

# Hall Technique: A Clinical Review

**Dr. Shimoli Shah**, BDS, Government Dental College, Ahmedabad

**Dr. Tripti Lath**, Postgraduate student, Department of Pediatric and Preventive Dentistry,

**Dr. D.Y.Patil Vidyapeeth's** Dr.D.Y. Patil Dental College and Hospital , Pune

**Dr. Radhika Thakkar**, BDS, MPH, AEGD Resident, University of Rochester Medical Center | Eastman Institute for Oral Health

**Dr. Jeel Chanchad** , Bachelor of Dental Surgery, College of Dental Sciences And Research Centre, Ahmedabad

**Dr. Mili Meghpara**, Postgraduate student, Department of Pediatric and Preventive Dentistry, Mahatma Gandhi dental college and hospital, Jaipur

**Dr. Sudhir Laxmanrao Dumne**, Postgraduate student, Department of Paediatric and Preventive Dentistry, Sinhgad Dental College & Hospital, Pune

**Corresponding address:** Dr. Shimoli Shah, 32, Rameshpark Society, Nr. Panchsheel Bus-stand, Usmanpura, Ahmedabad-380013, Email id- [imshimoli@gmail.com](mailto:imshimoli@gmail.com)

*Abstract: Dental caries in primary teeth is considered as the most common oral disease of childhood and has been studied in different countries worldwide. Traditional methods of managing carious primary molars in children include restoration with amalgam, composite resin, compomer, glass ionomer, and stainless steel crowns (SSCs) using conventional tooth preparation or extraction. The Hall technique, a novel method for management carious primary molars where decay is sealed using Preformed Metal Crowns (PMCs), without any caries removal, tooth preparation or local anesthesia. Present review of literature provides insight view about Hall technique.*

**Keywords:** Dental caries, Primary teeth, Stainless steel crown, Hall technique

**Introduction:** Dental caries in primary teeth is considered as the most common oral disease of childhood and has been studied in different countries worldwide.<sup>1</sup> The prevalence rate of early childhood caries (ECC) is between 1% and 12% in most developed countries.<sup>2</sup> However, the prevalence is higher in less developed countries, reaching 70%.<sup>3</sup>

Traditional methods of managing carious primary molars in children include restoration with amalgam, composite resin, compomer, glass ionomer, and stainless steel crowns (SSCs) using conventional tooth preparation or extraction. Recently, silver diamine fluoride (SDF) is being used as a non-invasive treatment option.<sup>4,5</sup>

Stainless steel crowns (SSC) are the most commonly used restorative material in primary teeth and it is often used as an interim restoration in permanent teeth in certain condition. The Hall technique, a novel method for management carious primary molars where decay is sealed using Preformed Metal Crowns (PMCs), without any caries removal, tooth preparation or local anesthesia.<sup>6</sup> This technique is named after Dr Norna Hall, a general dental practitioner from Scotland, who developed and used the technique for over 15 years until she retired in 2006.<sup>7</sup>

Using the Hall technique, the crown is placed without local anesthesia, caries removal, or tooth preparation. An appropriate size of PMC should be chosen and filled with glass ionomer cement. Then, the crown is fitted over the carious primary molar by either the dentist's finger pressure, or the child's biting force.<sup>8</sup> The Hall technique has very straightforward biological principles. It can arrest caries and protect the primary tooth until shedding. By using the Hall technique, the superficial plaque layer, which is the most essential layer in the biofilm for caries progression, is left and sealed along with the carious lesion. As a response, the plaque biofilm composition will be changed to a less cariogenic flora. Therefore, this technique may arrest or at least slows down caries progression in primary teeth.<sup>9</sup> With the Hall Technique, the process of fitting the crown is quick and non-invasive.<sup>7</sup> Present review of literature provides insight view about Hall technique.

### **Indication of Hall technique<sup>6</sup>**

- Moderately advanced Class I lesion where the extent of the cavity would make it difficult to obtain a good seal with adhesive material following partial caries removal.
- Proximal Class II lesions, cavitated or noncavitated.
- Occlusal Class I lesions, noncavitated if the patient is unsuitable to accept a fissure sealant or conventional restoration.
- Occlusal Class I lesion cavitated, if the patient is unable to accept partial caries removal technique.
- Hall technique is mostly indicated to be used in routine general dental practice

### **Contraindication of Hall technique<sup>6</sup>**

- Signs of irreversible pulpitis Clinical or radiographic signs of pulpal involvement or periradicular pathology, periapical pathology, interradicular radiolucency
- Buccal sinus
- Crowns that are so broken down that they would be considered unrestorable with conventional technique
- Extensive mesio-occlusal caries
- Occasional pain
- Pulp polyp
- Insufficient sound tissue left to retain crown
- Patient co-operation where the clinician cannot be confident that the crown can be fitted without endangering the patient's airway.
- Risk of bacterial endocarditis
- Patient unhappy with esthetics.

### **Procedural steps for Hall technique**

**Case selection:** It involves diagnosing asymptomatic early enamel and dentine caries in a primary molar; clinically and radiographically (using bitewings usually or a periapical). Bitewings or periapicals may typically show approximal lesions that are not visible clinically

but are diagnosed radiographically. There should be no signs or symptoms of pulpal pathosis; the lesion should be detected prior to the development of symptoms.<sup>10</sup>

**Access the tooth shape:** contact points areas and the occlusion.

- **Tight contacts:** If there is tight contact, separate the teeth with orthodontic elastic separators through mesial and distal contacts. Recall the patient 3–5 days later for crown placement after gaining space.
- **Crown morphology:** Often there is marginal ridge breakdown in one molar; there can be migration of the adjacent molar into the cavitated area. This makes difficulties in Hall technique of crown placement without making adjustments to the tooth or crown. In such cases rebuild the marginal ridge and allow the separators to place. Adjust the crown with band forming pliers. Check for occlusion in relation to anterior overbite, check buccal relationship of the tooth to be crowned with its opposing number.<sup>6</sup>

**Protect the airway:** It is important before the crown is placed, to ensure no danger to child by inhalation or swallowing. This is done by sitting the child upright. Otherwise gauze swab square can be placed between tongue and tooth where crown to be fitted. It should be extended to the palate and round the back of the mouth in front of the faces. Alternatively a piece of micropore tape can be used to secure crown.<sup>6</sup>

**Crown selection and placement:** The patient is placed 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 make sure that it fits with gentle pressure applied to the SSC over the contact points but not completely through. The SSC should be neither too loose nor too tight. The crown should “spring back” from the contact points while trying it on the tooth at this stage.<sup>10</sup>

**Loading with cement and placement of crown:** Dry the inside part of crown using cotton roll. Load the crown with GIC luting cement and avoid air blows and voids. Place the crown over the tooth using finger pressure. Maintain firm finger pressure until cement sets. While removing finger make sure that crown is not falling off. Ask the child to bite on crown before cement sets. Wipe the excess cement, check fit and second stage seating-after cementation remove excess cement from crown margin using explorer.<sup>6, 10</sup>

**Follow-up:** All teeth treated with the Hall technique should be followed up clinically and radiographically following the same protocols as conventional treatments. The tooth should be assessed for pain, sinuses, swelling and radiographically for signs of interradicular radiolucency or root resorption.<sup>11</sup>

#### **Advantages of Hall technique<sup>6</sup>**

1. Faster fitting of crown
2. Non-invasive procedure compared to conventional SSC procedure
3. No need to remove caries and no need of tooth preparation

4. SSC “pushed” onto primary molar crown
5. Less demanding for patients
6. Less demanding for dentists
7. No need of LA
8. No need for rubber dam

#### **Disadvantages of Hall technique<sup>6</sup>**

1. Esthetically not acceptable
2. Temporary bite opening
3. Caries progression cannot be assessed by radiographically or clinically

**Conclusion:** The Hall technique can be considered as a conservative caries management procedure for treating caries lesions in primary dentitions. It has become a routine dental treatment at specialist’s practices. A Hall crown technique is described as a procedure that requires no tooth preparation, with caries sealed in, as an alternative to restorative treatment procedures. The Hall technique is considered as most cost-effective technique compared to other conventional treatments.

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