

One-piece implant in reduced edentulous space closure: A report of two cases

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Abstract

Dental Implants have gained popularity over the years and are increasingly becoming the choice of treatment. Different clinical situations are often encountered where modifications have to be considered in order to achieve successful rehabilitation. One of the challenges faced includes non-availability of sufficient space for conventional implants. Here, we present 2 case reports of patients with over two year follow up using one piece implant.

Keywords: Anodontia, implants, one-piece implant, smaller diameter implants

Introduction

The edentulous space between the teeth especially the upper laterals, lower anteriors and upper and lower premolars still remains a challenge to the practicing dentist. The space can further be decreased by drifting of adjacent teeth, changing the dimensions of the space available. The conventional methods to achieve closure are light cure build ups, laminates, bridge or removable partial dentures, which can affect the tooth, gingival health and contour as well as cause damage to the adjacent teeth.^[1-4] In this vicious paradigm an implant emerges as a better solution in avoiding the associated problems. The placement of conventional dental implants requires certain principles. The area of concern however is restoring of edentulous spaces between the teeth by a thinner implant to satisfy both esthetic and functional requirements.^[5]

One-piece implants are currently experiencing an era of renaissance in implant dentistry for a variety of reasons, the most important of which are minimally invasive surgical techniques, maximum tissue preservation, a simpler treatment sequence and lower cost. In terms of implant

prosthodontics, technical complexity is minimized by reducing the number of components required, which also means that less treatment time is required. In conjunction with state-of-the-art computer-aided design/computer-aided manufacturing technologies, numerous innovative treatment options are now available, encompassing the entire range of modern prosthodontics.^[6]

Case Report

We report a case of two patients aged 36-year-old male and 20-year-old female were treated for edentulous space closure. Patients were selected systemically healthy, non-smokers with no contraindication for surgery. Following the clinical evaluation, the procedure and complication of implant therapy were explained and consent taken for the proposed treatment. The spacing between the teeth was carefully evaluated both clinically and on the cast and was found to be about 5.5 mm in one and 5 mm in the other patient; mesio-distally with a 4 mm width (bucco-palatally) at the crestal region in both. Partial closure of spacing in the male patient was noted due to drifting of adjacent teeth. Radiographs were assessed for the type of bone and for the presence of any pathology. The condition of adjacent and upper teeth was assessed and found within bounds [Figures 1-6].

Treatment procedure

Armamentarium include surgical implant kit containing drills (2 mm and 2.2 mm only), round bur, wrench, insertion tool and physio-dispenser.

Following standard aseptic preparation, implant site was anesthetized by infiltration of Lignocaine with adrenaline. Flaps on the buccal aspect using crestal incisions were raised. The appropriate position of the implant on the crest was marked using a round bur. A 2 mm Pilot drill was used to make the penetration until the desired length. Then a 2.2 mm drill was used to the depth of 13 mms and the single piece implant (TRX OP 2.8 mm × 13 mm, Life Care Devices Pvt. Ltd.) inserted using the wrench.

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Treatment outcomes

A total of two patients treated for edentulous space between the teeth using one-piece implant showed complete success. There were very minimal post-operative complaints mainly in the 1st week after placement. Surrounding tissues including adjacent teeth were found to be in good condition on follow-up for 2 years. On completion of treatment, the patient's esthetics and functions improved.

Discussion

This paper reports a case of a 2 years follow-up of two patients in whom edentulous space closure due to missing first and second premolars was achieved using one-piece implant. Good clinical results were achieved with no sign of bone resorption or infection or implant rejection due to any other cause.

Clinicians come across situations where spacing between teeth caused due to various reasons require treatment.

Conventional treatment modalities such as light cure build ups, laminates and RPDs have their own limitations.

Ever since implants have gained popularity, its use in different situations and structural re-modifications has been an ongoing process. One such invention is the one-piece implant and its usage in situations mentioned above.^[7]

The advantages of one-piece implants are many; esthetic and functional rehabilitation, shorter procedure time, minimum armamentarium, least damage to the surrounding tissues and better usage in space closure where conventional implants^[8] are not feasible and reduced cost.^[9] Since a small drill is used, the damage to the surrounding tissues is minimal and immediate esthetic rehabilitation is possible. The one-piece implants have shown to possess better advantages to the conventional dental treatment protocols for filling of minimal space measured between 5 mm and 6 mm.^[10]



Figure 1: Pre-operative photograph showing the spacing in the region of 1st premolars (patient 1)

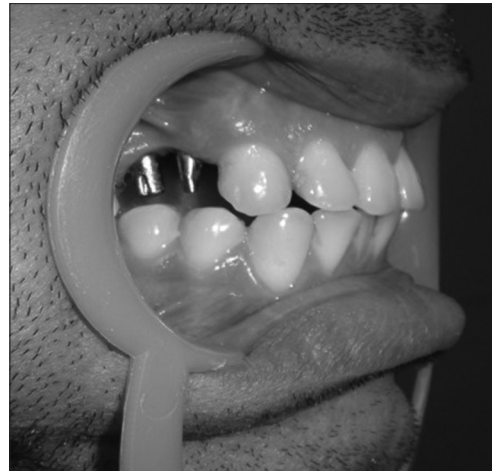


Figure 2: One-piece implant in space in the region of 1st premolar (patient 1)

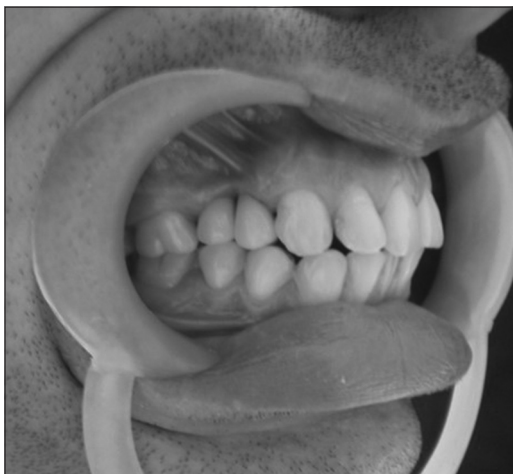


Figure 3: At 2 years post-operative photograph following prosthetic rehabilitation (patient 1)

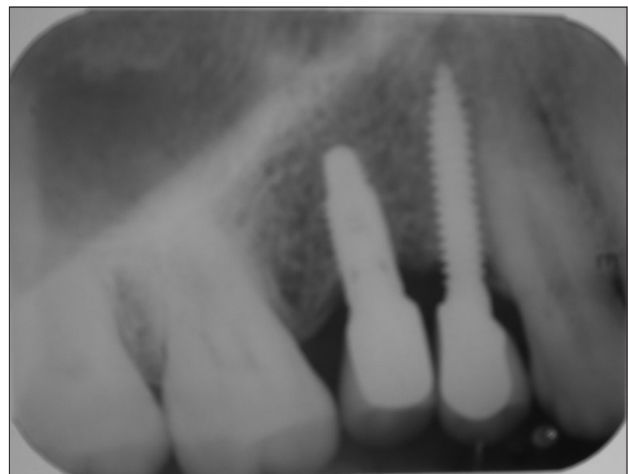


Figure 4: Post-operative radiograph after 2 years showing the one-piece implant place (patient 1)



Figure 5: Space due to congenitally missing upper left lateral incisor closed (patient 2)

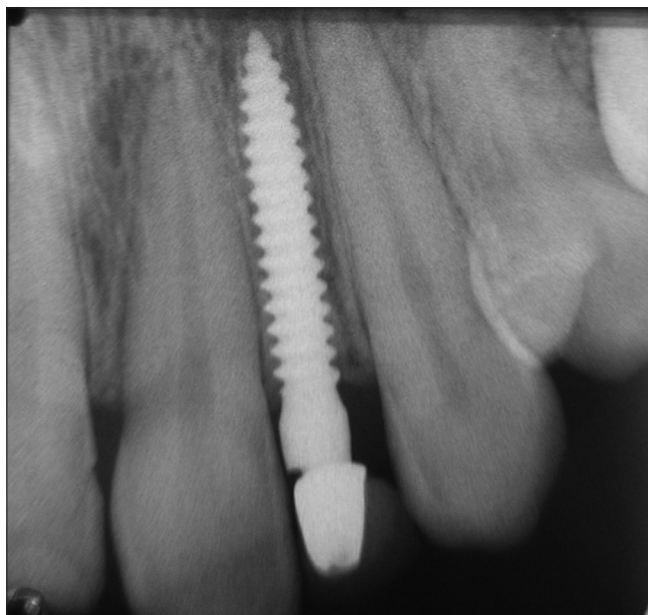


Figure 6: At 2 years post-operative radiograph of upper left lateral incisor closed using one-piece implant (patient 2)

Management of edentulous spaces in patients with missing teeth demands careful planning and often a multidisciplinary approach. The success of implant depends on the presence of sufficient tissue dimensions and on primary stability being achieved safely.^[11] In situations where esthetic and functional requirements are demanding and challenging as in congenitally missing anterior teeth of smaller diameter, edentulous space following orthodontic treatment or additional space that remains following conventional implant replacements, the dentist needs to plan for an alternative treatment procedure that best suits the situation. In such instances, one-piece implants can provide satisfactory

results.

The patient's acceptance of the treatment plan and restorative solution were certainly promoted by the use of one-piece implants with careful treatment planning and a minimal invasive insertion technique. The favorable implant survival rate and stable bone level together with esthetic and soft-tissue outcomes indicate that this one-piece implant is a viable treatment option.

The conventional space management options include; no treatment, orthodontic space closure and replacement of the missing tooth with denture, bridge or composite restorations. This article considers the possible options for closure of space of 5-6 mm with the use of implant. New methods and techniques should be added for advantages and further research is advised in this field.

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