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

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, to not 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 undesirable. 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 by Dr. Batool Ghaith, Dubai & Dr. Iyad Hussein, Dubai

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.

Hamdan Bin Mohammed College of Dental Medicine was established in 2012 to provide the highest quality of dental education and care, and is the first college of the Mohammed Bin Rashid University of Medicine and Health Sciences (MBRU). The postgraduate college offers residents a three year Master of Science Degree in the following six specializations:

- Endodontics
- Oral Surgery
- Orthodontics
- Paediatric Dentistry
- Periodontology
- Prosthodontics

For admissions inquiries, please call the student affairs office at +971 4 424 8612, or email: info@hmcmdm.ac.ae, Dubai Healthcare City, Building 24, Ground Floor, P.O. Box 596097, Dubai UAE, website: www.hmcmdm.ac.ae

Table 1. Treatment plan

<table>
<thead>
<tr>
<th>Treatment Plan</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Preventive care plan</td>
</tr>
<tr>
<td>2. Restorative treatment plan</td>
</tr>
</tbody>
</table>

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 inter-radicular 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.

The occlusion of restoring all Es and Ds in one child, on the occlusion.

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, to not 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 undesirable. 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 by Dr. Batool Ghaith, Dubai & Dr. Iyad Hussein, Dubai

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.

Hamdan Bin Mohammed College of Dental Medicine was established in 2012 to provide the highest quality of dental education and care, and is the first college of the Mohammed Bin Rashid University of Medicine and Health Sciences (MBRU). The postgraduate college offers residents a three year Master of Science Degree in the following six specializations:

- Endodontics
- Oral Surgery
- Orthodontics
- Paediatric Dentistry
- Periodontology
- Prosthodontics

For admissions inquiries, please call the student affairs office at +971 4 424 8612, or email: info@hmcmdm.ac.ae, Dubai Healthcare City, Building 24, Ground Floor, P.O. Box 596097, Dubai UAE, website: www.hmcmdm.ac.ae

Table 1. Treatment plan

<table>
<thead>
<tr>
<th>Treatment Plan</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Preventive care plan</td>
</tr>
<tr>
<td>2. Restorative treatment plan</td>
</tr>
</tbody>
</table>

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 inter-radicular 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.

The occlusion of restoring all Es and Ds in one child, on the occlusion.
ORIGINAL AIR-FLOW® METHOD

FOR A SUCCESSFUL PROPHYLAXIS SUB- AND SUPRAGINGIVAL

GUIDED BIOFILM THERAPY

ORIGINAL PIEZON® METHOD

FOR AN OPTIMAL PERFORMANCE AND MAXIMIZED PATIENT COMFORT

“I FEEL GOOD”

NEW PARTNER!

Al-Hayat Pharmaceuticals U.A.E. – 312 Al Waha Street, Office no. 101, 4483 Sharjah Mobile +971 50 6352456 – Tel +971 6 559 2483 – Fax +971 6 559 4373 – alhayat@ems.se www.alhayatuae.com

EMS—DENTAL.COM
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 multiple asymptomatic cavities primary molar and incisor teeth fitting with the diagnosis of Severe Early Childhood Caries (S-ECC). Interestingly, MF’s eight cavious 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) for clinical features, and Figures 2 (a & b) for radiographic findings. He also had initial caries on 55, 52, 51, 61, 62 & 93. 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 anaesthesia (LA), the “Hall Technique” with no LA (and restorations of the upper primary incisors) or full mouth rehabilitation under general anaesthesia (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 instituted 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 protocol, 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 interdental spaces where required.

**Table 2. Sequence of appointments**

<table>
<thead>
<tr>
<th>Appointment</th>
<th>Assessment, radiographs, explain treatment options; oral hygiene instructions; begin orthodontic separators in situ for one week (see Figure 2b &amp; d)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appointment 2</td>
<td>Assessment, orthodontic separators in place. Prepare and cement SSCs crown in 1st mol, 1st premolar, place new orthodontic separators in situ for one week (see Figure 2b &amp; d)</td>
</tr>
<tr>
<td>Appointment 3</td>
<td>Amalgam or composite strip crowns depending on orthodontic separators. Place new SSCs crowns in 64 &amp; 65 (exp and mov), place new orthodontic separators in situ for one week (see Figure 2b &amp; d)</td>
</tr>
<tr>
<td>Appointment 4</td>
<td>Radiographs, take sequence views SSC 54 &amp; 55 (exp and mov)</td>
</tr>
<tr>
<td>Appointment 5</td>
<td>Remove separators and cement SSCs crowns in 54 &amp; 55</td>
</tr>
<tr>
<td>Appointment 6</td>
<td>Impress teeth; take sequence views SSC 54 &amp; 55</td>
</tr>
<tr>
<td>Appointment 7</td>
<td>Buccal &amp; lingual fixed SSCs 1st mol</td>
</tr>
<tr>
<td>Appointment 8</td>
<td>Buccal &amp; lingual fixed SSCs 1st prem</td>
</tr>
<tr>
<td>Recall 1 week</td>
<td>No complaint. Check occlusion and SSCs</td>
</tr>
<tr>
<td>Recall 4 weeks later</td>
<td>If all SSCs in situ, no symptoms. Prepare orthodontic separators (or through orthodontic separators) to create interdental spaces (if necessary)</td>
</tr>
<tr>
<td>Recall 3 months later</td>
<td>All SSCs in situ. No symptoms. Continue orthodontic separators as per above. Monitor oral hygiene in addition to clear polisher or mild prophylaxis</td>
</tr>
</tbody>
</table>

*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 discernable with no auras present. No known trauma. De opted to manage 51 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 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.*
Discover the new time-saving composite

4 mm to success

- Bulk filling is possible due to Ivocerin®, the patented light initiator
- Special filler technology ensures low shrinkage stress
- Esthetic results are achieved quickly and efficiently in the posterior region
“Hall crowns are not a universal answer to managing all carious primary molars and the Hall Technique does not replace every carious primary molar in that child”

Discussion

In 2007 a new technique took the paediatric dental world by surprise1. 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 (HT) after UK based Scottish dentist Dr. Norma Hall started using this method2. The HT involved bonding a stainless steel crown (SSC) to a primary molar (PM) without any dental cavity removal or pulp extirpation. SSCs were found to be accepted by patients and their parents and had a high failure rate due to incorrect bonding or incorrect bonding. The main advantage of the HT was that it was a minimally invasive technique with a high chance of success. However, the HT has been under criticism due to the high number of SSCs that failed to bond properly. The number of SSCs that failed to bond properly has been reported to be as high as 30%3. This has led to the development of alternative techniques, such as the use of metal crowns or direct restorations, to improve the success rate of SSCs.

The patient followed up three, six and nine months later. He, nor his parents, had any complaints whatsoever. There were no issues with the occlusion, symptoms or signs of pulp pathology or teeth affected the molars. The bite had completely recovered. See Figures 4 (a, b, c, d & e). The parents' satisfaction in reaching a positive outcome without residual crown to the use of GA, was very high. Post op radiographs (Figures 5 a & b) showed sound filling of the root canals and no recurrent caries.

Long term treatment plan: 1. Continue follow up at 3 months intervals of all Es and Ds clinically. 2. Close monitoring of tooth 51 & 61 for any associated with pulp necrosis. 3. Replacing radiographs every 3 months to monitor all Es and Ds. Interval to increase if caries risk changed. 4. Restore remaining upper anterior teeth with composite strips once cooperation allows. 5. Reinforce preventive measures (oral hygiene, diet), professional topical fluoride varnish application 4 times/year.

References