

Ribbond as an esthetic space maintainer

Kallar S¹, Brar GS²

¹Dr. Shiminder Kallar
Assistant Professor
Department of Pedodontics
& Preventive Dentistry
Genesis Institute of Dental
Sciences & Research
Ferozepur, Punjab, India.

²Dr. Gurlal Singh Brar
Assistant Professor
Department of Pedodontics
& Preventive Dentistry
Genesis Institute of Dental
Sciences & Research
Ferozepur, Punjab, India.

Received: 25-04-2012

Revised: 13-05-2012

Accepted: 23-05-2012

Correspondence to:

Dr. Shiminder Kallar
brar_rock001@yahoo.co.
in

ABSTRACT

Ribbond is a biocompatible, esthetic material made from a high-strength polyethylene fiber. Lenowoven polyethylene ribbon (Ribbond) has been used successfully for tooth splinting, replacement of missing teeth, reinforcement of provisional acrylic resin fixed partial dentures, and orthodontic retention. This paper presents the application of this polyethylene ribbon - RIBBOND as an esthetic space maintainer in pedodontic practice. We suggest that this combined technique of polyethylene fibers and composite material could be very efficient alternative procedure to conventional unesthetic space maintainers in pedodontic practice with excellent esthetics and functional results.

Key Words: Ribbond, space maintainer, polyethylene fibres

Introduction

Fibre reinforcement is a proven technology today which is being in almost every field like the bus industry to ship manufacture to something complex like the wind mills to one of most important in today's world the bullet proof vests and jackets. Dentistry is no exception in accepting this technology in

its stride. The use of fibre reinforced composites/ ribbons has become a day to day practice in clinical dental practice which has made life easier for the dentist at the same time helping him provide quality care to the patients.^[1]

Ribbond fibres introduced in 1992 to the market are a bondable reinforced fibres consisting of ultrahigh strength polyethylene fibres. These fibers far exceed

the breaking point of fiberglass and are so tough that specially made scissors are required to cut them. Unlike Kevlar, Ribbond's fibers absorb less moisture than the dental resins. The key to Ribbond's success 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. Having virtually no memory, Ribbond adapts to the contours of the teeth and dental arch. For example; when making a periodontal splint, Ribbond tucks in interproximally without rebounding.^[2] In addition, unlike loosely braided or bundles of unidirectional fibers, Ribbond does not spread or fall apart when manipulated. Inaccurate fiber placement results in voids or excessive composite on the tensile side of the fibers that will be prone to fracturing. The unique fibre design renders the following properties to Ribbond.

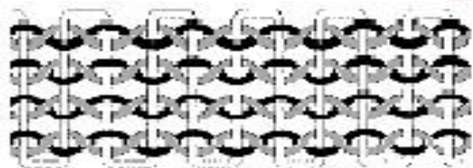


Fig. 1 Unique cross-link lock stitch lenoweave pattern of Ribbond Fibres

This paper presents the application of this polyethylene ribbon - RIBBOND as an esthetic space maintainer in pedodontic practice.

Case Report

An 8 year old girl reported to the Department of Pedodontics & Preventive Dentistry with missing deciduous second molar in lower right region of mouth. (Fig.2)



Fig. 2 Missing deciduous second molar in lower right region of mouth.

After applying rubber dam (Fig. 3), proximal surfaces of two adjacent teeth are roughened with bur to improve bonding (Fig. 4).

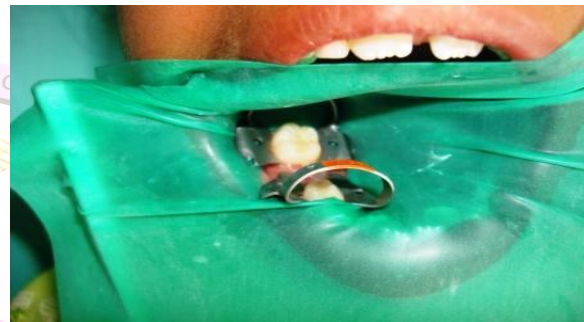


Fig. 3 Rubber Dam Application



Fig. 4 Proximal surfaces of two adjacent teeth are roughened

The Etchant & bonding agent (3M ESPE) was applied on the proximal surfaces. (Fig. 5) Strip of Ribbond approximately equal to the space between approximal teeth was cutted.



Fig. 5 Etching Bonding

Ribbond was dipped in dual cure resin cement (Fig. 6) & then placed between two teeth (Fig. 7) and final curing was done. (Fig. 8)



Fig. 6 Ribbond was dipped in dual cure resin cement



Fig. 7 Placement of Ribbond in between adjacent teeth



Fig. 8 Final curing

Patient was recalled after every 3 weeks and 6 weeks. Results at the end of 6th week showed it to be still going strong.

Discussion

Ribbond is a biocompatible, esthetic material made from a high-strength polyethylene fiber. It is relatively easy to use and technique is fast as no laboratory work is needed. It also has acceptable strength because of good integration of fibers with the composite resin; this leads to good clinical longevity. This material is expensive and this is Ribbond's disadvantage.^[3]

Industrial applications of composite and laminated structures with polymers provided dental researchers with bondable, ultrahigh tensile strength, fracture tough, aesthetic, extremely manageable reinforcement materials that have the potential to be applied to dental restoration. Since 1991, Ribbond bondable reinforcement ribbon has been used successfully for a variety of clinical techniques. The successful performance of the polyethylene fibre is because of the properties of the fibre itself, the degree of chemical bonding between the resin and the fibre and the effect of the leno weave with regard to crack resistance and deflection as well as resistance to shifting within the resin matrix. The fibre, as mentioned earlier, exhibits the structural aesthetics and handling characteristics necessary for a dental fibre composite material. The tightly woven leno weave unique to Ribbond provides a fixed position between the warp (lengthwise) and weft (crosswise) fibres. The weave is open enough to allow for efficient infusion and wetting of the resin on the fibres and ease

of manageability. Reinforcement fibers have been shown to increase the flexural strength and fracture toughness of composite resin restorations and thus help prevent fracture due to high stresses associated with mastication.^[4]

Since the early 1990s, a lenowoven polyethylene ribbon (Ribbond) has been used successfully for tooth splinting, replacement of missing teeth, reinforcement of provisional acrylic resin fixed partial dentures, and orthodontic retention. The fibers are made for chairside use in a single appointment procedure that requires no special treatment preparation or instrumentation.

Cast posts and cores are commonly used because of their superior mechanical properties. To solve this esthetic problem, tooth-coloured fibre and zirconium post systems were introduced; these are capable of resisting occlusal loads and have light transmission characteristics similar to those of natural teeth. Compared with alternative techniques, such as a composite resin restoration, screw-post, cast-metal posts and dentin pins, reattachment using a fibre post offers several advantages. It provides immediate esthetic and functional rehabilitation of the fractured tooth. Minimal patient cooperation is required, and the treatment takes little time and is, thus, readily accepted by the patient.^[5]

To conclude we suggest that this combined technique of polyethylene fibers and composite material could be very efficient alternative procedure to conventional unesthetic space maintainers in pedodontic practice with excellent esthetics and functional results.

References

1. Samadzadeh A, Kugel G, Hurley E, Aboushala A. Fracture strengths of provisional restorations reinforced with plasma-treated woven polyethylene fiber. *J Prosthet Dent* 1997; 78: 447-9.
2. Karaman AI, Kir N, Belli S. Four applications of reinforced polyethylene fiber material in orthodontic practice. *Am J Orthod Dentofacial Orthop* 2002; 121: 650-4.
3. Chafaie A, Portier R. Anterior Fiber-reinforced Composite Resin Bridge: A Case Report. *Pediatr Dent*. 2004; 26:530-534
4. Miller TE, Barrick JA. Pediatric trauma and polyethylene reinforced composite fixed partial denture replacement: a new method. *J Can Dent Assoc*. 1993; 59(3):252-256
5. Gurbuz T, Sengul F, Altun C. Finite element stress analysis of short-post core and over restorations prepared with different restorative materials. *Dent Mater J* 2008; 27: 499-507.
6. Yildirim Oz G, Ataoglu H, Kir N, Karaman AI. An alternative method for splinting of traumatized teeth: Case reports. *Dent Traumatol* 2006; 22: 345-9.
7. Giachetti L, Pace R. Rehabilitation of severely injured anterior teeth in a young patient using ceramic and FRC: A clinical report. *Dent Traumatol* 2008; 24: 560-4.
8. Eminkahyagil N, Erkut S. An innovative approach to chairside provisional replacement of an extracted anterior tooth: use of

- fiber-reinforced ribbon-composites and a natural tooth. *J Prosthodont* 2006; 15: 316-20.
9. Hamza TA, Rosenstiel SF, El-Hosary MM, Ibraheem RM. Fracture resistance of fiber-reinforced PMMA interim fixed partial dentures. *J Prosthodont* 2006; 15: 223-8.
 10. Yildirim Oz G, Ataoğlu H, Kir N, Karaman AI. An alternative method for splinting of traumatized teeth: Case reports. *Dent Traumatol* 2006; 22: 345-9.

Cite this article as: Kallar S, Brar GS. Ribbond as an esthetic space maintainer. *Int J Med and Dent Sci* 2012; 1(2):15-19.

Source of Support: Nil
Conflict of Interest: No

