

Conservative Bridge Preparation By Using Natural Tooth As A Pontic With Ribbond Fiber: A Case Report At IIDH Islamabad

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Abstract

Summary: Traumatic damage to anterior teeth is a common form of dental injury, particularly in younger people. The abutment teeth only need to be slightly prepared for the conservative bridge preparation, as the name suggests. The final prosthesis can be fixed to the adjacent natural teeth in no time. This case reports a chair-side conservative and esthetic restoration in a 19-year-old girl who came with grade 3 mobility in her upper left central incisor by using her natural tooth as a pontic with ribbond fibre.

Keywords: Conservative, Dental trauma, Ribbond fiber.

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1. Introduction

The majority of dental trauma in children aged 7 to 12 is caused mostly by slips and incidents that happen close to homes and schools. It primarily affects the maxillary rather than the mandibular jaw and is located at the front of the mouth¹. The idea of acid etch bonded fixed partial denture was initiated in the 1970s and 1980s. The preliminary bonded fixed partial dentures had been placed in a single go to use the patient's very own tooth, a tooth made from composite resin or an acrylic denture tooth². Conservative bridge preparation as the name shows calls for the minimal preparation of the abutment tooth and the fabricated bridge can be fixed to the adjoining natural teeth on the chair side with no time. Conservative bridges can be classified according to the types of pontic

1. Natural tooth pontic
2. Denture tooth pontic
3. Porcelain fused to metal pontic
4. All porcelain pontic

Retention is never as strong as traditional bridges because of the cautious preparation and bonded nature of all bridge types. Even if there has been little to no tooth preparation to provide an area for pontic fabrication, needed for the alternative of missing tooth with fibre-bolstered composite resin, resin-bonded FPDs with a single pontic have stated to have a 5 to 12 months survival rate of 61%³. Due to their "closed stitch" arrangement, the 215 fibres that make up the ribbond spectrum have an extremely high coefficient of elasticity and are extremely traction resistant. Ribbond

is likewise characterized by impact strength 5 times higher than iron. A ribbond is a reinforced ribbon with a high modulus that is made from ultrahigh molecular weight polyethylene fiber. To improve its adherence to synthetic repair materials as well as to light- or chemically-cured composite resins, it is treated with cold gas plasma.

Table-1 Describes the indications and contraindications of conservative bridge preparation with ribbond fibre.

Indications	Contraindications
1. Among infants and teenagers, the replacement of lost front teeth	Paradoxical behaviors
2. Narrow span edentulous area	Extensive edentulous spans
3. Unrestored abutments	Damaged or repaired abutments
4. Replacement of a single posterior tooth	Weakened enamel
5. Considerably long clinical crown	A significant difference in pontic width
6. Outstanding moisture management	Pronounced vertical overlap

2. Case Presentation

A 19-year-old female patient presented with the chief complaint of loosening of the upper left central incisor to the Department of Operative Dentistry, Islamic International Dental Hospital (IIDH), Riphah International University Islamabad. The patient had grade 3 mobility in tooth 21 for the past 7 days. She had

a history of trauma 3 years back. The medical history of the patient was not significant. Past dental history revealed she had a dental checkup after trauma 3 years back. Intraoral examination revealed marginal gingivitis associated with heavy plaque and calculus. She had a class 2 profile with maxillary prognathism, malocclusion, anterior open bite and supra eruption of the maxillary left central incisor, shown in Figures 1 & 2. Radiographic evaluation showed root resorption of #21 and healing of the bony socket, Figure 3.



Figure 1

Figure 2

Figure 3

The entire procedure was completed chairside in one single appointment. A rubber dam was applied for isolation Figure 4. The cervical region of the tooth was sealed with a flowable composite after a horizontal groove on the lingual surface of the pontic was made. Figure 5. The Ribbon fibre's length was established. The ribboned fibre was applied over the pontic slot that had been produced, and a flowable composite was used to cure it. Figure 6.



Figure-5

Figure-6

Figure-7

A thorough procedure was done and any occlusal discrepancies of the tooth were checked as the fibre extension of the pontic. On the abutment teeth (11, 22), little preparation equivalent to class 3 cavity preparations was carried out. The abutment's prepared surfaces were etched with 37% phosphoric acid for 30 seconds, followed by a 20-second water rinse. The flowable composite was applied to the prepared tooth surfaces following the application of the bonding agent as well as the pontic fibre extension. Finger pressure was then used to secure the pontic in place. The pontic's fibre extension was cured after being fitted into the grooves that had been created on the abutment teeth.

Instructions given to the patient:

1. Avoid biting on the front tooth that has been replaced with hard foods or objects.
2. The bridge will only help with phonation and aesthetics.

5. Discussion

Ribbon consists of polyethylene fibers with amultidirectional leno weave, planned to be used as are inforcement ribbon. Ribbon is compatible with all composite resin bonding techniques., and it's biocompatible. (4)

Many times there is a requirement for one-visit replacement of a single anterior teeth. A fibre-reinforced fixed partial denture employing an acrylic denture tooth or a composite resin pontic may be created for these situations. Although this approach was employed for anterior teeth as a temporary measure alternative, its cautious preparation and mentioned achievement suggest that it may be taken into consideration as a definitive alternative in certain situations. (3)

Table-2 Describes the advantages and disadvantages of conservative bridge preparation with ribbon fibre.

Advantages	Disadvantages
1. Minimal removal of the tooth structure	Reduced restoration longevity
2. Minimal risk of pulpal injury	Enamel modifications are required
3. Anesthesia is not usually required	Space corrections are difficult
4. Easy impression making	The abutment teeth must be properly aligned.
5. Supragingival preparation	Debonding
6. Typically, interim restoration is not necessary	
7. Shorter chair time	
8. Patient cost savings	
9. Rebonding may be done	

The benefits of this approach are evident. First off, aside from the fibre-mesh material, the process may be completed in a single session and doesn't need any special machinery or equipment. Second, the abutment tooth's periodontal apparatus is completely unaffected. Third, interdental spaces can be created to make it easier to clean between the teeth. Fourth, because this

procedure is noticeably less intrusive, it allows the patient to select various, more advanced traditional tooth replacement methods in the future. Fifth, repairs may be made right away without the need for any sophisticated methods or supplies. ⁽⁵⁾

5. Conclusion

The chair-side technique using the combined method of polyethylene fibres and resin composite retainers provides a fast, minimally invasive method that blends the benefits of fibre-reinforced technology for a practical and durable result. Even though this technique has many advantages, the development of objective guidelines for case selection and placement requires a thorough examination of the physical characteristics of the material and biological systems in combination with extensive medical trials intended to establish long-term efficacy.

CONFLICTS OF INTEREST- None

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Contributions:

A.H - Conception of study

T.A - Experimentation/Study Conduction

Z.R, K.S - Analysis/Interpretation/Discussion

Z.R - Manuscript Writing

M.D.A, M.G - Critical Review

M.D.A, M.G - Facilitation and Material analysis

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