

Case Report

Custom Made Fibre Post for Rehabilitation of Endodontically Treated Teeth: A Case Report

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Abstract: This case report describes an alternative technique to facilitate the fabrication of a direct custom-made post using Ribbond fibers. Designed with a lock-stitch feature that effectively transfers forces throughout the weave without stress transfer back into the resin, Ribbond's weave also provides excellent manageability characteristics. It conserves the remaining tooth structure and provides retention to the core.

Keywords: Custom fibre post, polyethylene fibers, Ribbond, Split dam.

INTRODUCTION:

Ribbond fibres introduced in 1992 to the market are a bondable, reinforced fibres consisting of ultrahigh strength polyethylene fibres. These fibres far exceed the breaking point of fibreglass and are so tough that specially made scissors are required to cut them. Unlike Kevlar, Ribbond's fibres absorb less moisture than the dental resins.

Number of fibres: 215

Fibre type: reinforced ultra-high-strength polyethylene fibers.

The key to Ribbond's success (and what distinguishes Ribbond from the other fibre reinforcements) is its patented leno weave. Designed with a lock-stitch feature that effectively transfers forces throughout the weave without stress transfer back into the resin, Ribbond's weave also provides excellent manageability characteristics. In addition, unlike loosely braided or bundles of unidirectional fibres, Ribbond does not spread or fall apart when manipulated. Since fibre reinforced resin structures derive their strength primarily from making laminates, high manageability and lack of memory is essential for close and accurate layering of the fibres [1]. It does not unravel when cut or manipulated and reinforces multidirectionally staying durable & impact absorbent. It also transfers stresses efficiently throughout the fibre network.

CASE REPORT

A 39-year-old female patient reported to the Department of Conservative Dentistry and Endodontics, with the chief complaint of broken upper right second premolar tooth due to accident. Past medical history was reviewed and there was no remarkable report. A definitive treatment plan was developed to include a root canal treatment and post-retained crown.

Endodontic treatment

In the first stage of treatment, a conventional root canal treatment was performed.

Isolation

Split dam technique [2]: In this technique two holes are punched in the dam that corresponds to teeth anterior and posterior to the teeth in question. The dam is then stretched over the clamped tooth and to the anterior tooth where the dam is stabilized with the widget. The dam between the holes is then cut with iris scissors. A 'liquid' rubber dam or dam caulking agent is applied to block the soft tissues.

Custom made fibre post

The inside of the canal and the enamel-dentin tissues of the tooth etched by 37% phosphoric acid (3M Scotchbond; 3M ESPE, St. Paul, Minn, ABD) 15 seconds. Following the etching procedure, tooth was rinsed with water in order to remove the acid. The primer and bond of self-etching adhesive (Clearfil SE Bond, Primer; Kuraray Co. Ltd, Osaka, Japan) was applied to the tooth. A dual-cure adhesive material (Paracore) was injected into the canal and a

premeasured 3mm strip of Ribbond glass fiber was coated with bonding resin and placed into the canal. The fibers were compressed onto the walls of the pulp chamber and cured. Fiber reinforced composite resin rehabilitation was completed upto the mid crown using

incremental layered adhesion technique. A hybrid composite resin was compressed into the occlusal portion and light cured for 2 minutes. Final shaping was done with diamonds and fluted carbide burs.



Fig 1: Pre-Operative



Fig 2: Split Dam Technique

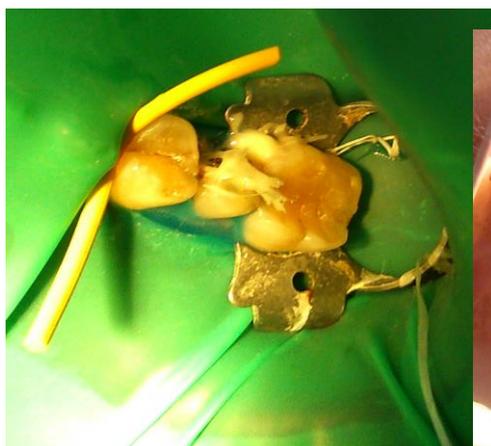


Fig 3: Insertion Of Fibres



Fig 4: Core Build Up

DISCUSSION

The Indications of Fibre reinforced composites are Ribbond endodontic post and core, Constructing Periodontal Splints, Cementing Ribbond Bridges to the Teeth [3], Maryland Bridge Framework, Composite Repairs, and Reinforce or Repair a Denture, Crown Retained Bridges and Reinforcing an Acrylic Provisional Bridge. Properties seen in Ribbond include high Bondability, Bonding to Composites [4], Bonding Ribbond to Acrylic Resins, Esthetic, Biocompatibility and Versatility.

The major advantages are that Ribbond fibers easily absorb water because of the “gas-plasma” treatment to which they are exposed. This treatment reduces the fibers’ superficial tension, ensuring a good chemical bond to composite materials. Ribbond is biocompatible, esthetic, translucent, and colourless and disappears within the composite or acrylic without

show-through and Ribbond fibers are also characterized by impact strength five times higher than that of iron according to the manufacturer. Ribbond is a highly versatile material with an array of desirable properties certainly helps us in achieving these goals.

REFERENCES

1. Karbhari V.M, Strassler H, Rudo D.N. The Development and Clinical Use of a Leno Woven UHMWPE Ribbond in Dentistry, Society for Biomaterials 29th Annual Meeting Transaction. 2003: 529.
2. Ingle, Bakland, Baumgartner. Ingle’s Endodontics 6. 6th edition: BC Decker.2008: 791-799
3. Strassler HE, Serio FG. Stabilization of the natural dentition in periodontal cases using adhesive restorative materials. Periodontal Insights 1997: 4:4-10.

4. Hambrook DS, Hastings JH. Use of bondable reinforcement fiber for post and core build-up in an endodontically treated tooth: maximizing strength and aesthetics. *Prac Periodont Aesthet Dent* 1995; 7:33-44.