Case Report

RIBBOND; AN ESTHETIC SPACE MAINTAINER: A CASE REPORT

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Abstract

Ribbond, a bondable, reinforced polyethylene fiber material is successfully used in dentistry as a fixed orthodontic retainer, a post traumatic stabilization splint, replacement of missing teeth and can also be used as an ideal space maintainer. The basis of its clinical usage and acceptability is the easy adaptation of the polyethylene fiber material to dental contours and unsurpassed manageability during the bonding process. It has been designed with the patented lock-stitch feature which helps it to effectively transmit forces through the weave without transferring the stress back to the resin. This paper presents a case report showing the application of Ribbond as an esthetic space maintainer in pedodontic practice and supports the fact that the combination of polyethylene ribbonfiber and composite material can also be an efficient alternative to conventional unaesthetic space maintainers in pedodontic practice.

Keywords - Esthetic space maintainer, Pedodontics, Ribbond.

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INTRODUCTION

The term “strength” is usually has been not very well understood in relation to dentistry. Strength is the resultant outcome of many attributes combined together. An overwhelming combination of strength and aesthetics is the “Ribbond” fibers. These fibers consist of ultra-high molecular weight polyethylene fibres that are not taut and brittle like glass fibres and metal and also will not weaken when subjected to stress.
concentration. Ribbond is highly manageable due to its patented cross-linked lock stitch leno-weave pattern\(^2\) as its multi-directional integrity remains stable and additionally the composite gets reinforced. The arrangement of the fibres significantly affects the behaviour of this reinforcement especially in long term.\(^3\) As dental structures need to endure multi-directional forces to bear the loads of mastication, the alignment of the fibres becomes increasingly significant.\(^4\) It’s highly biocompatible and possesses outstanding handling properties by virtue of its lock-stitch feature\(^2\) which transfers forces efficiently throughout the weave without transferring stress back into the resin. It is a totally colourless, translucent material and completely disappears within the composite offering excellent esthetics.\(^4\)

**CASE REPORT**

An 8 year old girl presented to the Department of Pedodontics & Preventive Dentistry with grossly carious deciduous first molar in upper left region of mouth. The grossly decayed tooth #65 was planned for extraction under local anaesthesia on the same day. Pre-operative IOPA of #65 (Fig. 1) was taken and upper and lower alginate impressions were made and models prepared (Fig. 2) before extraction for records. After proper cleaning of the proximal surfaces of two adjacent teeth, the etchant (Actino; Prevest Denpro Limited, Digiana Jammu, India) was applied on the proximal surfaces of the teeth. A strip of Ribbond\(^\text{TM}\) (Ribbond, Ribbond Inc, Seattle, Washington, USA) approximately equal to the space between approximal teeth was cut. Bonding agent (One Coat Bond SL; Coltène/Whaledent Inc., Mahwah, NY, USA) was applied over the Ribbond strip and cured with visible light. Flowable composite (Fusion Flo, Prevest Denpro Limited, Digiana Jammu, India) was applied on both the proximal surfaces and Ribbond strip was fixed into it and cured by blue light of visible spectrum for 60 seconds. A layer of high-strength composite resin (Beautifil II, Shofu Inc, Kyoto, Japan) as applied over the strip and cured finally after that. Finishing and smoothening of rough edges was done after complete curing. (Fig. 3) Patient was recalled after 2 weeks, 6 weeks and 12 weeks. On clinical examination after 2 weeks, it was seen that the space maintainer was still in place with no visible cracks, fracture or dislodgement with healthy surrounding gingival tissues. At the end of 6 weeks, similar results were seen with slight yellowish discolouration at the margins which was removed by oral prophylaxis and oral hygiene instructions were reinforced. Results at the end of 12\(^{th}\) week showed it to be still in place.

**Figure 1: Pre-operative IOPA of grossly-carious #65**
DISCUSSION

The applications for composite reinforced fibers seem very promising in orthodontics as retainers, in Periodontics as post traumatic stabilisation and in Prosthodontics as reinforcement of provisional acrylic resin fixed partial dentures. This promising material also has a great usage in Pediatric dentistry i.e. the power to replace the old concepts of unaesthetic, time consuming, and very technique sensitive Band and loop space maintainers. Ideally, space maintainers should not interfere with masticatory function or inhibit normal growth changes, should be easy to fabricate and maintain, strong, stable and durable, should not impose pressure on the teeth on which they are fabricated, easy to clean and should not cause dental caries or any soft tissue pathology. Presently, Band and loop are the most prevalent fixed space maintainers in pediatric dentistry. They have many advantages but also some really serious disadvantages, e.g., their technique sensitive fabrication which requires more than one appointment and it is unaesthetic also, because of which attempts have been made to introduce newer materials. Introduction of fibre reinforced technology has brought a new material into the realm of metal free, adhesive esthetic dentistry. Ribbond is one of the examples of such technology. Ribbond consists of bondable, ultra high strength polyethylene fibers with high elasticity coefficient which makes them resistant to stretch and distortion and a high resistance to traction allowing them to easily adapt to dental arch contour. Also, it is esthetic, biocompatible, translucent and easy to use reinforced ribbon. Only few studies are there in recent literature regarding the evaluation of clinical efficiency and patient acceptability of Ribbond as a space maintainer. The fibres are made for chairside
use in a single appointment procedure which requires no special tooth preparation or instrumentation. Along with many advantages and aesthetics, it also has good patient acceptance which leads to good clinical longevity. The present study is a case report on the usage of this promising material as an esthetic space maintainer. While using the material, we felt a great difference in manageability, chair side time consumption and the most importantly, patient acceptance. In a study by Garg A, et al in 2014, they compared the conventional band and loop and Ribbond space maintainer and concluded that the patient acceptance of Ribbond space maintainers was found to be better than that of band and loop space maintainers and the time taken to carry out the procedure of Ribbond space maintainer was significantly lower as compared to that taken by Band and Loop space maintainers. Ribbond space maintainers were also found to be superior in terms of clinical efficacy.

CONCLUSION

To conclude, we think that this combination technique of polyethylene fibers and composite material can be very efficient alternative procedure to unaesthetic space maintainers in Pediatric dentistry with unmatched aesthetics and patient acceptance.

REFERENCES


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