

Overcoming Obstacles in Oligodontia

Amruta Gujar, Rajeev Singh, Gaurang Mistry, Nivedita Paul*, Charushila Sardar, Ashwini Kini, Mishal Desouza

Department of Dentistry, DY Patil University, Navi, Mumbai, India

ABSTRACT

An Oligodontia patient is typically treated at an early age. Such patients have aesthetic as well as functional requirements that we as dentists seek to provide in a holistic manner, keeping in mind the growth patterns of the patient. The choice of the prosthesis as well as the material should be made while keeping in mind what the future definitive prosthesis can potentially be and not just based on the current scenario. In this article, the age-old technique of Teleskopcrone within an overdenture is used. The ease of this technique with the advancements of digital dentistry is highlighted in this article.

Keywords: Oligodontia; Telescopic overdenture; CAD-CAM

INTRODUCTION

There are many causes of syndromic and non-syndromic partial tooth agenesis with many syndromic types having related and defined genetic mutations (e.g., x-linked ectodermal dysplasia), non-syndromic types of defined genetic basis and others that are spontaneous without known cause. Clinical manifestations range from missing one or more teeth to missing the majority of the permanent dentition [1].

The oligodontia patient is typically identified at an early age and seeks replacement for missing teeth first in the mixed dentition stage and subsequently in late adolescence. Options for rehabilitation must meet esthetic and social needs and include combinations of orthodontics and conservative direct restorations with composite or ceramic, resin bonded fixed prostheses, and overdentures [2]. For many adolescent oligodontia patients, dental implants may not be an available or recommended treatment modality. The patient is most likely still growing so an overdenture provides interim or definitive restorative advantages. An overdenture using a telescopic coping mechanism can be recommended.

Telescopic crown or bridge is “an artificial crown constructed to fit over a coping, the coping can be another bar or any other suitable rigid support for the prosthesis” [3]. The term “Konuskrone” or “Teleskopcrone” are the German terms that translate to conical crown or telescopic crowns [4]. Even though the concept of conical crowns originates in America in 1886,

owing to R Walter and later, Goslee et al. in Germany was one of the pioneers of the telescope method and along with his pupils Bottger et al. set the foundations for this method that remains as relevant and unchanged since 1929. The basic mechanism with the parallel telescopic crown is the inner telescopic element of each double crown has parallel surfaces that are not only parallel to one another but also parallel to the axis of attachment for the remaining telescopic elements. The ultimate objective of the fabrication of this prosthesis is the preservation of the remaining teeth while lost function is being restored. Double crown is an effective type of retainer that provides retention, support and a splinting action between multiple abutment teeth. Longitudinal follow-up studies of 5-10 years report that conical crown-retained partial dentures have a lower failure rate compared to those retained with clasps or precision attachments [5]. Survival of abutment teeth used for telescopic abutment retainers in removable partial dentures.

Given the psychological impact oligodontia can have on an adolescent, an important therapeutic goal for the overdenture prosthesis is esthetics. A conventional prosthesis including flexible denture materials has been an often employed treatment modality. A CAD-CAM approach to overdenture manufacture can provide a highly esthetic, strong, and retentive prosthesis. In the following case report, a clinical and technical aspect of constructing telescopic crown-retained overdenture for an adolescent with Oligodontia is discussed.

*Correspondence to: Nivedita Paul, Department of Dentistry, DY Patil University, Navi, Mumbai, India, Tel: +919920927167; E-mail: nivedita.paul@gmail.com

Received: October 05, 2021; Accepted: October 19, 2021; Published: October 26, 2021

Citation: Gujar A, Singh R, Mistry G, Paul N Sardar C, Kini A, et al. (2021) Overcoming Obstacles in Oligodontia. Dentistry. 11:602.

Copyright: © 2021 Gujar A, et al. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

CASE HISTORY

A 19 year old female patient reported to the Department of Prosthodontics with the chief complaint of missing teeth and mobile prosthesis in the front region of the lower jaw. The patient was complaining of incomplete eruption of teeth and absence of all the deciduous teeth. After radiographic evaluation, it was diagnosed that patient has oligodontia and from hand wrist radiograph it was seen that there was still chance of growth in future. On clinical evaluation, the teeth present were 11,13,14,21,23,24,26,32,33,34,42,43,44 and a mobile fixed prosthesis was present from the 32 to the 42. There was evidence of caries in the mesial aspect of the 14 and slight gingival inflammation was observed in the region of the lower anterior prosthesis. A 13-15 mm of interocclusal distance was observed.

TREATMENT PLAN

After the removal of the mobile bridge and treatment of the carious 14, diagnostic casts made from alginate impressions were mounted using an arbitrary facebow on a semi-adjustable articulator using stabilized record bases and occlusal rims. The study casts were mounted in centric relation and at a vertical dimension that was consistent with lip continence and esthetics. The patient was asked to undergo pre-prosthetic orthodontic treatment but she was keen to get the treatment done as soon as possible due to personal commitments, so the treatment plan of a removable option was given. The available inter-arch space that was gauged was found to be well adequate to carry out the Marburg Double Crown Technique [6].

The wax mock-up was made and a temporary prosthesis was fabricated for the patient using a putty index of the wax up along with heat cure acrylic material, extraorally on the cast. This temporary prosthesis was temporarily cemented intraorally. After 3 weeks, the patient was recalled and tooth preparation was done with the help of putty indices. After the mouth preparation in the mandibular arch, gingival retraction was done and a final impression was made with addition silicone using the putty-wash technique. This was followed by making an interocclusal record using putty and a face bow transfer. The first master model was prepared from the impression for fabrication of the primary copings. In the laboratory, the wax patterns were prepared for the primary copings. The patterns were milled to obtain a frictional surface for retention and then cast. Once the primary copings were evaluated for fit, they were given for finishing and polishing. After this, a pick-up impression was made using polyether impression material and the second master model was made. The secondary copings were fabricated using pattern resin on this model. A paralleling device was used by the lab technician to gauge the parallelism of the copings. The laboratory fabricated wax occlusal rims were used to carry out a final jaw relation record.

A scan of the maxillomandibular relationship was then used to design the final framework of the denture containing the housing, on Exocad software [7]. The clinician-approved designs were then transferred from the design software to manufacture software and the final ceramo-metal copings were milled within

a framework. The bisque trial was carried out successfully. The patient's vertical dimension at occlusion was verified. The framework was sent out for the final composite build up. The ceramic glazing was carried out thereafter. Primary copings were cemented using resin modified glass ionomer cement and the telescopic overdenture was delivered. Acceptable retention was observed and acknowledged by the patient. Oral hygiene instructions were provided and prosthesis care directions were given. The patient was provided with fluoride gel and instructions to apply the gel to the intaglio surface of the denture prior to insertion. The patient left comfortable and satisfied with the result. The patient was called for follow up after a week, a month and 3 months (Figures 1-11).

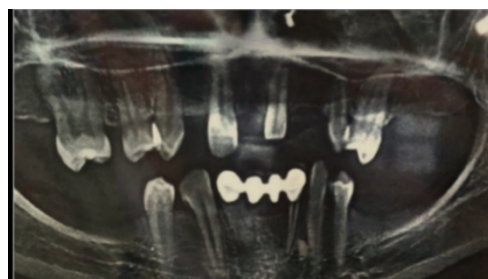


Figure 1: OPG of the patient.



Figure 2: Pre-op intra-oral frontal view.



Figure 3: Diagnostic waxup and index fabrication.



Figure 4: Jaw relation.

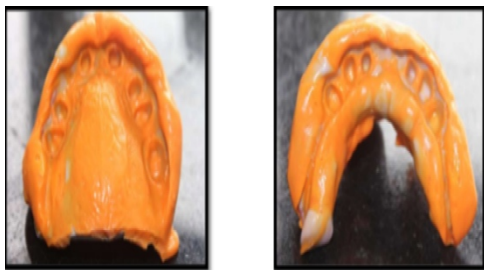


Figure 5: Maxillary and mandibular impression.



Figure 6: Temporisation.

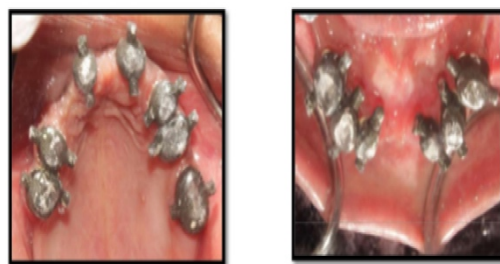


Figure 7: Primary copings evaluated for fit.

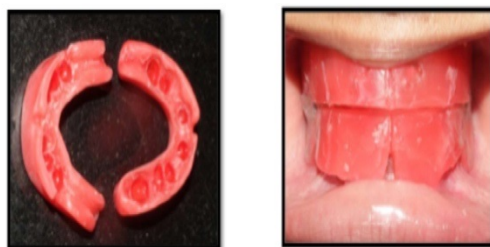


Figure 8: Occlusal rims and jaw relation record.



Figure 9: Final framework designing on exocad software.



Figure 10: Final prosthesis.



Figure 11: Post-operative frontal view.

DISCUSSION

Clinical manifestations of oligodontia consist in agenesis of multiple teeth eventually with deciduous retained teeth, atrophy of alveolar ridge, aberrations of teeth dimension, and shape, with consequent aesthetic and functional defects. The first choice treatment is based on a team collaboration of maxillo-facial surgeon, orthodontist, and prosthodontist, and is conditioned by various clinical parameters as number and site of lacking teeth, age and dental development of patients, eventual alveolar ridge atrophy. Treatment planning should be individualized for each patient.

The treatment goals are to keep the remaining teeth, recover the masticatory function and aesthetics, improve speech, and re-establish the emotional and psychological wellbeing. Replacing the missing teeth without interfering in the growth of the mandible and maxilla is the primary goal of treatment [8].

Considering all possibilities for oral rehabilitation of the referred patient, the prosthetic treatment of choice was the placement of a hybrid removable appliance. This type of prosthesis allows the restoration of function and aesthetics of missing teeth and can be modified over time to make it a fixed appliance if need be. The use of ceramo-metal over acrylic has the advantage of delivering a sturdy, yet lightweight, biocompatible, aesthetic and cost-effective prosthesis. There is increasing evidence that the implant supported prostheses are the preferred choice for patients with oligodontia. This choice can be explored once the adolescent patient has completely grown.

CONCLUSION

Besides the consequences caused by dental agenesis already mentioned, the emotional and psychological well-being of the child in dental agenesis cases is an important factor to perform an early intervention, be it fixed or removable. Crucial to a successful outcome for these young people is good communication between professionals in an interdisciplinary

team but also with the patient and parents. In the case above, the patient's needs as well as a cost-effective yet long-term treatment approach was employed that left the patient and her family satisfied.

REFERENCES

1. Weide YS-V, Schalk-Van Weide Y, Beemer FA, Faber JAJ, Bosman F. Symptomatology of patients with oligodontia. *J Oral Rehabil.* 1994;21(3): 247-261.
2. Thalji GN, Cooper LF. The role of complete overdentures in esthetic rehabilitation of the adolescent oligodontia patient: A case report. *J Esthet Restor Dent.* 2010;22(3): 247-261.
3. Vasconcellos F, Proussaefs P. A technique for duplicating the contours of an interim implant supported crown to fabricate a custom impression coping and the definitive prosthesis. *Implant Dent.* 2016;25(6): 861-865.
4. Langer Y, Langer A. Tooth-supported telescopic prostheses in compromised dentitions: A clinical report. *J Prosthet Dent.* 2000;84(2): 129-132.
5. Beschmidt SM, Chitmongkolsuk S, Prull R. Telescopic crown-retained removable partial dentures: Review and case report. *Compend Contin Educ Dent.* 2001;22(11): 927-942.
6. Wenz HJ, Lehmann KM. A telescopic crown concept for the restoration of the partially edentulous arch: The Marburg double crown system. *Int J Prosthodont.* 1998;11(6): 541-550.
7. Nunn JH, Carter NE, Gillgrass TJ, Hobson RS, Jepson NJ, Meehan JG, et al. The interdisciplinary management of hypodontia: Background and role of paediatric dentistry. *Br Dent J.* 2003;194(5): 245-251.
8. Gonçalves TMSV, Gonçalves LM, Sabino-Bezerra JR, Santos-Silva AR, da Silva WJ, Garcia RCMR, et al. Multidisciplinary therapy of extensive oligodontia: A case report. *Braz Dent J.* 2013;24(2): 174-178.