55, 54, 64, 65, 75, 74, 84 & 85) were free from symptoms of pain, and clinical and radiographic signs of pulpal pathosis. See Figures 1 (a, b, c, d & e) for clinical features, and Figures 2 (a & b) for radiographic findings.

He also had initial caries on 55, 52, 51, 61, 62 & 63. There was no known trauma history. His initial cooperation was categorized as “pre-cooperative”. MF’s behavioral scale was assessed to be negative initially but improved dramatically to positive behavior as treatment progressed. Treatment options for the carious primary molars that were discussed and explored with MF’s father were; prevention only, conventional restorative treatment using local anesthesia (LA), the “Hall Technique” with no LA (and restorations of the upper primary incisors) or full mouth rehabilitation under general anesthesia (GA). MF’s father was keen for his son to receive dental treatment in the dental chair rather than under GA due to many reasons including financial constraints (children’s dental GA is not routinely provided by a free public service available to everyone in the UAE as it is in the UK for example). After sufficient consideration, the father consented for the HT as the child’s cooperation for LA was not forthcoming and he was adamant about avoiding GA.

Treatment
A treatment plan was arranged on our postgraduate clinic (See Table 1). An extensive preventive programme was instigated to improve MF’s very poor oral hygiene in addition to diet assessment, analysis and advice. Over a period of two months and following the HT protocol5, the child had all his eight primary molars fitted with SSCs and cemented with GIC. No LA was used. The molars were fitted with elasticated orthodontic separators in order to create space to prepare the teeth to receive the SSC a week later. Two molars were treated per appointment (see Table 2).

As per the standard Hall manual, the following principles were adhered to during treatment:

1) Compliance with the indications and contra indications and selection criteria for the HT5. Assurance of the absence of any symptoms or signs of pulpal pathosis or sepsis (clinical or radiographic assessment).

2) Blue elasticated orthodontic separators were used and left in situ for one week (see Figure 1b & d) to create interdental spaces where required.

3) Two SSCs placed in a single appointment were never: a. In the same arch adjacent to each other (i.e. never in the same quadrant) b. On the same side in opposing arches

4) When two crowns were placed in a single appointment they were diagonally in opposing arches (for example 64 & 84).

5) Appointments were at least one to two weeks apart to allow the occlusion to settle. The appointments were short; no longer than 15-20 minutes.

The SSCs were placed as per the schedule in Table 2. The patient also had simple excavations and GIC with a view to eventually removing composite strip crowns.

Table 2. Sequence of appointments

<table>
<thead>
<tr>
<th>Appointment</th>
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</tr>
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<tr>
<td>1a</td>
<td>Assessment, palpation, explanation options, GA (if needed), orthodontic separators, SSC cemented (see Table 2)</td>
</tr>
<tr>
<td>1b</td>
<td>Appointments were never: a. In the same arch adjacent to each other (i.e. never in the same quadrant) b. On the same side in opposing arches</td>
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<tr>
<td>1e</td>
<td>No complaints, check occlusion and CO</td>
</tr>
<tr>
<td>2a</td>
<td>All 5 (and LA) crowns in. No symptoms, strategy then: GA (if needed), orthodontic separators, SSC cemented (see Table 2)</td>
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Figures 3 (a, b, c, d & e): Immediate post-treatment completion images. All Es and Ds were restored using the HT. Notice the good gingival status. Using the primary canines as a guide, opening of the bite is noted in Figures 3 (d & e). It became diastematised with no trauma present. No known trauma. 51 was Sun’ed conservatively as a ray showed no pathology. The patient by this time had no experience of LA, avoided GA and was gradually becoming cooperative.

Figures 4 (a, b, c, d & e): 9 months post-treatment. The patient had no complaints. The occlusion had equilibrated (note primary canines in Figures 4 b & c and compare to Figure 3 a, d & e). All Es and Ds were restored using the HT. Notice the good gingival status. Using the primary canines as a guide, opening of the bite is noted in Figures 4 b & c. The patient had no complaints. The occlusion had equilibrated (note primary canines in Figures 4 b & c and compare to Figure 3 a, d & e). All Es and Ds were restored using the HT. Notice the good gingival status. Using the primary canines as a guide, opening of the bite is noted in Figures 4 b & c and compare to Figure 3 a, d & e).
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In 2007 a new technique took the paediatric dentistry world by surprise.1 Recommended a simple way in managing early enamel and dentinal decay in the primary molar using a SSC; it was named the Hall Technique (HT) after UK based Scottish dentist Dr. Norna Hall. The HT involves creating an occlusal strip crown once cooperation allows.3-5 Reinforce preventive measures (oral hygiene, diet), professional topical fluoride varnish application 4 times/year.

**Discussion**

In 2007 a new technique took the paediatric dentistry world by surprise.1 Recommended a simple way in managing early enamel and dentinal decay in the primary molar using a SSC; it was named the Hall Technique (HT) after UK based Scottish dentist Dr. Norna Hall. The HT involves creating an occlusal strip crown once cooperation allows.3-5 Reinforce preventive measures (oral hygiene, diet), professional topical fluoride varnish application 4 times/year.

This case had been a great challenge due to important factors which were; the patient’s young age, anxiety, the number of molars involved, pre-cooperation, the limited financial situation and the patient’s distance from a dentist including general anaesthesia and the scepticism that other dentists had of the HT. However, the parents’ dedication to attend to multiple appointments, motivation and great support to their child made it successful. Modelling techniques had worked successfully in the patient’s MF’s dental anxiety, where he observed and learned appropriateness between his parents and sister. Separation anxiety is very common at this age and having the parent or his sister around was helpful. MF had a high risk dental caries status, so the patient’s primary molars were treated using SSCs, although other options such as complete caries removal, restorative caries removal or non restorative caries treatment (NBT®) were possible.

MF was a good candidate for the HT, as his molars were carious, asymptomatic, no signs of pulpitis or sepsis, no clinical or radiographic signs of pulpal involve-ment or necrosis and had a good amount of tooth structure for crown retention. In other words, the molar lesions were “captured” before they became pulpally involved and treatment was effective as it included the under the crown without local anaes-thesia, tooth preparation or caries removal. Priority was given to tooth 84 as it had the deepest lesion compared to the rest. MF accepted the minute occlusal changes after cementation of all 4 HT crowns. The occlusion clinically appeared to have re-established itself in a very short time (see Figures 3 and 4 using the primary canines as indices) and was always cleaned before proceeding with the next phase.

Managing the upper anterior teeth is a difficult treatment and restorations would have been impossible in this case due to the child’s lack of cooperation. Therefore, temporization of open cavities with GIC was a valuable method to introduce to the child to dental procedures. It was also advantageous after treating the pro-gress of caries, reducing the chance of sepsis and pain, reducing the oral plaque of decay and a good source for fluoride. Composite strip crowns will be considered as an alternative if cooperation allowed. Coincidently the patient’s 51 became discoloured, albeit asymptomatic. Although no history of trauma was elicited in this case due to the child’s lack of cooperation.

The case was hence under observation in the long term. Plans are in place to manage his upper anterior teeth as outlined above.

**Conclusion**

This case is an “All Hall” case where maximum capacity of the HT was used in one single child. The HT is one of the tools of the toolkit available to dentists in the fight against dental caries.11

Although well designed trials are in place to support the HT, this case highlights that retaining eight carious primary molars in one child, with no to medium term restorative complications is achievable using the HT. The lesions need to be “caught” prior to any pulpal involvement.

It may be of interest to GDPs and primary care dentists, rather than specialists in paediatric dentistry, who deal with the majority of children in GP practices. The HT is a suitable modality for the GDP environment, hence this case report.

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