CASE REPORT
MANAGEMENT OF CROWN FRACTURE WITH RIBBOND FIBER: A CASE REPORT

Dr. Annil Dhingra¹, Dr. Neha Arya²

¹Professor and Head, Department of Conservative Dentistry and Endodontics, Seema Dental College and Hospital. ²Post Graduate Student.

Corresponding Author: Dr. Annil Dhingra, Professor and Head, Department of Conservative Dentistry and Endodontics, Seema Dental College And Hospital, Rishikesh. Ph No. 9811155290; Email Id- anildhingra5000@yahoo.co.in.

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. Different types of fibers are available. The authors considered parameters such as physical properties, 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 technique 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 solutions 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. Ribbond is one such material, which has occupied 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 patented leno weave. Designed with a lock-stitch feature, it effectively transfers forces throughout the weave without stress transfer back into the resin, providing excellent 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 composite or acrylic without show-through offering excellent esthetics. Ribbond’s fibers are the standard in biocompatibility (3). The same material is also used in the construction of artificial hip and knee joints.
By virtue of such wide spectrum of intended properties, it enjoys varied applications in day to day dentistry like: endodontic posts, periodontal splints, aesthetic space maintainers, bondable bridges and single bridges and orthodontic retainers (4).

**Case report**

A 25 year patient reported in the Department of Conservative Dentistry and Endodontics in Seema Dental College and Hospital with a chief complaint of fractured teeth in the upper anterior teeth region (Fig 1A). The patient had history of root canal treatment done of the same tooth 3 months back. On clinical examination it was found:
1. Fractured crown with respect to maxillary 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.](image)

**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 wettability 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).
Discussion
In the restoration of traumatized anterior teeth, both esthetics and mechanical resistance to fracture are of great importance in obtaining good long lasting results. Ribbond fibers represent an effective means to confer a higher mechanical strength to composite restorations, without 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 composite materials, allowing a quick restoration of the dental morphology. In the case of a complex crown fracture, the dental restoration by Ribbond fibers and composite create a central support stump could be a
useful therapeutic approach in order to shorten the recovery period following prosthletic 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 others. Ribbond also has been described as being used for periodontal splints, strengthening removable prostheses, post and core fabrication, provisional and permanent bridges, denture repairs and a framework for composite onlays and crowns (6, 7). Splinting teeth for periodontal, orthodontic or posttraumatic reasons is a common procedure. Although traditional methods are successful, splinting teeth with reinforcement fibers that can be embedded in composites has gained popularity (8).

Ribbond is a biocompatible, esthetic material made from a high-strength polyethylene fiber. The various advantages of this material include ease of adaptation to dental contours and ease of manipulation during the bonding process. Because it is a relatively easy and fast technique (no laboratory work is need), procedures can often 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 composite resin is used, the volume of the retention appliance can be minimized. In addition, 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 reversible and conservative. It also meets the patients’ esthetic expectations (2, 10).

**References**