



MULTIDISCIPLINARY APPROACH FOR MANAGEMENT OF CONGENITALLY MISSING LATERAL INCISORS - 5 YEAR FOLLOW UP: A CASE REPORT

Dental Science

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ABSTRACT

Several treatment modalities have been recommended for the replacement of congenitally missing anterior teeth. Selecting the appropriate treatment option requires a multidisciplinary approach so that the desired functional and esthetic outcomes can be achieved. This case report closely focused on a combined orthodontic as well as prosthetic approach using single tooth implants in the management of congenitally missing lateral incisors.

KEYWORDS

lateral incisors, esthetic zone, multidisciplinary approach, Implant supported PFM crowns

INTRODUCTION

The replacement of congenitally missing lateral incisors requires the use of an interdisciplinary treatment approach to achieve the desired functional and esthetic outcomes. The lateral incisor is the second most common tooth to be missing after third molars and incidence varies in literature from 1-5%.^{1,3} Treatment options include canine substitution, prosthodontics restorations including fixed and removable prostheses, resin-bonded retainers and single tooth implants.^{4,6} Selecting the treatment option depends on the occlusion, anterior relationship, specific space requirements, periodontal factors and condition of the adjacent teeth.

The success of osseointegrated implants has revolutionized dentistry. Single-tooth implant based rehabilitation has become one of the most conservative treatment alternatives for the replacement of missing teeth. Implant based treatment option for congenitally missing lateral incisors requires an interdisciplinary management approach as these implants are esthetically challenging. The orthodontic improvement is usually necessary as a pre-prosthetic approach in such cases and the treatment should be closely coordinated with the implant placement and the restorative team. This case report demonstrates combined orthodontic and surgical/ prosthodontics approach for implant based rehabilitation of congenitally missing lateral incisors.

CASE REPORT

A 20 year old male patient referred to the outpatient department, Department of Prosthodontics Subharti Dental College & Hospital with the chief complaint of bilateral congenitally missing maxillary lateral incisors (fig 1). The patient was undergoing an active orthodontic treatment for past one year. On intraoral examination it was found that both maxillary lateral incisors were congenitally missing (Fig. 2). Patient was explained about different treatment options. Patient wanted replacement of the missing teeth with implant-supported fixed prosthesis to restore esthetics and function. Patient was apparently healthy with no medical history.

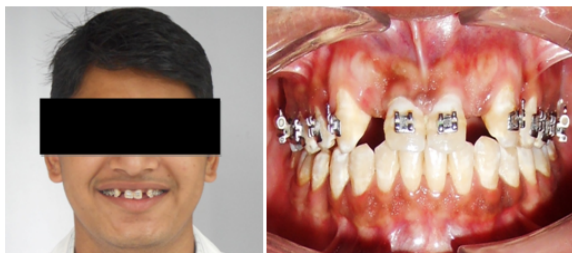


Fig 1 & Fig 2. Clinical Photographs showing bilaterally missing maxillary lateral incisors

A complete case history was taken and was advised to undergo routine blood investigations and an orthopantomogram(OPG) was taken (Fig 3). Clinical and radiographic examination revealed that the mesio-distal width of available alveolar bone between the maxillary central incisor and maxillary canine on right side was 7.6 mm and 7.8 mm on left side. Oral prophylaxis was done and diagnostic Impressions were made and poured in type IV gypsum product (Kalabhai).



Fig 3. Orthopantomogram (OPG)

Surgical and Prosthetic Phase

Patient consent was taken prior to the surgical procedure. All sterilization and disinfection protocols were followed prior to surgery. Local anesthetic solution was administered using lignocaine 2% (1:80,000) and full thickness mucoperiosteal flap was reflected. Osteotomy was done using physiodispenser (NSK Nakanishi Inc. Tochigi Japan) with sequential drilling. Patient underwent placement of 3.3 mm × 11.5 mm (Alpha-bio SPI Dental Implant System, Israel) implants bilaterally in lateral incisor regions (Fig. 4). Patient was recalled after a week for suture removal. Conventional loading protocol was followed and gingival healing screws were placed three months after the implant placement.



Fig 4. Implants placed in lateral incisor region bilaterally

After 10 days implant level impression was made with polyvinyl siloxane impression material (Imprint II; 3M ESPE). Impression was poured in type III gypsum product (Kalabhai). The secondary models were poured following attachment of implant analogs to impression

copings, as the implants were placed on the prosthodontic axis so straight abutments were used. Metal try (fig 5) in was done to evaluate the marginal accuracy. The abutment was prepared to provide ideal alignment and emergence profile of the crown. A metal-ceramic crown (fig 6) was cemented with glass ionomer cement (KetacCem, 3M ESPE). Post-operative OPG was taken (Fig. 7) and patient was instructed regarding oral hygiene and maintenance of prosthesis. The patient was highly satisfied with esthetics of implant supported prosthesis (fig 8). Patient was scheduled for regular maintenance therapy at an interval of 6 months and has completed 5 years of follow-up with no clinical complications (Fig. 9).



Fig 5. Metal trial done



Fig 6. Cementation of metal ceramic crown



Fig 7. Post operative OPG



Fig 8. Post cementation frontal view



Fig 9. OPG at a 3 year follow up visit

known as the esthetic zone for implant placement. Improved technology involving the surface of the implant body, abutment connection and prosthetic reconstruction of implants provided successful osseointegration with raised possibility of totally mimicking the esthetics and function of natural teeth at this area.⁸ The main advantage of this type of restoration is that it leaves the adjacent teeth intact. Belser et al⁸ reported that under normal circumstances, anterior implants should not be placed prior to the end of growth i.e. in females prior to age of 16 and in males prior to age of 18.

This case report demonstrates the combined use of orthodontics and implantology to replace the congenitally missing lateral incisors. Preparatory orthodontic treatment may be needed to align teeth, create adequate space in addition to establish an optimal axial inclination of the teeth adjacent to the proposed implant site.⁷ A multidisciplinary approach with proper patient selection and diagnosis is recommended in cases with single tooth restoration to achieve desired esthetics and functional outcomes.^{5,6,7,9}

Proper prosthetic concepts must also be followed to maximize esthetics and function. The clinician must consider the time needed for implant integration and soft-tissue healing, creation of emergence profiles, occlusal forces in relationship to loading and on the final restoration⁶. Therefore, replacement of missing teeth in the esthetic zone should be considered challenging and must be diagnosed early so that a multidisciplinary approach can be established at a nearly stage.

It can be concluded that single tooth implant rehabilitation in esthetic zone is a challenging task and requires a multidisciplinary treatment approach to achieve the desired treatment outcomes. Early diagnosis and treatment planning of the congenitally missing laterals is important so that appropriate orthodontic and prosthodontic intervention can be followed.

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DISCUSSION

Wheeler⁷ considered anterior maxilla as one of the most difficult areas,