

Comparison of Restorative Materials in Class III Dental Caries in Primary Anterior Teeth in 3–6 Year Child Patient: A Retrospective Analysis

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Abstract

Background and Aim: In the modern era, array of restorative materials are discovered to restore the tooth in both children and adults. Restorative care is a part of a comprehensive oral health treatment plan that takes many factors into consideration including: caries-risk assessment, the durability of dental materials, safety, developmental status of the dentition, anticipated compliance, and patient's ability to cooperate for treatment. Hence, the aim is to find the preferred method used to restore the anterior tooth of pediatric patients under the age of 3–6 years. **Materials and Methods:** Data were collected from pediatric patients under the age of 3–6 years from the pediatric department of dentistry for the choice of restorative materials of maxillary primary anterior under class-III caries. Class-III caries with the involvement of pulp were excluded. A total of 200 teeth met with inclusion criteria based on age, gender, and choice of restorative method, and the study was done on those teeth only. **Results:** In Group A (3–4 years), 91.4% of patients opted for strip crowns and only 8.5% of patients opted for glass ionomer cement (GIC) restorative materials on the basis of dentist choice. In Group B (4–5 years), 94.3% of patients opted for strip crowns and only 5.6% of patients opted for GIC restorative material method based on dentist preference. Overall, in 93% of patients, dentists prefer strip crowns rather than GIC restoration. Similar results are also found in other studies. **Conclusion:** Within the limitations of the study, it was determined that dentists prefer the strip crowns as a choice of restorative method over the GIC in Class-III dental caries in primary maxillary lateral incisors for children under the age of 3–6 years, and there is a statistically significant difference in the choice of restorative material.

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

INTRODUCTION

Different restoration materials were preferred in various eras. In today's society, tooth-colored materials are frequently used, and patients' preferred choices depend on their socioeconomic standing. However in the case of pediatric patients, comfort and appearance come first. Time management is typically challenging when treating juvenile patients; thus, dentists always strive to perform the least amount of dental treatment possible while still producing excellent results.^[1,2]

A variety of restorative materials have been developed in the contemporary era to repair teeth in both children and adults. Restorative care is a component of a comprehensive oral health treatment plan that takes into account a variety of factors, such as caries-risk assessment, durability of dental materials, safety, dentition development status, expected compliance, and patient cooperation.^[3,4]

The invention of strip crowns in the 1970s allowed pediatric dentists to restore several important incisors in a sturdy and fashionable manner. This technique is thought to be the best for reconstructing maxillary incisors with extensive or multi-surface caries.^[5,6] There are various treatment methods available for carious lesions that affect the upper anterior deciduous teeth. The strip crown approach for the fabrication of composite resin cores, which is quick and has acceptable esthetic results, was described by Grosso *et al.* in 1987.^[7,8]

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Since youngsters also have an esthetic sense of their teeth, the color, shape, and textures of the tooth surface are crucial for an attractive smile. In addition, a youngster with missing or rotting teeth may experience functional issues such as discomfort, stuttering, and trouble speaking or swallowing.^[9,10]

Pediatric dentistry requires a minimum amount of clinical time, particularly in emergency scenarios that call for more time. Longer clinical working times show less patient collaboration precise moments. Strip crowns are the greatest option in this situation.

In pediatric dentistry, it is critical to cut down on clinical time, particularly in more complicated cases where more time is needed and patient involvement is minimal. Therefore, the use of strip crowns is an intriguing alternative in cases of esthetic reconstructions for restoration of severely damaged dental crowns because it allows coverage of the majority of the prepared remaining structure, promotes a satisfactory esthetic result, requires little operative time, is simple to carry out, and is affordable.^[11-13]

Since being developed as a dental material in the 1970s, glass ionomer has been in use. There were several restrictions on the substance when it was first introduced as a restorative material. The substance was not very polishable, had poor handling properties, and tended to wash out of the repair over time. Glass ionomers have significantly improved and changed since their invention. Today's glass ionomers are easier to handle, have better wear resistance, and have better esthetics than the original glass ionomers.^[14] Hence, the aim of the present study was to find the preferred method used to restore the anterior tooth of pediatric patients under the age of 3–6 years.

MATERIALS AND METHODS

The retrospective study was conducted in the department of pediatric dentistry of Private Dental College and Hospital. Ethical approval was obtained from the Institutional Review Board of the college and ethical clearance certificate of approval was obtained prior to the start of the study.

The study population included patients who underwent treatment for Class-III caries in a private dental college by means of systematic sampling. Data were collected from pediatric patients between the age of 3 and 6 years, from the pediatric department of dentistry for the choice of restorative materials of maxillary primary anterior (central incisor, lateral incisor, and canine) under class-III caries. A total of 200 teeth that meet the inclusion and the exclusion criteria were included in the study.

The inclusion and exclusion criteria followed in the study were as follows:

Inclusion criteria

Patients who underwent treatment for classic caries in Class-III, and patients with teeth met with the restorative material of choice were included in the study.

Exclusion criteria

Patients with Class-III caries with involvement of pulp, children below the age of 3 years and more than 6 years of age were excluded from the study.

The total of the included patients was divided into two groups on the basis of the age as follows: in Group A there were patients with 3–4 years of age and in Group B, there were patients with 5–6 years of age. There were 47% of the patients belong to Group A, and in Group B, there were 53% of the total patients. In each of included groups, the choice of the restorative method was compared superlatively. Data were collected under the following parameters age, gender, and choice of restorative materials.

Statistical analysis

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

RESULTS

Demographic characteristics were recorded as per the part of the history record. The distributions of the groups as per age were represented in Chart 1. It depicts the percentage distribution of the age group of 3–6 years old. The X-axis represents the age group of 3–6 years old and the Y-axis represents the percentage distribution. In Group B, 6% higher number of individuals falls as compared to Group A, the distribution was found to be non-significant.

Chart 2 depicts the association between the age of children and the percentage of children who underwent restorations. The X-axis represents the age of the children and the Y-axis represents the percentage of children who underwent restorations. GIC: Glass-ionomer cement and strip crown.

In Group A (3–4 years) 91.4% of patients opted for strip crowns, and only 8.5% of patients opted for GIC restorative materials based on dentist choice.

In Group B (4–5 years) 94.3% of patients opted for strip crowns and only 5.6% of patients opted for GIC restorative material method based on dentist preference $P < 0.005$. Hence, the result was found to be statistically significant. Overall, in 93% of patients, dentists prefer strip crowns rather than GIC restoration.

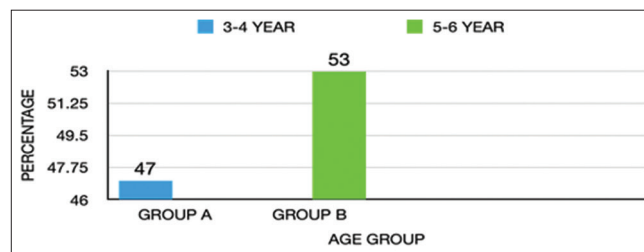


Chart 1: Depict the percentage distribution of age group of 3–6 years old. The X-axis represents the age group of 3–6 years old Y-axis represents the percentage distribution

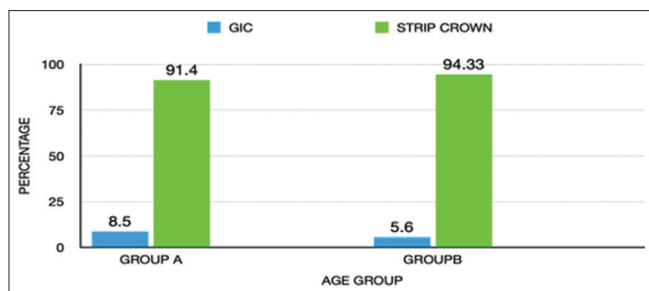


Chart 2: Association between the age of children and percentage of children who underwent restoration. The X-axis represents the age of the children and the Y-axis represents the percentage of children who underwent restorations. GIC: Glass ionomer cement and strip crown

DISCUSSION

In our study, we discovered that due to the shorter clinical time in the patient's mouth, dentists chose strip crowns over GIC restoration methods. Dentists prefer strip crowns to GIC repair in 93% of all patients. Other researchers have produced similar findings. Crowns are a more commonly employed option for restorative material in Class-III dental caries in primary maxillary lateral incisors in children between the ages of 3 and 6 years old, according to Devi *et al.*^[15]

According to de Souza *et al.* 2018, Composite resin restorations were done on all of the child's top anterior teeth to restore their appearance and functionality, improving the child's and her family's quality of life. With the aid of strip crowns, composite resin crowns might be prepared more quickly with superior cosmetic results, restoring the patient's smile and self-confidence in the process.^[16]

The use of strip crowns in the production of composite resin crowns, according to Dr. Gupta 2022, led to a quicker clinical turnaround, a superior cosmetic result, and the restoration of the patient's smile and personality.^[16]

Dr. Garima Khandelwal claims that strip crowns make it simple to restore primary incisors even when there is little tissue left behind after preparations and that they produce attractive outcomes. To examine the benefits and drawbacks of this approach and assess the clinical success or failure of these restorations, however, long-term clinical trials are required.^[17]

All-composite resin single-tooth restorations have worse success rates than all-ceramic restorations, according to Vanoorbeek *et al.*, for up to 3 years of function. All-ceramic crowns continue to be the treatment of choice for CAD/CAM-generated metal-free single-tooth restorations because of the inferior esthetics and wear resistance of all-composite resin crowns.^[18]

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CONCLUSION

In Class III dental cavities in primary maxillary lateral incisors of children aged 3–6 years, it was found that dentists favor strip crowns over GIC as a restorative treatment.

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