

CASE REPORT

Esthetics in Space Management - Demand of New Era

Kanika Gupta Verma¹ and Pradhuman Verma²

Assistant professor¹
Department of Pedodontics and
Preventive Dentistry
Surendra Dental College & Research Institute
Sri Ganganagar (Rajasthan), India.

Assistant Professor²
Department of Oral Medicine & Radiology
Surendra Dental College & Research Institute
Sri Ganganagar (Rajasthan), India.

Article Info

Received: January 12, 2011

Review Completed: February 15, 2011

Accepted: March 18, 2011

Available Online: July, 2011

© NAD, 2011 - All rights reserved

ABSTRACT:

Premature primary tooth loss has been known to cause space loss with resultant malocclusion. Maintenance of the space may eliminate the need for prolonged orthodontic treatment; for which clinicians prescribe various types of space maintainers. In this century, pediatric dentists aim to incorporate esthetics while maintaining space, by giving esthetic space maintainers to children.

Most commonly two different forms of esthetic space maintainers are in use. One designed with an orthodontic wire and other includes the use of Fiber reinforced composite (FRC). This paper describes two cases where space loss is prevented by the use of resin bonded esthetic space maintainers.

Key words: *Space Management, Fiber Reinforced Composite, Simple Wire Space Maintainer, Composite Resin, Esthetics*

Introduction:

Pediatric dentists must provide answers to parents about the oral health of their children and intercept developing malocclusions that are within treatment talents.¹ One key diagnostic feature for future occlusion status is the occlusion of primary dentition. Premature primary tooth loss has been known to cause space loss with resultant malocclusion.² Maintenance of the space may eliminate the need for prolonged orthodontic treatment; for which clinicians prescribe various types of space maintainer.³

Some changes have appeared in the preparation of fixed space maintainers ever since Buonocore⁴ reported that process of acid etching could increase the rate at which resin holds on to surface of the enamel.

In this century, dental esthetics is on the mind of more adolescents & children. So pediatric dentists aim

to incorporate esthetics while maintaining space, by giving esthetic space maintainers to children.⁵

Most commonly two different forms of esthetic space maintainers are in use. One designed with an orthodontic wire, bonded with resin to the etched enamel for space control.⁶ Other form by utilizing high technology that allows clinicians to test materials as challenging as space maintainers. This includes the use of Fiber reinforced composite resin (FRCR) that has been developed for various other dental applications.⁷

This paper describes two cases where space loss is prevented by the use of resin bonded esthetic space maintainers.

Case report 1: A 9 years old boy reported to the Department of Pedodontics and Preventive Dentistry with multiple grossly decayed teeth (Figure 1). A complete medical and dental history was taken. After the intraoral and radiographic examinations with periapical and panoramic radiographs, it was decided to extract the grossly decayed mandibular primary

Email for correspondence:
drguptakanika@hotmail.com

second molars. With parental consent, extraction was done and space length of lost teeth was evaluated. The Fiber Reinforced Composite, (Ribbond THM, Ribbond Inc, Seattle, Wash) was cut in proper length to the size after intraoral measurement (Figure 2). The prepared dental surfaces were cleaned with pumice, etched by using 37% phosphoric acid, then rinsed, dried lightly, wetted by light curing adhesive, Prime & Bond NT (Caulk, Milford, DE, USA) and light cured. A thin layer of flowable composite (Teric Flow, Vivadent, Lichtenstein) was applied onto tooth surfaces without light cure. Ribbond was positioned onto intended area (Figure 3) and after preliminary curing; restorative composite was further cured for 40 seconds at several points. Occlusion was carefully checked. Finishing and polishing was done to achieve a good esthetic outcome (Figure 4). Patient had controlled appointments at 1 week and was checked after every 3 months.

Case Report 2: A 8.6 years old girl reported to the department with her parents with the chief complaint of badly decayed teeth in her mouth. After complete history taking, intraoral and radiographic examinations, she was diagnosed as the patient with rampant caries (Figure 5). Endodontic and restorative procedures were performed and it was decided to extract some unrestorable teeth (Figure 6). Space maintenance was done using fixed simple wire space maintainer, bonded with flowable composite resin. Prepared rectangular space maintainer was made 1mm away from gingival margin, bonded onto the buccal surfaces of abutment teeth. Abutment teeth were cleaned with pumice polishing paste, subjected to etching by 37% phosphoric acid. After application of bonding agent, Prime & Bond NT, fixed space maintainer was placed on abutment teeth. Bonding was done using Teric Flow, a flowable composite resin and light curing for 40 seconds. Process was completed by finishing and polishing. Patient was highly comfortable with the space maintainer because of comfort and favorable esthetic results (Figure 7).

Patient was recalled every 3 months for the evaluation of space maintainer and abutment teeth.

Discussion:

The placement of the proper space maintainer in children requires the knowledge of the growth process of the dental arch. The space maintainers most commonly used were reported as being band-loop or crown-loop space maintainers prepared in laboratory conditions. In this study, esthetic fixed space maintainers were given that dentist could easily prepare near the patient without needing any laboratory stage.

In this study, flowable composites are used because of their thixotropic qualities, could better adapt to the difficult places to access and that lower air bubbles could emerge during the application.⁸

The use of FRCR is a well established option for the replacement of missing teeth. It is a polyethylene plasma-treated fiber system, semi manufactured product made of fiber system, thermoplastic polymer, and light curing resin matrix for reinforcing dental polymer. FRC is made of unidirectional fibres, which increase the strength and stiffness of the final product perpendicular to the direction of the fibres. FRCR space maintainers are easy to apply, are reliable on adhesive bonding and generally require only one visit, eliminating annual steps.⁹

Simple wire fixed space maintainer is simple to fabricate and require single visit without needing any laboratory stage. Simsek et al⁶ determined that failure rate after 15.6 month follow-up was 5%, as compared to 10-11% failure reported with Band and loop space maintainers.¹⁰ The use of such space maintainers eliminates the problem of rotation in the abutment teeth, which is normally a matter of concern with other space maintainers.

Esthetic space maintainers do not have any contact with adjacent periodontal tissues, thereby eliminating periodontal problems afflicted with conventional fixed space maintainers. They take less space in the oral cavity, which makes them feel natural and easier to clean. The laboratory procedures are eliminated because they do not require casts.

Conclusion:

This case report showed that esthetic space maintainers can be a new alternative to conventional fixed space maintainers used in pediatric dentistry.

References:

1. Ari Kupietzky: Bonded resin composite strip crowns for primary incisors: clinical tips for a successful outcome. *Pediatric Dentistry* 2002; **24**:2; 145-148.
2. Betul K, Esber C, Ugur Kabala: Glass fiber reinforced composite resin space maintainer: Case reports. *J. Dent for Children* 2003; **70**:3; 258-261.
3. Taylor LB. Space maintenance: Is it necessary with cuspal interlock? *J. Dent Child.* 1994; **20**:2-13.
4. Buonocore M.G: A simple method of increasing the adhesion of acrylic filling materials to enamel surfaces. *J. of Den Res*, 1955; 34(6)
5. William F. Waggoner: Restorative Dentistry for primary dentition. *Textbook of Pediatric dentistry*; Jimmy R. Pinkhalm; fourth edition; 341-374.
6. Sera Simsek, Yucel Yilmaz, Taskin Gurbuz: Clinical evaluation of simple fixed space maintainers bonded with flow composite resin. *J. of Dent for Children* 2004; **71**:2; 163-168.
7. M. Yalcin Aydin, Betul Kargul: Glass-Fiber reinforced composite in management of avulsed central incisor: A case report. *J. of Dent for Children* 2004; **71**:1; 66-68
8. Ronald E. Goldstein, Linda C. Niessen: Issues in aesthetic dentistry for older adults. *J. of restorative & esthetic dentistry* 1998; **5**; 235-242.
9. Amir Chafaie, Richard Portier: Anterior Fiber-Reinforced Composite Resin Bridge: A case report. *Pediatric Dentistry* 2004; **26**:6; 530-534.
10. Zuhal Kirzioglu, M. Semra Ozay Erturk: Success of reinforced fiber material space maintainers. *J. of Dent for Children* 2004; **71**:2; 158-162.



Figure 1: Intraoral Photograph Showing Retained 74 and Grossly Decayed 75 and 85



Figure 2: Ribbon Fibres Measured to the Size of Space to be Managed



Figure 3: Positioning of Ribbon Fibre with flowable Composite



Figure 4: Fiber Resin Composite Space Maintainer With A Good Esthetic Outcome



Figure 5: Intraoral Photograph of Patient With Rampant Caries



Figure 6: Intraoral Photograph of Patient After Required Extractions, Endodontic and Restorative Procedures



Figure 7: Esthetic Simple Wire Space Maintainer