



PROSTHETIC REHABILITATION OF MISSING ANTERIOR TEETH USING MINIMALLY INVASIVE APPROACH.

Prosthodontics

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ABSTRACT

Rehabilitation of missing teeth using fiber reinforced composite resin is a dental practice designed around the principal aim of preservation of as much of the natural tooth structure as possible. Therefore this treatment option is good alternative to conventional treatment options in children for replacing missing teeth until a more definitive prosthesis can be provided at the end of growth period. This article aims to present a case report of 16 year old female whose missing anterior teeth was replaced using fiber reinforced composite resin.

KEYWORDS

Fiber Reinforced Composite Bridge, Anterior Teeth.

INTRODUCTION

Replacing anterior missing teeth especially in a growing child is always a challenge for the clinician. However, an immediate replacement is important to provide a positive psychological approach and to maintain the facial esthetics and phonetics.¹ Various treatment options can be considered ranging from Maryland bridges to implants.^{2,3} However, choice is made on the basis of conservation, natural preservation, minimum invasion, aesthetics and cost of the treatment.⁴ The FRC bridges are adhesive, minimally invasive and economical restorations used for replacement of missing teeth in a single visit.^{1,5} A review of dental literature suggests that the FRC prostheses have good longevity especially those made by direct technique.^{6,7} This clinical case report presents a directly made fiber reinforced bridge for congenitally missing lateral incisor in a young patient.

CASE REPORT

A 16 year old patient came to the department of prosthodontics and crown and bridge with the chief complaint of unaesthetic appearance. On examination forwardly placed maxillary anterior teeth and spacing between maxillary and mandibular anterior teeth with retained deciduous canine and missing permanent right lateral incisor with incompetent lips was observed. On examination patient had convex profile, straight divergence, Class I molar relation bilaterally, proclined and protruded upper and lower incisors, having skeletal class I bases and average growth pattern (fig 1).



Figure 1: Preoperative Photograph

Clinical Procedure:

Non extraction treatment in both maxillary and mandibular arches, followed by retraction of incisors in both arches, extraction of deciduous canine followed by distalisation of permanent canine thereby creating space for replacement of permanent right lateral incisor was planned and achieved following orthodontic treatment.

FRC FPD was selected for space created for permanent lateral incisor to provide better esthetics and a conservative fixed solution to the patient. Traditional FPD was avoided as patient was young.

The shade of veneered composite resin was selected using vita classic shade guide. A box shaped conservative cavity was prepared on distopalatal side of maxillary right central incisor and mesiopalatal side of maxillary right canine. Dimensions of prepared cavity were kept as 1mm deep and 2mm wide. Flaring of walls was done between 5° and 15°. All internal line angles were rounded.

Mesiodistal length of fiber (Angelus Interlig) was measured and exact amount of fiber was cut by a scissor. A small fiber was also cut to be placed vertically in pontic area for additional support. The prepared cavity was etched (36% phosphoric acid Detray conditioner 36 Densply) for 30 seconds on enamel, washed and dried. The 5th generation self priming bonding agent (Prime and bond NT Densply) was applied and cured for 10 seconds. Flowable composite (Esthet X Flow) was applied on the bonding area, cut fiber was adjusted on the bonded surface and firmly secured. It was then cured for 40 seconds. The cavity on adjacent teeth was then filled with composite (Esthet X HD) and cured. Smaller fiber was then placed vertically in the pontic area and secured with horizontal fiber using flowable composite and it was cured.

Now the pontic was built layer by layer using dentin, enamel and translucent shade. Mesial portion of Lateral incisor on the other side was also built. Occlusion was checked for high points. Finishing and polishing was completed in order to achieve natural esthetic prosthesis appearance (fig 2,3).



Figure 2: Clinical Procedure



Figure 3: Preoperative and Postoperative Photographs.

The case has been under observation from the past 1 year and the patient is highly satisfied and has no problem.

DISCUSSION:

Fixed FRC bridges offer a suitable alternative to conventional treatment options in replacing a missing permanent anterior tooth until a more definitive prosthesis can be provided at the end of growth period. Fiber reinforcement results in material with enhanced mechanical properties such as stiffness, strength, toughness and less fatigue. Fibers produce a load enhancing effect on the brittle composite materials by acting as the stress bearing component and by crack stopping or crack deflecting mechanism.^{8,9} This provides the advantages of bondability and chairside ease of fabrication and repairability. It is economical and less time consuming. Design is non-invasive and reversible so other conventional treatment options always remain open.

However, certain disadvantages associated are difficulty in maintaining oral hygiene and questionable ability to withstand heavy biting forces.

Studies by Unlu and Belli¹⁰ and Freilich¹¹ have reported a mean survival period of 3 to 4.5 years respectively, for FRC bridges which make it a suitable interim treatment option for replacing missing permanent anterior teeth in children until a definitive restoration can be provided.

The fiber within the composite matrix are ideally bonded to the resin through an adhesive interface. The resin matrix acts to protect the fibers and fix their geometrical arrangement, holding them at predetermined positions to provide optimal reinforcement. The interface between two components plays the key role of allowing loads to be transferred from the composite used to replace missing tooth structure to the fiber.⁹

CONCLUSION

FRC resin prosthesis is a conservative and successful treatment option for younger patients.

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