

## Composite Resin Strip Crowns used for Rehabilitation of Maxillary Central Incisor: Two Cases Report

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### Abstract

Lack of teeth at maxillary anterior region causes aesthetic, functional and psychologic problems for patients. There are alternative treatment options for single missing tooth as; 3-unit fixed prothetic, removable partial dentures, Maryland bridge, implant. However, the developments in adhesive technology condused to production of new and strong composite materials.

Composite resin strip crowns (SC) have been in use more than 2 decades on the purpose of restoring carious primary teeth. In spite of being used for such a long time, there is an inadequacy of literature concerning the clinical success of these crowns.

In this clinical report, aesthetic and conservative rehabilitation of two cases of maxillary anterior one missing tooth by composite resin strip crowns.

In both cases, lack of maxillary right incisor resulted from trauma or congenital factors was observed. With restriction of the missing teeth places because of migration of adjacent teeth.

**Keywords:** Composite, Strip Crown, Aesthetic

### Introduction

Lack of teeth at maxillary anterior region cause aesthetic, functional and psychologic problems for patient. Sensitive and rigorous attitude is required even though only one missing tooth exist [1]. Lack of single maxillary anterior tooth occurs due to; congenital facts, trauma, recurrent caries, root resorptions, endodontic complications and periodontal diseases [2,3].

There are alternative treatment options for single missing tooth as; 3-unit fixed prothetic removable partial dentures, Maryland bridge or implant [4]. The developments in adhesive technology condused to production of new and strong composite materials. Thus, conservative and aesthetic treatment approaches came into prominence [5].

Composite resin strip crowns (SC) have been in use more than 2 decades to restore carious primary teeth. In spite of being used for a long time, there is an inadequacy of literature concerning the clinical success of these crowns [6]. The SC is the most aesthetic of all available restorations for treatment of carious primary teeth. SC requires maximum technical precision as well [7]. Lack of attention in: selection of patient, saliva or bleeding control, adhesive applications and addition of resin composite material may cause failure [7].

This case report introduce the aesthetic and conservative rehabilitation of maxillary anterior one missing tooth in two patients by composite resin strip crowns (Table 1).

### Case Reports

#### Case 1

A 10 - year old girl applied to Dicle University Faculty of Dentistry Department of Pediatric Dentistry clinic with the lack of maxillary right central incisor. She had slipped and fallen while running and her maxillary right incisor had been avulsed. She remarked that, she had applied to faculty of dentistry before for treatment and first session of the treatment had been performed but she had not gone to further appointments. Family stated that, they had informed about root fracture by the previous doctor. The medical history of the patient was unremarkable. Extraoral examination did not show any

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Advantages of using strip crowns	Problems that may be encountered when using strip crowns
The strip crown technique is a quick, simple and effective method for the aesthetic restoration of incisors.	Tearing of strip crown form when trimming.
It provides minimum chair-side time with a single visit that is quite important for young trauma patients.	Splitting of filled crown form when sitting it.
Minimum finishing and polishing applications are needed.	Difficulty in stripping off crown form.

Table 1: Advantages and disadvantages encountered when using strip crowns



Figure 1: Intraoral view of case 1

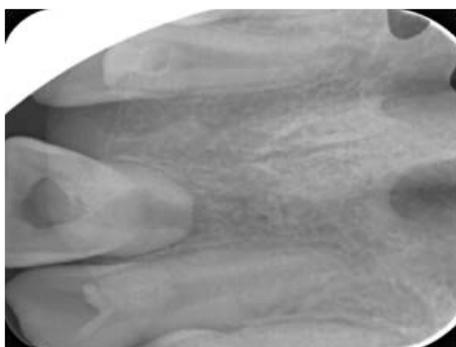


Figure 2: Radiographic view of case 2

pathology. The intraoral examination revealed the mesialization of maxillary right lateral incisor toward missing tooth so that, the space of right central incisor was contracted (Figure 1). The root canal cavity of maxillary left central incisor, which was performed by the previous doctor while the first session of the treatment was observed. The periapical radiography revealed a huge root resorption of maxillary left central incisor (Figure 2).

By taking aesthetic expectations into consideration, available restoration alternatives were presented to the family as; gaining the missed part of the space because of the mesialization of maxillary lateral incisor with orthodontic treatment and performing the final restoration by fixed prosthetic restoration or implant. But the family refused this treatment plan due to economical issue. Therefore, more economic and conservative treatment plan was presented. Consequently, the admitted treatment plan was restoring the maxillary right lateral incisor like maxillary left central incisor.

Ahead of aesthetic rehabilitation, root canal treatment of maxillary central incisor, which has a large part of root resorption, was initiated. Following the root-canal cavity, ISO #60 Ni-Ti

hand file (Dentsply Maillefer, Ballaigues, Switzerland) was used to estimate the working length. Root canals were shaped up to #80 Ni-Ti file. During root canal instrumentation, 1% NaOCl and 2% chlorhexidine solutions were used for irrigation. Finally root canal was dried with sterile paper points (Gapadent, Germany) and CaOH (Sultan, Healthcare Inc, Englewood, NJ, USA) was used as a medicament for 10 days. At the second session, following the irrigations and drying with sterile paper points, mineral trioxide aggregate (MTA) (Angelus White, Londrina, PR, Brasil) was placed into the root canal by MTA carrier (Micro Apical Placement System, Produits, Dentaires, Vevey, Switzerland) and pluggers (Maillefer, Dentsply). A periapical radiograph was taken in order to check the position of MTA (Figure 3). The canal orifice was sealed with cotton pledget and Cavit (ESPE, Seefeld, Germany) temporary filling material.

Gingivectomy was performed at the same session. At the following session, upper right lateral incisor was etched by 35% phosphoric acid (scotchbond Multi- purpose Etchant; ESPE, ABD) 30 seconds. The bonding agent (Single Bond, 3M-ESPE, ABD) was polymerized 10 seconds with LED light device. After the selection of an appropriate size strip crown, it was modified in accordance with the size of the left incisor by scissors. In the sequel, a gap was created at the palatal surface of strip crown in order to eliminate the excess composite. Finally, composite resin was applied into the strip crown and was adapted to the tooth which was etched and bond agent application was performed before. Than, it was polymerized by LED light device from different ways for 20 seconds. Following the polymerization, strip crown was separated from the tooth surface by sond. Small adjustments were needed to give proper morphology to the tooth. Finally, finishing and polishing were performed by aluminium oxide discs (Soflex, 3M ESPE Dental AG, MN, USA) (Figure 4).



Figure 3: The position of MTA



Figure 4: Final view of case 1

## Case 2

A 10-year-old girl applied to our clinic with aesthetic complaint due to congenital lack of upper right incisor (Figures 5 and 6).

The optimum treatment alternative was explained to the patient as prosthetic rehabilitation or implant surgery following orthodontic treatment. However, orthodontic treatment was not accepted by the patient's family because of economic failure. Thus, strip crown technique, which is an alternative aesthetic rehabilitation, was described to the family and following their acceptance, treatment was performed (Figure 7). The stages were practised with the same order and technique as the previous patient (Table 1).

## Discussion

Fixed or removable dentures; implants and adhesive bridges are the principle treatment alternatives for the lack of anterior single tooth because of different reasons [8,9]. However, the practitioners may encounter some difficulties while these

treatment performances. The systemic health and economic conditions, aesthetic expectations, the size and positions of available teeth, distance between teeth are significant factors for selection of proper treatment option [10]. In recent years, practitioners tend toward more conservative treatment options in order to maintain more tooth structure [8,9].

There are some disadvantages for both practitioner and patients while the prosthetic rehabilitation of missing teeth. Some of them are; the preparation of abutment teeth, excessive number of sessions, failure of repairs, coordination problems between practitioner and technician, high costs. According to these disadvantages, practitioner may tend toward restoration techniques which can be performed directly and in a single session [11]. Fixed dentures may damage pulpal vitality in patients with the younger age groups. On the other hand, gingival margin may be visible as a result of gingival damages [12].

The optimum treatment procedure of the individuals whose growth and development of their body are not completed is to maintain the place of missing tooth or teeth with fixed or removable apparatus until the growth and development of the body is completed. However, the temporary removable apparatus have disadvantages as; risk of fracture and loss, irritation of soft tissue, inadequate aesthetic view and to require patient cooperation [13].

The reasons of not to choose prosthetic approach in our cases are in addition to these disadvantages; the ages of the patients and inadequate distance of missing tooth areas because of the migration of adjacent teeth. The high cost of orthodontic treatment was an obstacle for the families of our patients and only prosthetic restorations would not be satisfying.

As an other treatment alternative, implant surgery following the orthodontic treatment was presented to the families. The major advantages of implant surgery are; no need of preparations at adjacent teeth and preservation of alveolar bone [14]. Although the advantages of this treatment procedure, high cost was still an obstacle for the families. Finally we decided to perform more economic treatment plan.

Composite resin materials have great physical, aesthetic properties and marginal integrity. The restorations which were performed with application of composite resin materials are more conservative, no need to local anesthesia and extra sessions. All stages may performed in single session and the cost is lower than the other treatment alternatives [15].

Strip crowns are transparent plastic crowns with varying sizes. The indications for strip crown are; incisors with congenital malformation, discoloration of teeth suffered from trauma or congenitally and teeth with amelogenesis imperfecta [16,17]. In our cases, strip crowns which were chosen in proper size and morphology had been used following composite resin application in order to enable minimum finishing and polishing applications.

In order to copy the adjacent tooth shape and obtain an aesthetic restoration, dentists may use a wax-up model and silicon mold. This will help to give proper palatal contour to the restoration. The wax-up model ease the work of the dentist while restoring the tooth [18,19]. Many dentists in the world use this method in order to make restorations but, this requires making an impression, preparing a cast model and producing a wax-up



Figure 5: The intraoral view of case 1



Figure 6: The radiographic view of case 2



Figure 7: The final view of case 2

model and that means an extra appointment. By using the strip crowns, a mold can be obtained and shaped easier at the same visit. The final restoration needs less finishing and polishing applications [20].

## Conclusion

The lack of anterior teeth as a result of dental trauma or congenital reasons may cause aesthetic, functional and periodontal problems in children. In both cases, lack of upper right incisor due to trauma, congenital factors and restriction of the missing teeth place because of migration of adjacent teeth were observed. The aesthetic and functional problems were solved by strip crowns and composite resin. It was determined that, converting lateral incisors to central incisors is easier with strip crowns and composite resin. We are in the opinion that; in case of considering sensitive rules while composite resin applications, if the modification of anterior tooth is needed due to aesthetic reasons, strip crowns help to shorten practitioner's time. Besides, minimum finishing and polishing applications are needed with strip crowns.

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