

PROSTHODONTIC REHABILITATION OF A PATIENT WITH PARTIAL ANODONTIA

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Abstract

Background: This clinical report describes the prosthodontic rehabilitation of a 25 year old male patient diagnosed with partial anodontia. The options for a definitive treatment plan included fixed, removable, or implant-supported prostheses. However financial restrictions can prevent patients from choosing the most desirable treatment. A combined dental therapy approach was used that included minimal extractions, restorations, enameloplasty, ortho treatment, fabrication of mandibular overlayover removable partial denture and maxillary removable partial denture. Functional and esthetic results were achieved for the patient.

Keywords: Anodontia, Overlay Removable Partial Denture, Overdenture, Rehabilitation.

Introduction

Patients affected with partial anodontia (the congenital absence of one or more teeth) are a significant treatment challenge for the restorative dentist. Partial anodontia is typical of a syndrome known as Hereditary Ectodermal Dysplasia,¹⁻³ which is usually transmitted as an X-linked recessive disorder. Deciduous teeth often are retained and teeth in the permanent dentition are frequently small, conical and tapered toward the coronal surface. Patients may present with lack of alveolar growth, marked mandibular protrusion on closure, or a deep vertical overlap.

Depending on the severity of the condition, various prosthodontic treatments²⁻⁷ are available to improve appearance, mastication and speech.

Financial reasons may restrict patients from choosing the most desirable treatment. The use of Overlay over removal partial denture is a reversible treatment that can significantly improve function and give esthetics without jeopardizing compromised dentitions. The Overlay denture is a prosthesis that covers and is partially supported by natural teeth, tooth roots, or dental implants. It can be used to effectively treat patients with a reduced number of teeth. In a study, Jemt *et al*⁸ reported 94.5% cumulative success rate for implants and 100% for overdentures. This clinical report describes the fabrication of mandibular overlay over removable denture and maxillary removable partial denture for a patient with partial anodontia.

Case Report

A 25 year old male patient reported to the Prosthodontics department with the chief complaint of compromised dental esthetics and mastication. His medical history was insignificant. Extraoral examination revealed reduced vertical dimension of occlusion (VDO) as evidenced by facial features and phonetics. Intraoral clinical examination revealed underdeveloped ridges and small conical teeth. Maxillary arch presented one retained deciduous tooth (left first molar) and six permanent teeth (left and right central incisors with diastema, first and second molars). In the mandibular arch five retained deciduous teeth (three incisors and two first molars with infraocclusion) and five permanent teeth, right and left canines (with conical crowns

and short roots) first molars and left second molar were present. [Figure 1]

A diagnosis of partial anodontia was made from the clinical and radiographic features. IOPA radiographs revealed no development of primary or permanent teeth.



Figure 1: Frontal view of maxillary and mandibular arches

Treatment Procedure

Primary impressions were made in alginate impression material (Vignette; Dentsply India Pvt.Ltd, Gurgaon, Haryana) and poured in dental stone type 3 (Kalstone; Kalabhai Karson Pvt.Ltd, Mumbai). Diagnostic casts were mounted on a semiadjustable articulator (Hanau H2, Teledyne, Waterpik, Ft.Collins).

The vertical dimension of occlusion (VDO) was reduced, as evidenced by deep folds in the commissures of the mouth and profile view. Careful evaluation of factors relative to the VDO are essential to appropriate treatment planning. Diagnostic casts were then mounted on a semi-adjustable articulator with the use of facebow and centric relation records. The physiologic rest position was determined conventionally by facial measurements, interocclusal distance and confirmed by phonetics, particularly sibilant sounds.⁹

Patient was referred for extraction of retained deciduous teeth except mandibular first molars because they had healthy crown and roots and strongly engaged into the bone but were slightly infraoccluded. Orthodontic treatment for midline diastema, root canal treatment of right and left mandibular canines was planned. After completion of RCT,

canines were prepared as over denture abutments and cemented metal coping was given over that. [Figure 2]



Figure 2:Overdenture abutments with coping and infraoccluded right and left first molars.

After closing of diastema in two months by orthodontic treatment [Figure 3] new diagnostic casts were obtained and surveyed to determine the most suitable path of placement and removal of the definitive prostheses. Enameloplasty was done on remaining teeth. Then final impression of maxillary and mandibular arches was made, face bow transfer was done, and after jaw relation were recorded, teeth selection was done. The master casts were mounted on a semi-adjustable articulator (Hanau H2; Teledyne, Waterpik, Ft. Collins) and arrangement was done with generalized spacing for natural appearance. Proper occlusion was maintained between deciduous mandibular first molars and opposing teeth to replace infraocclusion in this region with the help of modeling wax during wax-up that was later converted into heat cure acrylic. The artificial teeth were positioned and evaluated for esthetics and function at the try-in appointment.



Figure 3:Orthodontic treatment of midline diastema.

The prosthesis was processed in heat polymerized resin (Lucitone 199; Dentsply, York, PA). After processing, the casts were remounted and the occlusion was adjusted to remove processing errors. The finished and polished complete denture was inserted with occlusal adjustments. The patient was shown how to properly insert and remove the prostheses and given instructions on adequate oral hygiene. Functional and esthetic results were achieved in final prosthesis. [Figure 4 and Figure 5]

Regular recalls were scheduled for one year to make necessary adjustments and monitor the patient's oral hygiene.



Figure 4:Frontal view of mandibular overlay over partial removable denture and Maxillary removable partial denture with orthodontic treatment of midline diastema.



Figure 5: Side view of mandibular overlay over partial removable denture, Maxillary removable partial denture and remaining teeth in occlusion.

Discussion

True partial anodontia or oligodontia is seen as agenesis of one or more teeth. Congenital absence of teeth is a hereditary phenomenon that is most often passed on to each generation by an autosomal dominant pattern along with incomplete penetrance. The ultimate problems that set in due to partial anodontia are poor esthetics and function which in turn affect patient's psychosocial attitude.¹⁰ Anodontia is seen as a manifestation of one of the most severe forms of ectodermal dysplasia. The patient with anodontia exhibits a senile facial appearance due to lack of teeth and underdevelopment of the alveolar ridges.¹¹ Early rehabilitation is an important outcome of dental treatment.¹² The absence of teeth leads to atrophy of alveolar ridge and reduced vertical dimension that affects the appearance of face. A dental prosthesis can enhance the tonus of masticatory muscles and prevent alveolar bone resorption due to the absence of teeth.¹² Patients with such disorders and their parents have to be motivated

at regular intervals to overcome any social stigma. The dentist plays an important role in such cases.

Conclusion

This clinical report demonstrated that overlay over removal partial denture can be a reversible, inexpensive and conservative form of treatment for partial anodontia patients with limited finances. For this patient, the treatment improved esthetics and oral function and established a favourable plane of occlusion leading to an increase in the confidence of the patient.

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