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

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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, who advocate the use of the HT, to restore all carious Ds and Es 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, 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 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 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...
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graphic signs of pulpal pathosis or sepsis (clinical and radiographic findings).

He also had initial caries on 55, 54, 64, 65, 75, 74, 84 & 85 were free from symptoms of pain, and clinical and radiographic signs of pulp pathosis. See Figures 1 (a, b, c, d & e) for clinical features, and Figures 2 (a & b) for radiographic findings.

He was found to have multiple asymptomatic carious primary molars and incisor teeth fitting with the diagnosis of Severe Early Childhood Caries (S-ECC). 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 pulp pathosis or sepsis (clinical and radiographic findings).

He also had initial caries on 55, 54, 64, 65, 75, 74, 84 & 85. 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 a totally 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 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 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 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 HT: Assurance of the absence of any symptoms or signs of pulp pathosis or sepsis (clinical or radiographic assessments).
2) Blue elasticated orthodontic separators were used and left in situ for one week (see Figures 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 and 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 restorations placed (with no LA) on his upper anterior primary incisors and canines, using simple excavation and GIC with a view to eventually resealing composite strip crowns.

Table 2. Sequence of appointments

Figure 1 (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 1 (d & e). 51 remained asymptomatic. Good gingival health and oral hygiene were noted. As his cooperation improved plans are in place to monitor 51 with a view to eventually resealing composite strip crowns.

Figure 2 (a & b): 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 pulp pathosis or sepsis (clinical and radiographic findings).

Figure 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). 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.

Figure 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 (a, b, c, d & e). 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.

Figure 5: Assurance of the absence of any symptoms or signs of pulp pathosis or sepsis (clinical or radiographic assessments).

Figure 6: 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

Figure 7: When two crowns were placed in a single appointment they were diagonally in opposing arches (for example 64 and 84).

Figure 8: 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

Figure 9: When two crowns were placed in a single appointment they were diagonally in opposing arches (for example 64 and 84).

Figure 10: Appointment 1; Assessment, radiographs, explain treatment options; OR, drill-out; appliances removed; FL, coronal onlay (as per HT)
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Discussion

In 2007 a new technique took the paediatric dentists by surprise. 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. Noma Hall started using this method. The HT is primarily a stainless steel preformed crown (SSC), which is improvised to avoid the need for treatment under GA and averted a dental GA in a very young child. A situation difficult to practice on a daily basis.

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 resources and the patient’s family’s lack of cooperation. Although the tooth is asymptomatic and clinically appears to be carious, the amalgam restorations might be an alternative if the tooth is asymptomatic and the SSCs are the restorative materials of choice in multiple surface carious affecting primary molars. The disagreement lies in the method used to apply them.

This report showcased treated dentists to introduce general dental practitioners (GDPs) and specialists in paediatric dentistry (PDs) a new pathway to introduce the child to dental procedures. It was also advantageous after progressing the progression of caries, reducing the chance of caries and pain, reducing the oral plaque of disease and a good source for fluoride. Composite strip crowns will be considered as an alternative if cooperation allowed. Coincidentally 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. Therefore, temporization of open cavities with GIC was a general method to introduce the child to dental procedures. It was also advantageous after progressing the progression of caries, reducing the chance of caries and pain, reducing the oral plaque of disease and a good source for fluoride. Composite strip crowns will be considered as an alternative if cooperation allowed.

The patient was followed up three and six months later. He, nor his parents, had any complaints whatsoever. There were no issues with the occlusion, symptoms or signs of pul- pal pathosis or peptic afflicting the molars. The had been completely recovered. The patient was followed up three and six months post treatment. He had no complaints and the tooth looked good. An X-ray was taken and confirmed that the SSCs was in place. The tooth was asymptomatic and the SSC was in place.

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 that were available to dentists in the fight against dental caries.

Although well designed trials are in place to support the HT, this case highlights that estab- lishing eight carious primary molars in one child, with no to medium term 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 paedi- atric dentistry, who deal with the majority of children’s treatment needs. The HT is a fit modality for the GDP environment, hence this case report.

References