

PROSTHODONTIC REHABILITATION OF PATIENT WITH NONSYNDROMIC OLIGODONTIA: A CASE REPORT

Jitendra J. Mete^A, Vilas Rajguru^A, Amit Chavan^B, Shankar P. Dange^C

A - Associate Professor, Department of Prosthodontics, Government Dental College, Aurangabad, Maharashtra, India

B - Senior lecturer, DRRK Dental college, Akola, Maharashtra, India

C - Dean and Professor, Department of Prosthodontics, Government Dental College, Aurangabad, Maharashtra, India

Prosthodontics

Manuscript reference number
NJMDR_5310_17

Article submitted on: 31 May 2017
Article accepted on: 03 June 2017

Corresponding Author

Jitendra J. Mete, MDS
Associate Professor,
Department of Prosthodontics,
Government Dental College,
Aurangabad, Maharashtra, India
Pin code: 431001
Email: jeetendra1685@gmail.
com

Abstract:

Oligodontia is the agenesis of six or more teeth, excluding third molars. Congenital absence of teeth is a polygenetic disorder that can occur either in isolation or as a co-finding in many syndromes. Clinical features, diagnostic characteristics and management strategies all depend on the severity of the condition, presence or absence of associated syndromes and available resources. The absence of teeth in patients can cause aesthetic, functional, and psychological difficulties, particularly if the anterior teeth are involved. This case report describes the role of prosthodontist in the multidisciplinary treatment approach for a twenty-three years old female patient with non-syndromic oligodontia. After pre-prosthetic orthodontic proper alignment and positioning of teeth and correction of inter-maxillary relations, prosthetic rehabilitation was carried out. Prosthetic rehabilitation involved full-mouth porcelain fused to metal crowns and bridges after increasing occlusal vertical dimension by two millimeters. Patient expressed complete satisfaction with function and esthetic of prosthetic rehabilitation.

Key words: oligodontia, prosthetic rehabilitation, PFM crowns, fixed dental prostheses

Introduction

Congenital absence of one or more of the normal complement of teeth and is one of the most frequent alterations of the human dentition.¹⁻³ Congenital absence of teeth has been classified as hypodontia (two to six teeth missing), oligodontia (more than six teeth missing) and anodontia (all teeth missing).⁴ Oligodontia is associated with masticatory, speech, and esthetic difficulties which may result in to psychological problems.⁵ Oligodontia can occur as an isolated finding which can be sporadic or familial or could be part of a syndrome. Single dominant, recessive and X-linked genes have been isolated in familial oligodontia, though expressivity and penetrance may vary depending upon dentition, gender,

demographic and geographic profiles. The permanent dentition usually presents with a distinct pattern of agenesis involving the last teeth of a dentition group to develop.⁶ Subjects with congenital absence of teeth present with a characteristic clinical picture depending upon the nature and severity of the disease condition as well presence or absence of any other syndromic predispositions.^{1, 5, 6} These subjects usually present with shorter anterior and overall cranial base length, retrognathic jaws and counterclockwise-rotated occlusal plane.⁷ They have reduced alveolar bone formation in the affected edentulous areas. Impaired oral stereognostic and oral motor abilities have been reported in patients with congenitally absent teeth.^{7, 8}

Different treatment options available for

individuals affected by oligodontia include osseointegrated dental implants, fixed and/or removable dental prostheses with or without orthodontic treatment to align the teeth and to close the abnormal tooth spaces. Genetic engineering can be a new target in tooth loss. However, these subjects require a multidisciplinary team approach for their successful rehabilitation. This requires a detailed treatment planning, patient's and family counseling and regular follow ups to provide a stable and effective functional and psychological rehabilitation which will ultimately improve the subject's quality of life.⁹ Present case report is mainly focused on clinical prosthodontic rehabilitation of orthodontically treated non-syndromic oligodontia patient with conventional fixed dental prosthesis.

Case report

A twenty-three years old female patient diagnosed with non-syndromic oligodontia reported to the Prosthodontic clinic with chief complaint of difficulty in speech, mastication, and unaesthetic appearance due to absence of teeth. Past dental history revealed that patient had undergone orthodontic treatment for correction of malaligned and widely spaced teeth. Medical history of the patient revealed no associated systemic abnormality or disease. Extra-oral examination revealed decreased lower facial height, along with a flat facial profile. The nasolabial angle was within normal limits, and the lower lip was full and slightly protruded relative to the upper lip at closure. A deep mentolabial sulcus was present and increased activity of the mentalis muscle was visible in the skin overlying the chin upon lip closure. Undersized conical teeth, decreased occlusal vertical dimension, deep anterior overbite and underdeveloped alveolar ridges were detected during the intraoral examination (Fig.1, 2, and 3). Crossbite on the right first premolar region was evident (Fig.3). According to the clinical examination the occlusal relationship belonged to Angel's Class I. Congenitally missing teeth were maxillary lateral incisors, maxillary second molars, mandibular central and lateral incisors, mandibular second molars.

Diagnostic impressions of maxillary and mandibular arches were made in irreversible hydrocolloid and poured in type III dental stone. Diagnostic casts were mounted on semi adjustable articulator using facebow and centric relation records. Based on case history, clinical examination, and evaluation of diagnostic casts treatment plan was

formulated. Treatment plan was explained to the patient and patient accepted it. According to treatment plan it was decided to replace the missing teeth with porcelain fused to metal fixed dental prostheses after raising the vertical dimension of occlusion by two millimeters.

After mock tooth preparation on mounted diagnostic casts, diagnostic wax up was done at raised vertical dimension of occlusion (Fig.4, and 5). Putty indices of complete arch diagnostic wax up were made. Preliminary tooth preparation of teeth present was carried out in maxillary and mandibular arches.

Heat cured tooth colored acrylic full arch provisional prostheses were fabricated using putty index. Finished and polished acrylic provisional prostheses were tried intraorally to check esthetic, occlusion, and phonetics. Anterior guidance was established with no posterior interferences on protrusion and lateral excursion. Once the both patient and prosthodontist has satisfied with esthetic and function of provisional prostheses, cementation was carried out using temporary luting agent. Patient was recalled at weekly interval to evaluate provisional prostheses for one month. At one-month recall visit patient was comfortable with raised vertical dimension of occlusion and expressed complete satisfaction with esthetic and function of provisional prostheses.

Final tooth preparation was carried out followed by gingival retraction using retraction cords and final impression with polyvinyl siloxane impression material by putty wash technique. Final impression was poured in type III dental stone. Maxillary cast was mounted on semiadjustable articulator using facebow record. Centric relation was recorded using wax occlusion rims and aluwax bite registration material. Mandibular cast was mounted using centric relation record. Vertical dimension was raised by two millimeters. After die cutting and ditching wax patterns for full arch porcelain fused to metal crowns copings were fabricated. Wax patterns were invested in phosphate bonded investment and cast in cobalt chrome alloy. Coping trial was done followed by ceramic build up and bisque trial. After minor occlusal adjustments at bisque trial final polishing and glazing was done. Final porcelain fused to metal fixed dental prostheses were evaluated for fit, occlusion, esthetic, and function. After evaluation final fixed dental prostheses were cemented using permanent luting cement (Fig.6, 7, 8, and 9). Instruction regarding oral hygiene maintenance and diet were given to the patient. Patient was recalled

at monthly interval for one year. At one-year recall visit patient expressed satisfaction with function and esthetic of prosthodontic rehabilitation.



Fig.1:Maxillary dentition at presentation



Fig. 2: Mandibular dentition at presentation



Fig. 3: Occlusion at presentation



Fig. 4: Mounted diagnostic casts with mock preparation

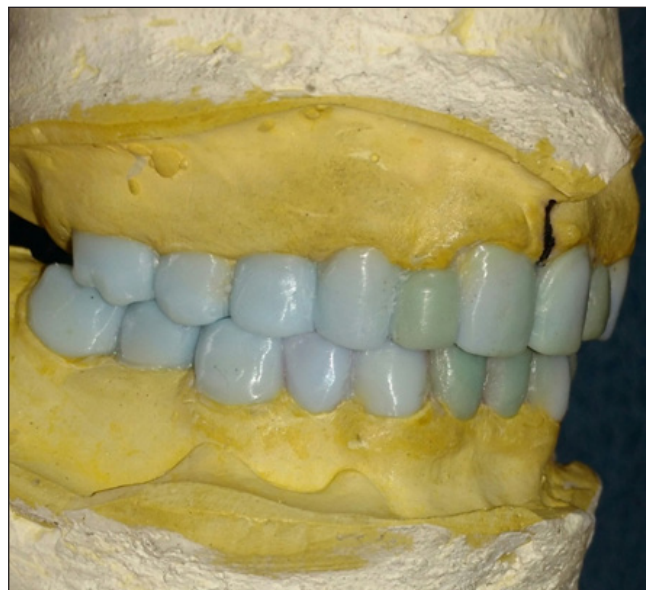


Fig.5: Diagnostic wax up at raised vertical dimension of occlusion.



Fig.6: Final restoration of maxillary arch with porcelain fused to metal fixed dental prostheses.



Fig.7: Final restoration of mandibular arch with porcelain fused to metal fixed dental prostheses



Fig.8: Frontal view occlusion after prosthodontic rehabilitation.



Fig.9: Extraoral view after prosthodontic rehabilitation

Discussion

Case presentation described role of prosthetic rehabilitation in multidisciplinary management young female patient with oligodontia. In case of oligodontia the utilization of existing teeth for retention, stability, function and the phonetics should be considered. In this case, the abutments of the fixed bridges were orthodontically corrected permanent teeth, which provided both esthetically and functionally a satisfactory result. Fixed dental prostheses supported and retained by natural teeth helps to protect the proprioceptive mechanism, and to prevent the resorption of the residual alveolar ridges.

Endosseous implants could also be considered as an alternative treatment ^{10, 11, 12} but in this case tooth supported prostheses were preferred because of the sufficient number of remaining teeth for retention and support. Also anatomical difficulties due to underdeveloped ridges, and cost of dental implants prevented dentist and patient from choosing this option. Considering the young age of the patient, the patient will be able to retain her remaining teeth for a long period of time due to ability to maintain good oral hygiene. The patient was also very satisfied by the excellent esthetic results and function of prosthetic rehabilitation at 1 year follow up.

Conclusion

This case highlighted role of prosthodontist in multidisciplinary team approach for rehabilitation of oligodontia patients.

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