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INTERIM FIXED SPACE MAINTAINER: A NEW TECHNIQUE

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ABSTRACT: The loss of permanent tooth in adolescent patient makes it highly desirable to perform the necessary treatment as expeditiously as possible. When a tooth is lost, space maintenance should be provided immediately after extraction to prevent tipping, tilting, or rotation of the abutment teeth or eruption of the opposing teeth. To ascertain function and esthetics, immediate treatments include interim space maintainer approaches. So this report describes a new technique for the management of the lost mandibular second premolar with a fixed functional interim space maintainer in a 12-year-old boy. The technique offers provision of conservative and cost effective fixed interim space maintainer which can restore correct, harmonious, and nondestructive occlusal relationships.

KEYWORDS: Interim restoration, space maintenance, permanent second premolar

INTRODUCTION

Adolescents are often affected psychologically by the unacceptable appearance of diseased, damaged, or missing teeth, one should provide immediately an appropriate treatment to avoid any consequences within the arch and with the opposing arch. The loss of a lower second premolar can lead to tipping of the molars, and premolars may undergo greatest amount of distal drifting with all the teeth anterior to the space, including the central and lateral incisors on the side where the loss occurred, may show evidence of movement. Different techniques for the space management after the loss of second premolar have certain limitations. This report provides a new approach for the management of lost second premolar in an adolescent patient.

Case Report

A 13 year old male with no relevant systemic history reported with carious permanent second premolar to the Department of Pedodontics, Navodaya Dental College and Hospital, Raichur.

The patient's clinical and radiographic examination revealed grossly decayed permanent mandibular second premolar and had a large periapical abscess with an intermittently draining extra oral sinus on the lower border of the mandible (Fig. 1-4). Hence the tooth was extracted and the sinus tract was removed extra-orally. Since the first premolar was not fully erupted, and the patient was not ready to wear a removable appliance, an economical fixed interim space maintainer was designed and delivered to the patient. The follow-up for 3months revealed satisfactory results. The appliance was intended to remain in place until the patient's occlusion is enough to receive a permanent prosthetic replacement

Technique

The technique devised by Rajashekhara et al⁴, for the fabrication of the fixed interim space maintainer was followed.

Band adaptation was done for the adjacent abutment teeth i.e., mandibular first premolar and mandibular first molar using 0.004*0.150*2 inches and 0.006*0.180*2 inches band material respectively (Fig. 5. and Fig.6). Alginate impressions of both the arches were made bands were stabilized in the impression and cast prepared. A wire mesh was constructed by bending 26-G stainless steel orthodontic wires. The width of mesh was 2mm less than the bucco-lingual width of the crowns. The length and contour of mesh correspond to the edentulous space. The mesh was soldered to the bands contoured for the abutment teeth. The mesh served to hold the three units of bridge together. The gingival extension of the wire mesh was placed 1mm above the ridge to allow adequate cleansing while not allowing food entrapment or gingival irritation. The occlusal rest is prepared on first premolar and first molar for better retention. Finishing and Polishing of the soldered joint was done (Fig. 7). A mandibular second premolar is selected as pontic (Fig. 8). The pontic was attached to the finished wire framework using auto polymerizing acrylic resin, matching the shade of the pontic. The acrylic attachment was finished and polished. The bridge was ready for a try in the patient's mouth for



Fig.1. Extra oral sinus opening



Fig. 2. Intra oral view

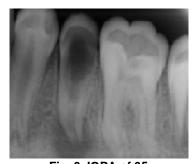
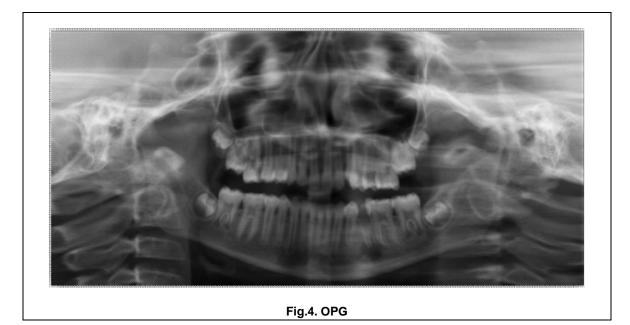


Fig. 3. IOPA of 35



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final adjustments. The bridge was assessed for the gingival extension and soft tissue blanching. The occlusal and eccentric movements were adjusted. The bridge was cemented with Fuji I Glass ionomer luting cement [Fig. 9].

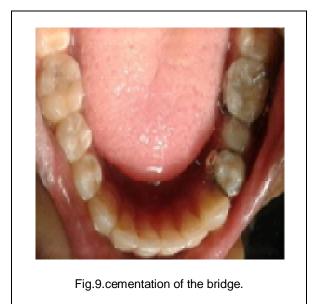
Discussion:

The loss of tooth will invariably lead to severe mutilation of the developing dentition unless an appliance is constructed to maintain the relationship of the remaining teeth and to guide the eruption of the developing teeth.

The space can be maintained, this may be accomplished in one of the several ways. $^{\rm 1}$

- Cast overlay band and loop.
- Band and loop space maintainer with occlusal bar and rest.
- Conventional fixed bridge work
- Etched casting, resin-bonded posterior bridge.
- Single unit implant prosthesis.

The fixed interim space maintainer presented over here stands out as an appropriate treatment modality in case of loss of a permanent tooth in a young adolescent patient. Success of bonded prosthesis is variable, design-dependent and requires the abutment teeth to have adequate structure and sound enamel for etching and bonding.²



Advantages

Functional, Good patient compliance, Readily acceptable, Maintains the mesiodistal dimensions of the lost tooth, Prevents supra eruption of opposing teeth and It does not restrict normal growth and development. These are among the ideal requirements for a space maintainer³.

CONCLUSION

Space maintenance forms an integral part of preventive orthodontics. After the loss of a tooth, space maintainers maintain function and preserve arch length, and eliminate any potential psychological damage a patient could face as a result of the loss of teeth. Fixed interim space maintainer presented in this article provides conservative and cost-effective approach which can restore correct, harmonious, and non-destructive occlusal relationship.

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