Current Practice of Stainless Steel Crowns on Hypoplastic Permanent 1st Molars Among Pediatric Providers

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Introduction

Molar-incisor hypomineralization (MIH) is a developmental enamel defect affecting the first permanent molars and often the permanent incisors. Presentation varies from mild discoloration to full-crown involvement and can significantly impact dental outcomes in young patients.[1] Affected teeth have reduced mineral content and increased protein and water levels, compromising enamel integrity. As a result, these teeth are more prone to caries, sensitivity, fractures, and post-eruptive breakdown (PEB), which may lead to substantial tooth structure loss or even extraction in severe cases.[1] [2] Given its impact, MIH is a growing concern among pediatric dentists.

The etiology remains unclear, though it is believed to involve genetic and environmental factors during early tooth development. Studies suggest links to prenatal and early childhood exposures, such as maternal illness, premature birth, low birth weight, high fevers, antibiotic use, and childhood illness.[1] [2] Teeth with MIH are 4.6 times more likely to develop caries than unaffected teeth. With a U.S. prevalence of 10% to 13%, the condition poses a rising challenge in pediatric dentistry.[2]

Treatment varies with severity. Mild cases may be managed using remineralizing agents, silver diamine fluoride (SDF), or sealants.[4] [5] Moderate to severe cases often require restorative intervention.[2] Severely affected molars are frequently restored with adult prefabricated stainless steel crowns (SSCs) to preserve tooth structure, manage sensitivity, and restore function.

SSCs typically require significant preparation, and extensive caries may complicate outcomes. Placement with a spacer and no prep is possible, though esthetic concerns remain.[2] [3] The use of SSCs remains debated, especially when less invasive alternatives are available. This study aims to assess pediatric dentists' comfort level with using adult SSCs for permanent first molars with PEB due to MIH.

Objectives

This study aims to evaluate how frequently stainless steel crowns are used for severely affected permanent first molars with post-eruptive breakdown and to assess the comfort level of pediatric dental practitioners from different training backgrounds, geographic regions, and years of clinical experience in utilizing stainless steel crowns for these cases.

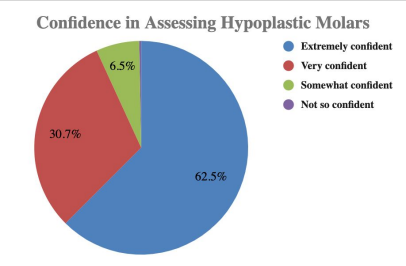
Study Design & Methods

This cross-sectional study was conducted over a two-month period, from March to April 2025, using an 10 question electronic survey distributed via SurveyMonkey. The survey was emailed to approximately 10,000 active members of the American Academy of Pediatric Dentistry (AAPD). The target population included currently practicing pediatric dentists and residents within the United States.

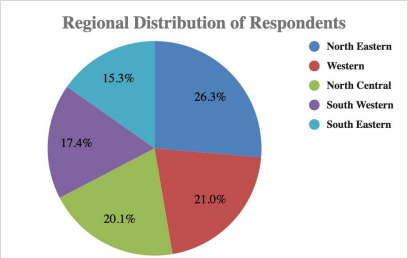
Following Institutional Review Board approval from Montefiore Medical Center, a list of AAPD members was obtained, and a study invitation was disseminated via email. Participation was voluntary, and recipients were given the option to opt in or out of the study. There were no exclusion criteria based on ethnicity, gender, race, years of clinical experience, or practice location.No patient identifiers were collected. Completion of the survey constituted informed consent. All responses were anonymous, and no identifying information was recorded. The compiled data were analyzed using descriptive statistics.

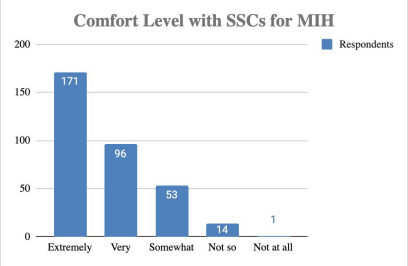
Results

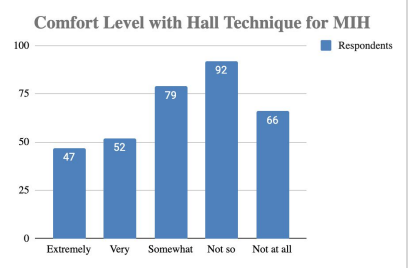
A total of 336 pediatric dental providers across the U.S. completed the survey. For the purposes of this presentation, a subset of four representative survey questions was selected to illustrate key trends in provider confidence and clinical practice patterns. Most (93.2%) reported being extremely or very confident in assessing hypoplastic first molars, and 79.5% expressed moderate to high comfort placing adult SSCs on MIH-affected molars with PEB. In contrast, only 29.5% felt highly comfortable using the Hall technique. Regional responses were diverse, with the North Eastern AAPD district most represented (26.2%), followed by the Western and North Central districts.



Results







Discussion and Conclusion

Findings indicate that the majority of pediatric dental providers feel confident in their ability to assess hypoplastic first permanent molars and are comfortable utilizing SSCs as a restorative option. Over 79% of respondents reported moderate to high confidence in placing adult SSCs on severely compromised molars with PEB. In contrast, comfort with the Hall technique—a minimally invasive approach that utilizes spacer placement and no tooth preparation—was more variable, with less than one-third of respondents reporting high comfort levels.

Geographic trends and provider training backgrounds may influence restorative preferences. The data underscore the need for enhanced education and clinical exposure to newer or less commonly practiced techniques, such as the Hall technique, particularly during pediatric dental residency training. Uniform guidelines may also help bridge regional discrepancies and promote consistent treatment outcomes.

Adult-sized SSCs are widely utilized by pediatric providers to restore severely affected hypoplastic first permanent molars. Confidence in their placement is generally high across all practice settings and training backgrounds. However, more variability exists in the adoption of alternative methods such as the Hall technique. As this study was descriptive in nature, no hypothesis testing or p-values were calculated. The reported results reflect self-reported trends rather than causal associations. Future studies with inferential statistics and clinical outcome data are necessary to guide evidence-based treatment protocols and optimize care for patients with MIH.

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