

Case Report

Mini-screw assisted interim pontic

ABSTRACT

Replacement of missing teeth in growing children is one of the challenges an orthodontist encounters. Removable partial denture or resin-bonded fixed denture can be considered as replacement options, but they promote alveolar bone loss due to lack of alveolar loading. Removable denture is undesirable as adolescents are self-conscious in revealing the edentulous space while eating. Resin-bonded fixed denture compromise alveolar and gingival contours. Dental implants are not placed in growing children due to remaining growth. Orthodontic miniscrews can be efficiently used for interim restoration before skeletal growth. The current article presents a case report of miniscrew-assisted interim tooth pontic.

Keywords: Growing children, interim pontic, miniscrew

INTRODUCTION

Replacement of the missing anterior tooth either due to developmental absence or due to traumatic injury in growing children poses challenge to orthodontists. Removable partial denture and resin-bonded fixed partial denture can be used. However, these options have their own disadvantages. The removable options are not well tolerated by adolescents as they are self-conscious to reveal their edentulous space by taking out the tooth while eating.^[1-3] Fixed options require enamel reduction, and they do not guarantee ideal gingival and alveolar contours.^[4,5] Moreover, bonded bridges and removable dentures have been associated with atrophy of the local bone eventually compromising the esthetics at the pontic site. At times, even soft tissue and bone grafts may be required if dental implant is planned.^[6]

Osseointegrated implant is the other option, but a dental implant should not be placed in a patient younger than 18, because they become analogous to ankylosed teeth and they submerge relative to the adjacent teeth. In adolescent growth, the bone of the maxilla continues to develop vertically, and the dentition erupts with this vertical growth. Bone around implants, however, remains stationary during the adolescent

growth period, leading to vertical bone defects and apparent submersion of the crown of the implanted tooth.^[7-9]

An innovative procedure to restore pontics with temporary anchorage devices (TADs) has been proposed. TAD to support pontics is a revolutionary use of anchorage devices and is beneficial not only for retention but also for temporarily providing the patient with a pontic tooth during this phase of vertical facial growth.

CASE REPORT

A 13-year-old male patient visited our clinic with missing upper left central incisor (21). He had a history of trauma and the tooth got avulsed when he was 8 years old. The edentulous space got reduced due to the tipping of upper right central incisor (11) and upper left lateral incisor (22). Other extraoral and intraoral features

**RAMANA REDDY SBV,
VENKATA NAGA SRAVANTHI JONNALAGADDA**

Private Practitioners (Orthodontists), Eswar Dental Clinic, Hyderabad, Telangana, India

Address for correspondence: Dr. Ramana Reddy SBV, Eswar Dental Clinic, MIG-276, Road No. 4, KPHB Colony, Hyderabad - 500 085, Telangana, India.
E-mail: eswardental@rediffmail.com

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looked to be normal, except for mild lower anterior crowding [Figure 1].

Upper and lower arches were leveled and aligned using Smart Clip of 0.022 slot (3M). Once sufficient space was opened, an acrylic riding pontic of upper right central incisor width was placed [Figures 2 and 3]. Once the braces were removed, a lingual retainer and an acrylic temporary pontic were also placed by bonding onto adjacent teeth with composite [Figure 4]. The patient visited us many times with the debonded pontic. Hence, a miniscrew-assisted interim pontic was planned. A stainless steel miniscrew (A1 Series) of 10 mm length and 2 mm diameter was inserted into the crest of the alveolar ridge with the head of miniscrew resting over the alveolar ridge. Composite material was added to cover the undercuts of the screw, and the head of the screw was prepared for making an alginate impression [Figures 5 and 6]. The impression was sent to the laboratory for the fabrication of temporary pontic. Later, the temporary acrylic pontic was cemented onto the prepared miniscrew [Figure 7].

DISCUSSION

A miniscrew-assisted pontic is an effective alternative to a Maryland bridge or a removable denture for temporary replacement of a missing tooth in an adolescent patient. Although mini-implants experience some osseointegration, their polished, smooth surfaces allow them to be removed without anesthesia. The risk of fracture during insertion and removal is quite low when large diameter screws are used. Mini-implant that is large enough for stability but small enough to avoid interference with alveolar growth should be chosen.^[10] This approach allows for the vertical development of the alveolar process and maintains the bone density and morphology of the alveolar process, making the later insertion of a dental implant possible without additional surgical build-up.^[11] It is understood that this method is a temporary esthetic solution and a space maintainer until growth is completed.^[12]

The use of TADs to support pontics in growing patients is an excellent opportunity to communicate with referring

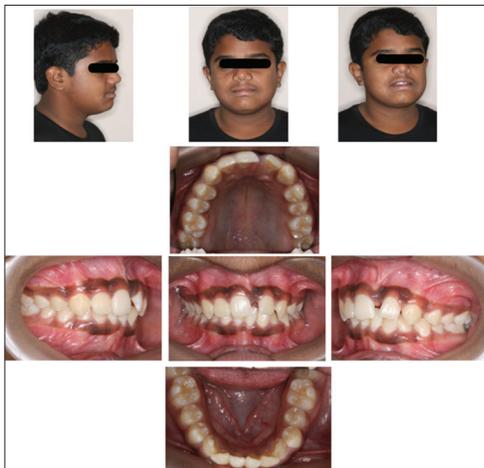


Figure 1: Pretreatment intraoral and extraoral photographs



Figure 2: Sufficient space opened for replacement of 21



Figure 3: Riding pontic placed in relation to 21

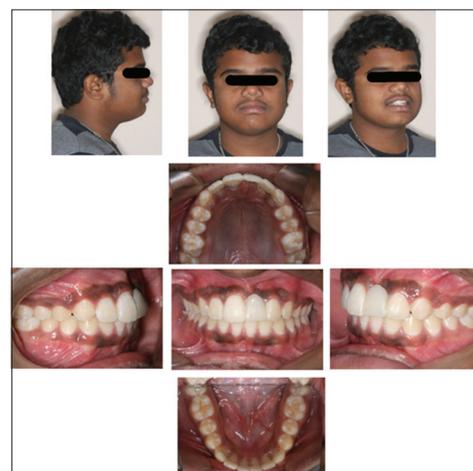


Figure 4: Posttreatment extraoral and intraoral photographs with acrylic temporary pontic



Figure 5: Miniscrew placed in 21 region

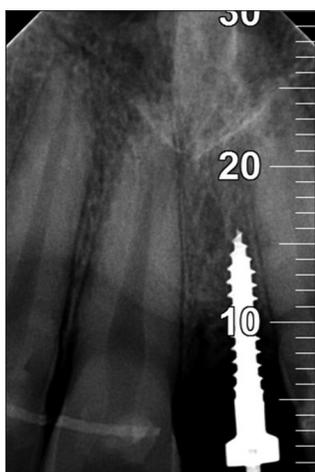


Figure 6: Intraoral periapical showing miniscrew of 10 mm placed in 21 region



Figure 7: Acrylic crown cemented in relation to 21

to a general dentist. The key point to make with referring dentists is that this is analogous to a retainer with a tooth on it, simply holding space and bone until they are ready to place a permanent implant. It may be argued that interim restoration of the missing teeth with orthodontic miniscrew should be performed by restorative dentists or prosthodontists. However, orthodontists have the most training, the most experience, and the greatest comfort with TADs. It is only natural that the orthodontist is the appropriate person to maintain the TAD and temporary restoration just as would occur in retention maintenance.^[6,13]

CONCLUSION

The placement of TADs for the support of pontics in edentulous spaces in growing patients offers an efficient way of retention. The patient gets psychological benefits from not wearing the removable retainer. The crestal and buccolingual alveolar bone and soft tissue volume are preserved during and through the completion of facial growth. Removable and resin-bonded options cause atrophy of alveolar bone, necessitating the soft tissue and bone grafts at the time of permanent restoration. Weighing its advantages, miniscrew-supported pontic should be considered as a treatment option for restoration of missing teeth in growing patients. The case report presented above was an ideal case for miniscrew-supported interim pontic, as the patient was in growing phase with noncomplaint behavior for a removable appliance and the chances of breakage of pontic are less.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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