MAVEN

CASE REPORT

MANAGEMENT OF CROWN FRACTURE WITH RIBBOND FIBER: A CASE REPORT

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Abstract

Traumatized anterior teeth need quick esthetic and functional repair. Esthetic requirements of anterior teeth require the use of composite materials which, in the most complex cases, can be used in association with fibers so as to improve their mechanical resistance. Differ- ent types of fibers are available. The authors considered parameters such as physical prop- erties, water absorption, ease of cutting and of laying. Polyethylene fibers appear to have the best properties in elasticity, translucency, adaptability and tenaciousness, resistance to traction and to impact. In the case of a simple crown fracture, the missing part was restored by polyethylene fibers and composite resins. The authors recommend this tech- nique for predictable restoration of traumatized anterior teeth. (2018, Vol. 02; Issue 01: Page 22 - 25)

Keywords: Ribbond fiber, Traumatized tooth, Polyethylene fiber.

Introduction

Provision of innovative treatment solu- tions to various problems has always been the motto of medical scientific brains. Dentistry is no exception to this endeavor. The acceptance of advances in material science has really helped this cause. Rib- bond is one such material, which has oc- cupied an important place in the dentist's repertoire (1).

It is bondable fiber reinforced material, made from the ultra-high molecular weight polyethylene and ceramic fibers used to make bulletproof vests.

The key to Ribbond's success is its pa- tented leno weave. Designed with a lock- stitch feature, it effectively transfers forces throughout the weave without stress transfer back into the resin, providing ex- cellent manageability characteristics (2). Having virtually no memory, Ribbond adapts to the contours of the teeth and dental arch. It is translucent, practically colorless and disappears within the com- posite or acrylic without show-through of- fering excellent esthetics. Ribbond's fibers are the standard in biocompatibility (3).

The same material is also used in the con- struction of artificial hip and knee joints.

By virtue of such wide spectrum of in- tended properties, it enjoys varied applica- tions in day to day dentistry like: endodon- tic posts, periodontal splints, aesthetic space maintainers, bondable bridges and single bridges and orthodontic retainers (4).

Case report

A 25 year patient reported in the Depart- ment of Conservative Dentistry and Endo- dontics in Seema Dental College and Hos- pital with a chief complaint of fractured teeth in the upper anterior teeth region (Fig 1A). The patient had history of root ca- nal treatment done of the same tooth 3 months back.

On clinical examination it was found:

1. Fractured crown with respect to maxil- lary left central incisor.
2. Periodontium was normal with respect to fractured tooth.

On radiographic examination (Fig 1B):

1. Fracture involving crown portion of the tooth.
2. Root canal treatment was performed.

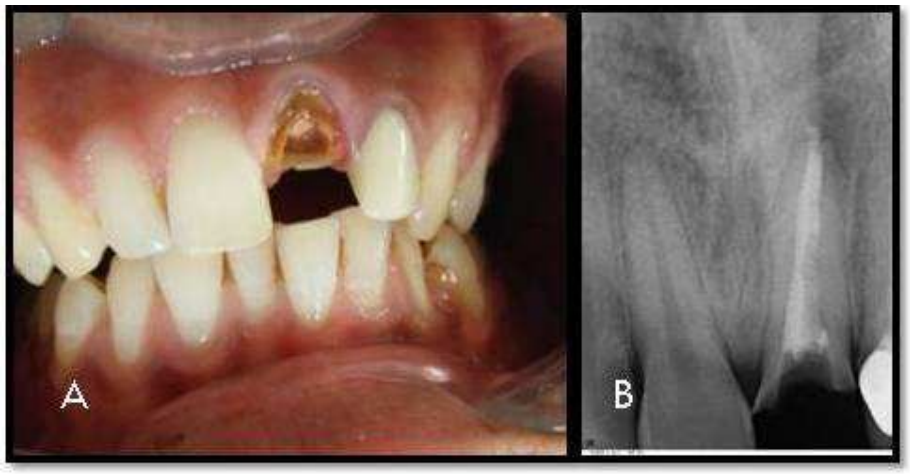

Fig 1: A- Intraoral view; B- Diagnostic radiograph.

Management

The immediate goal was to restore the fractured tooth surface. Post space was prepared with peso reamer 1, 2 and 3 (Fig 2). Ribbond material was selected for the filling of the root canal space (Fig 3). Placed the fiber in the bonding agent as per to increase the wettabilty to properly adhere to the root canal (Fig 4). Fibers are placed in the canal and initial core build up was done with GIC Fig 5 & 6).

Fig 2: Post space prepared with peso reamer

Fig 3: Ribbond material

Fig 4: The fiber placed in the bonding agent

Fig 5: Fibers placed in canal

Fig 6: Post operative intraoral view

Discussion

In the restoration of traumatized anterior teeth, both esthetics and mechanical re- sistance to fracture are of great im- portance in obtaining good long lasting re- sults. Ribbond fibers represent an effec- tive means to confer a higher mechanical strength to composite restorations, with- out changing the esthetic results (1, 5).

The translucency of Ribbond fibers make them more esthetic than carbon fibers (6). In this clinical case, we found it very easy to lay Ribbond fibers and stratify compo- site materials, allowing a quick restoration of the dental morphology. In the case of a complex crown fracture, the dental resto- ration by Ribbond fibers and composite create a central support stump could be a

useful therapeutic approach in order to shorten the recovery period following pros- thetic restoration.

Conclusion

The use of Ribbond, a polyethylene fiber, is based upon the clinical reports of tooth replacement by Bredenstein and Sperber, Marcus, Miller, and Portilla, among oth- ers. Ribbond also has been described as being used for periodontal splints, strengthening removable prostheses, post and core fabrication, provisional and per- manent bridges, denture repairs and a framework for composite onlays and crowns (6, 7). Splinting teeth for periodon- tal, orthodontic or posttraumatic reasons is a common procedure. Although tradi- tional methods are successful, splinting teeth with reinforcement fibers that can be embedded in composites has gained pop- ularity (8).

Ribbond is a biocompatible, esthetic ma- terial made from a high-strength polyeth- ylene fiber. The various advantages of this material include ease of adaptation to den- tal contours and ease of manipulation during the bonding process. Because it is a relatively easy and fast technique (no la- boratory work is need), procedures can of- ten be completed in a single appointment (1, 7, 9). It also has acceptable strength because of good integration of fibers with the composite resin; this leads to good clinical longevity. Because a thinner com- posite resin is used, the volume of the re- tention appliance can be minimized. In ad- dition, in case of fracture during wear, the appliance can be easily repaired. There is no need for removal of significant tooth structure, making the technique reversi- ble and conservative. It also meets the pa- tients' esthetic expectations (2, 10).

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