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Modified Hall Crown Technique: A Case Report

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INTRODUCTION

The Hall Technique has continued to gain popularity in clinical practice over the past few years. Dental caries, despite advancements in dentistry, still remain a major health problem across the world today. Studies have shown that conservative techniques as opposed to traditional methods can save time, cost, and avoid more invasive procedures. The Hall crown technique is a method of treating multisurface carious lesions by avoiding invasive procedures and thus potentially saving a child discomfort or even time in the operating room. The Hall Technique is based on the biological principle of atraumatic restorative techniques. By arresting superficial caries and achieving an adequate seal, the carious lesion will not be able to progress farther, thus protecting the primary tooth from premature exfoliation. This seal also can change the plaque biofilm composition to a less cariogenic flora, which can serve to slow down or even halt caries progression in the child's dentition.

CASE DESCRIPTION

In this case report, we introduce a 7 year old male with past medical history significant for B cell ALL; chemotherapy completed in January of 2020. Patient also is significant for an undiagnosed behavioral disorder. The patient was seen previously for an emergency pulpotomy of the lower right primary second molar with local anesthesia due to acute pain in June of 2020, after clearance from oncology. A standard MTA pulpotomy was performed with Activa as a provisional restoration due to F1 behavior and an erupting 6 year molar adjacent to tooth being restored (Fig. A).

In 2021, radiographic examination revealed a successful pulpotomized tooth with a fractured buccal component (Fig. B). The patient was originally booked for an attempt oral sedation but was supposed to undergo neurological evaluation the day of his sedation. Treatment options were presented to the parents including a modified hall crown technique, no treatment, or rescheduling sedation. The modified hall crown technique presented was to reduce the occlusion of the distal lingual cusp, as the distal lingual cusp was in occlusion with the opposing tooth. The parents consented to a modified Hall crown technique for #T. Orthodontic spacers were placed while patient was in protective stabilization device and brought back to the clinic one week later. With consent, 30% Nitrous Oxide was utilized with protective stabilization, and minimal occlusal preparation was performed on the distal lingual cusp and the buccal fracture was smoothed. The separators were removed and a stainless steel crown (LRE6) was cemented on #T with RMGI cement. At a one month post-op examination, the patient presented with the restoration in place and no discomfort and no signs of clinical infection present. A periapical radiograph was taken (Fig. C), revealing no signs of periapical pathology. The parents were extremely pleased with the procedure. The plan was originally to cancel the oral sedation. However, the parents were so happy with the treatment, they opted to attempt an oral sedation with the provider. The remaining treatment was able to be carried out under moderate conscious sedation.

RADIOGRAPHS

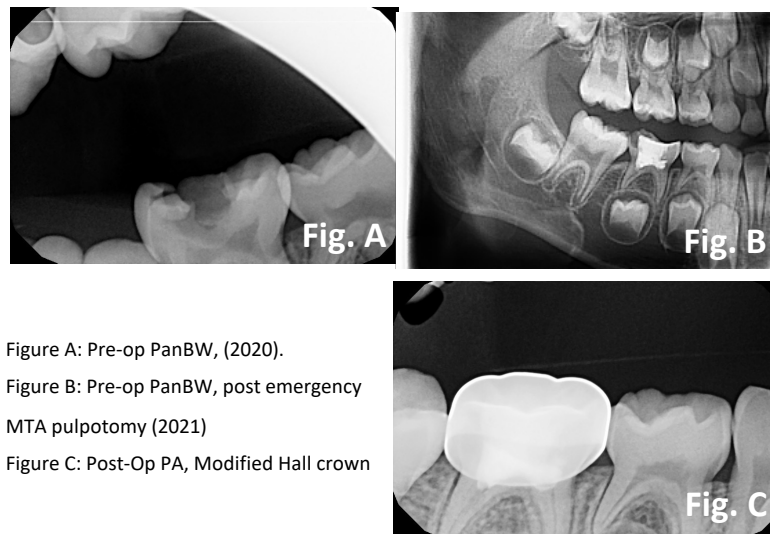


Figure A: Pre-op PanBW, (2020).

Figure B: Pre-op PanBW, post emergency
MTA pulpotomy (2021)

Figure C: Post-Op PA, Modified Hall crown

POST-OP PHOTOGRAPHS

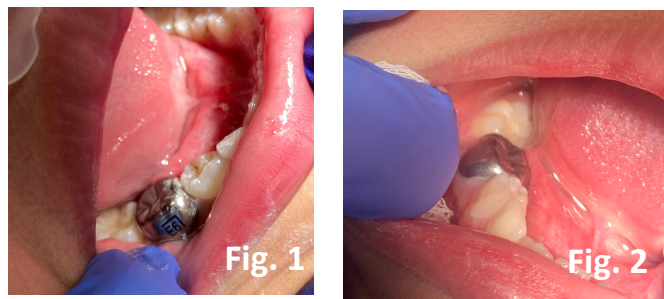


Fig. 1: Immediately following HC cementation.

Fig. 2: 2 month Post-op photo

DISCUSSION

This case report shows that the Hall technique can be extremely beneficial when used judiciously. The Hall technique is traditionally utilized by cementing a stainless steel crown over a caries-affected primary molar without local anesthesia, caries removal, or any tooth preparation. By employing a modified technique in this case, we were able to prevent possible pulpotomy failure and premature loss of a primary tooth. In numerous clinical trials, the Hall technique has performed with a high success rate, suggesting it definitely has a place in pediatric dentistry, especially when access to the operating room is limited and the need for sedation in patients seems to be ever increasing. By employing the Hall technique, or a modified version such as in this situation, we can achieve the goal of avoiding pain, preventing premature loss of a primary tooth essential for growth and development, and improving parent satisfaction by providing care for their child.

Traditional caries removal has a place in dentistry when achievable. However, it is important to be flexible as practitioners of how we approach dental treatment, as patients with special health care needs may not be able to tolerate traditional treatment approaches. In this case, we provided a much needed restoration for a tooth already caries free, however the technique when used traditionally, changes the caries environment of the oral cavity. This is also important for setting the child up for future success. By sealing off bacteria from the rest of the oral environment, bacteria is not able to continue to proliferate, causing the caries cycle to continue to progress and worsen the child's dentition. As practitioners, it is our responsibility to provide the best service to our patients. Prevention is indisputably the most important duty we have for the pediatric population. The Hall technique continues to have high parent satisfaction and low failure rates, deeming it another small step in overcoming barriers to care for our population.

RESOURCES

1. Altoukhi DH, El-Housseiny AA. Hall Technique for Carious Primary Molars: A review of the Literature. *Dent J(Basel)*. 2020;8(1):11. Published 2020 Jan 17. doi:10.3390/dj8010011
2. Ebrahimi, Masoumeh, Shirazi, Alireza S, Afshari, Elham. *Success and Behavior During Atraumatic Restorative Treatment, The Hall Technique, and the Stainless Steel Crown Technique for Primary Molar Teeth*. *AAPD Journal Pediatric Dentistry*. 2020; V 42 (May/June): <https://www.aapd.org/globalassets/media/publications/open-access/187-92.pdf>
3. Kidd EA. 2004 May-Jun;38(3):305-13. dHow 'clean' must a cavity be before restoration? *Caries Res*. oi: 10.1159/000077770. PMID: 15153704.