Research Paper

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Natural Tooth Pontic – An Easy, Esthetic and Economic Prosthesis – a Case Report.

Medical Science

KEYWORDS : Tooth loss, natural tooth pontic, immediate replacement, splinting, interim prosthesis, Ribbond.

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ABSTRACT

Aims and objectives

Loss of an anterior tooth is a catastrophe. However, immediate replacement of the lost tooth is definitely a comforting proposition. Not only the patient but even the dentist has a strong desire to save an anterior tooth for the primary reason of esthetics. If the tooth crown is not grossly decayed, broken down or discolored, it can be used as a pontic in designing an interim prosthesis.

Case description

A chair side technique using the patient's own natural tooth as a pontic for replacing the missing tooth using a fiber reinforced composite resin splint is described in this article.

Conclusion

This is a simple, economical, and rapid method to replace a single tooth. It requires minimal or no tooth preparation; thus is a reversible technique and avoids the laboratory costs.

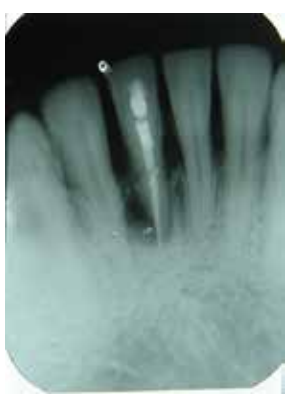
Introduction:

Loss of a tooth or teeth in the anterior zone of the dentition is a dreadful situation for one and all. The most important concerns involve esthetics, phonetics and functional disability to some extent. The common reasons for tooth loss in the anterior region include trauma, severe periodontitis, endodontic failures etc. Immediate replacement of the lost or the extracted teeth is necessary for the aforementioned reasons. The options include an immediate removable partial denture, immediate implants etc. Another treatment option is a periodontal splint using the crown of the extracted tooth as a natural pontic (1). A variety of materials are available for this purpose which include multiflex orthodontic wires, steel meshes, glass or fiber splints etc.(2-4). The main advantages of this technique are its simplicity, reversibility and affordability. The natural tooth pontic splinted to the periodontally compromised abutments definitely creates a win – win situation in terms of replacement of the lost tooth as well as stabilizing the adjacent teeth. It may even be retained as a definitive prosthesis in some cases.

Case Report:

A 40 year old female patient was referred to the department of Periodontology, Bharati Vidyapeeth Dental College & Hospital, Pune with the chief compliant of loosening of a tooth and a draining sinus on the lingual side in front region of the lower jaw since 10-15 days. The patient had a fall around one year back and had undergone root canal treatment with 31 around six months back in a private dental clinic. The patient was asymptomatic for the next four to five months. However, since the past 10-15 days she noticed a slight swelling in the lower front region on the lingual side. She also noticed occasional pus discharge from the swelling. On intra- oral examination, 31 was grade II mobile while the lower front teeth 32, 41, 42 had grade I mobility. There was a deep lingual pocket associated with 31 and also a draining sinus was evident lingually. Introral periapical radiograph of 31, 32, 41, 42 region showed approximately 50 % bone present with 31 and nearly 60% bone present with 41, 42 and 32 (Fig. 1).

Figure 1: Intraoral periapical radiograph of 31, 32, 41, 42 region.



A lateral radiolucency was seen with 31 which also extended towards 32. A radiolucent line extending across 31 at mid root level was present and so a root fracture was suspected. Considering all these factors, 31 seemed to have a poor prognosis and so was extracted. On extraction, an iatrogenic labial perforation was evident (Fig. 2).

Figure 2 : Extracted 31- iatrogenic perforation evident.

It was decided to use the crown of the extracted tooth as a pontic. The patient was recalled on the next day for splinting.

An in vitro endodontic treatment was carried out with the extracted tooth and it was filled with a flowable composite resin. The length of the natural tooth pontic was determined by measuring the distance from incisal edge of the central incisor to the extraction site. Some additional length was added so the pontic would be touching the gingival tissue when the extraction site healed. The extracted tooth was measured with a periodontal probe to the length needed. The root was cut from the crown with a 556 bur (SS White Burs) and then shaped with a flame-shaped finishing bur (SS White Burs).The gingival aspect of the tooth was smoothed and shaped to be rounded (Fig. 3).

Figure 3 : Natural tooth pontic cut to the desired length and edges rounded.

Various materials available for periodontal splinting include adhesive composite resins, wires, metal mesh, nylon, cast metal frameworks bonded to adjacent teeth, glass or polyethylene fiber reinforcement materials etc. Ribbond (Ribbond Inc., Seattle,WA, USA), is a bondable, polyethylene, lock-stitch multidirectional reinforcement ribbon for composite resin (5,6). Ribbond offers not only excellent composite resin reinforcement but also ease of use and an assortment of widths of the fibers to manage a wide variety of clinical situations. It has been reported that the lock-stitch weave of Ribbond is easier for clinicians to manipulate and use when compared to other fiber materials. Also, research has demonstrated that the fiber reinforcement architecture with Ribbond Reinforcement Ribbons provides for an increase in flexural strength and flexural modulus of composite resins that resists cracking (7).

As the central and lateral incisors 41, 42, 32 also were mobile, it was decided to splint the teeth from canine to canine i.e. from 33 to 43. The teeth were cleaned on the facial and lingual surfaces using a prophylaxis cup with a non fluoridated pumice paste. The teeth were then thoroughly rinsed and dried. A piece of dental floss was laid onto the lingual surface at the level of the proximal contacts and cut to length. With the cut floss, a 3-mm-wide piece of Ribbond was taken and cut to an equal length as the floss The polyethylene ribbon is extremely tough. To cut the fiber ribbon, the manufacturer supplies a scissor with special cutting blades as part of the product kit. The ribbon was then wetted with adhesive resin. Once wetted, the white opaque appearance of the ribbon changes to an esthetic translucency. The ribbon was then blotted to remove excess resin using a paper napkin. It was put aside and covered to block any light until it could be embedded in the composite resin on the teeth. The natural tooth pontic was etched with a phosphoric acid etchant for 15 seconds, rinsed with water and dried. A resin adhesive (Prime & Bond, Dentsply) was painted on the etched surfaces. It was also put aside until it was time to bond it to place The teeth adjacent to the pontic in the mouth were etched for 30 seconds with a 32% phosphoric acid gel. The teeth were then rinsed with an air-water spray for 10 seconds and gently dried. Prime and bond, was applied to the etched enamel surfaces using a disposable brush. The tooth pontic was picked up with cotton pliers and placed in the area where it was extracted and the incisal edge height was adjusted at the same height as the adjacent central incisor. Using plastic filling instruments Ribbond was embedded into the composite resin starting at the left canine and moving around the arch to the right canine. The ribbon was adapted on the lingual and interproximal surfaces using a cotton pliers and plastic filling instrument. It is important that the ribbon be as closely adapted to the lingual surfaces of the teeth as possible. At this time the ribbon may be visible and not completely covered with an adequate thickness of composite resin. A flowable composite resin (Tetric Flow, Ivoclar, Vivadent) was applied to smooth the irregular lingual surface and provide an even thickness of composite covering the ribbon The flowable composite resin on the lingual surface was light cured for an additional 10 seconds for each tooth. The composite resin was shaped, finished, and polished to remove any excess restorative material and achieve an aesthetic result. The patient was shown the use of a proximal brush to clean the embrasure areas. The natural tooth pontic is functioning well two years after placement (Fig 4).

Figure 4: Splinted natural tooth pontic - 2 years in function.

Discussion

Immediate replacement of a lost anterior tooth definitely lessens the psychological impact of tooth loss on the patient. A number of cases have been reported using this technique. One or two teeth can be replaced using the natural teeth as pontics. Quirynen et al assessed the longevity of composite bonded resin or natural teeth as replacements for periodontally lost lower incisors and reported a survival rate of 80% after 5 years of function (8).

However, difficulties can be encountered with spaced teeth. In these cases, good aesthetics can be achieved by considering composite build-up of the abutment teeth to allow space closure. Also, in presence of crowded or malaligned teeth, slight proximal disking may be required to accommodate the pontic. The main limiting factors with this technique are patient compliance with maintainence of meticulous oral hygiene, limited functional efficiency, chances of discolouration of the pontics over years and chances of splint fracture. Periodic recall visits for evaluation are therefore essential.

REFERENCE

1. Kretzschmar JL. The natural tooth pontic: A temporary solution for a difficult esthetic situation. J Am Dent Assoc 2001;132:1552-3. | 2. Parolia A, Shenoy KM, Thomas MS, Mohan M. Use of a natural tooth crown as a pontic following cervical root fracture: A case report. Aust Endod J 2010;36:35-8. | 3. Stoller NH, Green PA. A comparison of a composite restorative material and wire ligation as methods of stabilizing excessively mobile mandibular anterior teeth. J Periodontal 1981;52:451-4. | 4. Friskopp J, Bromlof F, Soder PO. Fiber glass splints. J Periodontol 1979; 50:193-6. | 5. Karbhari VM, Strassler H. Effect of fiber architecture on flexural characteristics and fracture of fiber-reinforced composites. Dent Mater.2006 | 6.Rudo DN, Karbhari VM. Physical behaviors of fiber reinforcement as applied to tooth stabilization. Dent Clin North Am. 43(1):7-35, 1999. | 7. Strassler HE, Karbhari V, Rudo D. Effect of fiber reinforcement on flexural strength of composite. J Dent Res (Special Issue), 80:221, (abstract no. 854), 2001. | 8. Quirynen M, Mongardini C, Lambrechts P, Geyseleer CD, Labella R, Vanherle G, et al. A long term evaluation of composite bonded natural/resin teeth as replacement of lower incisors with terminal periodontitis. J Periodontol 1999;70:205-12. |