

Restorative Choices for Class III Caries in Preschoolers: A Retrospective Study

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Abstract

Background: In contemporary dentistry, a variety of restorative materials are available for treating tooth decay in both children and adults. Effective restorative care requires a comprehensive approach that considers several factors, such as the patient's risk of future cavities, the durability and safety of the materials, the stage of tooth development, and the patient's anticipated cooperation. This study aimed to identify the preferred restorative method for front teeth in children aged 3–6 years. **Materials and Methods:** Data were collected from pediatric dental patients aged 3–6 years who had Class III caries in their upper front baby teeth. Cases involving pulp involvement were excluded. The study focused on 200 teeth that met the inclusion criteria based on age, gender, and the chosen restorative method. **Results:** In the younger group (3–4 years), 91.4% of patients received strip crowns, whereas only 8.5% received glass ionomer cement (GIC) restorations, indicating a strong preference for strip crowns by dentists. Similarly, in the older group (4–5 years), 94.3% received strip crowns and 5.6% received GIC. Overall, strip crowns were preferred in 93% of cases, a statistically significant difference. These findings align with other studies in the field. **Conclusions:** Within the limitations of this study, it is clear that dentists favor strip crowns over GIC for restoring Class III caries in the upper front baby teeth of children aged 3–6 years. This preference is statistically significant, suggesting a clear clinical advantage for strip crowns in this specific context.

Keywords: Crown, Dental caries, Lateral incisors, Restorative materials.

INTRODUCTION

Throughout history, dentists have favored different materials for restoring teeth. Today, we frequently use tooth-colored materials, and the choice often depends on the patient's financial situation.^[1] For children, however, comfort and appearance are the top priorities.^[2] Because it can be difficult to manage a young patient's time, dentists strive to minimize the treatment duration while achieving excellent results.

Several restorative materials have been introduced recently to fix teeth in both adults and children.^[3] Restoring a tooth is part of a broader oral health plan that considers many factors, such as the patient's risk of getting cavities, the material's durability and safety, the stage of tooth development, and how cooperative the patient is likely to be.^[4]

The invention of strip crowns in the 1970s gave pediatric dentists a durable and attractive way to restore multiple front teeth.^[5] This technique is considered optimal for fixing upper incisors with significant or widespread decay. There are various treatment options for cavities affecting upper front baby teeth. In 1987, Grosso and others described a method for creating

composite resin cores using strip crowns; this approach is quick and produces good esthetic results.

Because children are also conscious of how their teeth look, the color, shape, and texture of the tooth surface are vital for an attractive smile. In addition, a child with missing or decayed teeth may experience functional problems, such as pain, lisping, and difficulty speaking or swallowing.

Pediatric dentistry requires minimal clinical time, especially in emergencies that need more time. Longer procedures lead to less patient cooperation. Strip crowns are the best choice in this situation.

In pediatric dentistry, minimizing clinical time is crucial, especially in complex cases requiring more time and where

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patient cooperation is limited. Strip crowns offer an attractive option for esthetic reconstructions of severely damaged teeth. They cover most of the prepared tooth structure, produce good esthetic results, require little operative time, are easy to perform, and are affordable.

Glass ionomer has been used since the 1970s. Initially, it had limitations, including poor handling properties, a tendency to wash out of the repair, and difficulty polishing. Today, glass ionomers are much improved; they are easier to handle, more wear-resistant, and more esthetically pleasing. Therefore, this study aimed to determine the preferred method for restoring front teeth in children aged 3–6 years.

MATERIALS AND METHODS

We conducted a retrospective study in the pediatric dentistry department of a private dental college and hospital. The institutional review board of the college granted ethical approval before we started the study.

We used systematic sampling to select patients aged 3–6 years who received treatment for Class III caries in their upper front baby teeth (central incisors, lateral incisors, and canines) at the dental college. The study included a total of 200 teeth that met specific criteria.

Inclusion criteria

- Patients treated for Class III caries
- Teeth that received the chosen restorative material.

Exclusion criteria

- Class III caries involving the pulp
- Children younger than 3 or older than 6 years

We divided the included patients into two groups based on age:

- Group A: 3–4 years old (47% of patients)
- Group B: 5–6 years old (53% of patients).

We compared the preferred restorative method in each group. The collected data included age, gender, and the chosen restorative material.

Statistical analysis

Data were gathered and produced from the records of the kids in the 3–6 years old age range, and the Statistical Package for Social Sciences was used to analyze the information. The Chi-square test was used for data analysis. The chosen $P = 0.05$.

RESULTS

We meticulously documented the demographic characteristics of each patient as part of their medical history. Although we observed a slightly higher number of subjects (6%) in Group B compared to Group A, this difference in the distribution of ages between the two groups was not statistically significant, indicating a relatively balanced representation of age ranges across the groups Figure 1.

Our investigation into the relationship between the age of the children and the type of restoration they received revealed

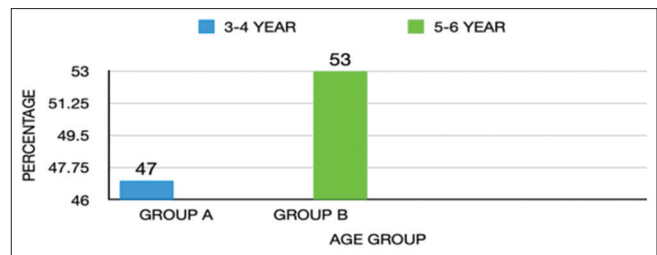


Figure 1: The percentage distribution of the age group of 3–6 years old

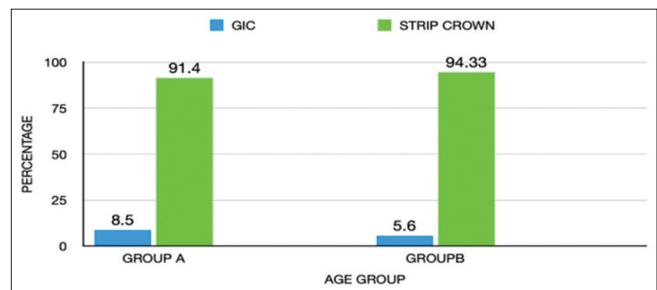


Figure 2: The association between the age of children who underwent restorations

a clear inclination toward strip crowns over glass ionomer cement (GIC) restorations, irrespective of the child's age group. In Group A, comprising children aged 3–4 years, an overwhelming majority of 91.4% were treated with strip crowns, whereas only 8.5% received GIC restorations, reflecting the dentists' preference for this method in younger patients. Similarly, in Group B, consisting of children aged 4–5 years, the preference for strip crowns was even more pronounced, with 94.3% of children receiving this treatment compared to a mere 5.6% who underwent GIC restorations. This consistent preference for strip crowns across both age groups was statistically significant ($P < 0.005$), underscoring its clinical relevance Figure 2.

Overall, our findings demonstrate a strong trend toward the utilization of strip crowns in pediatric restorative dentistry, with dentists opting for this technique in an impressive 93% of cases. This suggests that strip crowns were widely recognized as a favorable approach for managing dental restorations in young children, likely due to factors such as their ease of application, esthetic outcomes, and overall effectiveness in addressing the specific needs of this patient population.

DISCUSSION

Our study's findings highlight a clear preference among dentists for strip crowns over GIC restorations when treating young children. This preference seems to stem primarily from the desire to minimize the time a child spends in the dental chair, a crucial consideration when dealing with potentially anxious or restless young patients. The expeditious nature of strip crown placement allows dentists to complete the procedure swiftly and efficiently, thus reducing the child's overall discomfort and stress.

This observation aligns seamlessly with existing research in the field of pediatric dentistry. A study conducted by Devi *et al.*^[6] further solidifies the notion that crowns, in general, are a favored choice for addressing Class III caries in the primary maxillary lateral incisors of children aged 3–6 years. This suggests a broader trend toward prioritizing durable and long-lasting solutions for dental restorations in young children, even if they necessitate slightly longer treatment times compared to GIC restorations.

The advantages of strip crowns extend beyond mere expediency. Multiple studies have underscored their positive impact on both the esthetics and functionality of restored teeth. Valdeci de Souza's *et al.* 2018^[7] research vividly illustrates how composite resin restorations, facilitated by the use of strip crowns, can significantly enhance the appearance and function of a child's upper front teeth. These improvements, in turn, contribute to a marked elevation in the child's quality of life, as well as that of their family. A confident smile can have a profound effect on a child's self-esteem and social interactions, making the esthetic benefits of strip crowns particularly valuable.

Dr. Ankita Gupta's 2022 study echoes these sentiments, emphasizing the swift clinical turnaround and superior cosmetic results associated with strip crown-assisted composite resin crowns. The ability to restore a child's smile and, consequently, their self-assurance, underscores the transformative potential of this restorative technique. By addressing both the functional and esthetic aspects of dental restoration, strip crowns empower young patients to embrace their smiles and navigate social situations with confidence.

The efficacy of strip crowns is further supported by Dr. Garima Khandelwal's observations.^[8] She highlights their remarkable ability to facilitate the restoration of primary incisors, even in challenging scenarios where minimal tooth structure remains following preparation. This versatility makes strip crowns an invaluable tool in the pediatric dentist's arsenal, enabling them to address a wide range of clinical presentations with confidence and precision. However, Dr. Khandelwal also prudently emphasizes the necessity of conducting long-term clinical trials to gain a more comprehensive understanding of the advantages and potential drawbacks of this technique. Such trials would shed light on the long-term success rates and any unforeseen complications associated with strip crown restorations, ultimately informing evidence-based clinical decision-making.

While the evidence overwhelmingly supports the use of strip crowns in pediatric dentistry, it is essential to acknowledge the inherent limitations of all-composite resin restorations. Research by Vanoorbeek *et al.*^[9] reveals that these restorations, while esthetically pleasing and functionally sound in the short term, may exhibit lower success rates compared to all-ceramic restorations over 3 years. This discrepancy underscores the ongoing need for research and innovation in the field of restorative materials, with the ultimate goal of developing solutions that offer both immediate benefits and sustained long-term durability.

In conclusion, our study, in conjunction with existing research, paints a compelling picture of strip crowns as a preferred restorative option for young children. Their ability to expedite treatment, enhance esthetics, and restore function makes them a valuable asset in the realm of pediatric dentistry. However, as with any clinical intervention, it is crucial to remain cognizant of the potential limitations of strip crowns and to continue exploring novel restorative materials that can further elevate the standard of care for our youngest patients. The pursuit of excellence in pediatric dentistry necessitates a commitment to evidence-based practice, ongoing research, and a dedication to providing children with the highest quality dental care possible.

CONCLUSIONS

The overwhelming preference for strip crowns in pediatric dentistry, evidenced by our study and corroborated by extensive research, underscores their efficacy and versatility in addressing the unique challenges of restoring primary teeth. Their ability to combine efficiency, esthetics, and functionality positions them as a valuable tool in the pediatric dentist's repertoire. However, ongoing research and innovation remain essential to further refine restorative techniques and materials, ensuring that children receive the most effective and durable dental care possible. As we continue to advance our understanding of pediatric oral health, the commitment to evidence-based practice and the pursuit of optimal patient outcomes will remain paramount.

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