

Prosthetic Rehabilitation of a Treated Cleft Palate Patient by Using an Overlay Denture with Twin Occlusion: A Case Report

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Abstract

Rehabilitation of patients with congenital anomalies such as cleft lip and palate, anodontia, hypodontia is a daunting prosthetic challenge. A treatment plan, which would restore the functional and esthetic needs within the ambit of physiological and financial conditions of the patient, should be contemplated. Especially in the group of patients where old age in addition to multiple systemic diseases deters any invasive prosthetic treatment modality, a more conservative planning, which would resolve the chief complaint, is more fruitful. This article describes a case report of an elderly female where an overlay denture with twin occlusion is planned and fabricated in order to re-establish the masticatory efficiency and to achieve a pleasant esthetics.

Keywords: Cleft palate, Hypodontia, Malocclusion, Overlay denture

INTRODUCTION

Patients afflicted with congenital/developmental anomalies address the prosthodontists with unique esthetic and functional challenges. Such anomalies are frequently associated with partial anodontia, which needs significant meticulous endeavors for an effective functional rehabilitation.¹

One such commonly occurring anomaly is cleft lip and palate. The prevalence of cleft lip and palate among the general population depends on racial, ethnic, and geographic origin, as well as on socio-economic status. Its prevalence has been estimated to range from 1:500 to 1:2500 live births. It is mainly characterized by the presence of an oronasal communication, malformation or agenesis

of the teeth close to the cleft and deficient sagittal and transverse growth of the maxilla.²

In healthy partially dentulous patients with normal tooth anatomy, excellent rehabilitations can be attained with fixed prosthetic modalities. However, achieving definitive prosthetic results in the cleft patients may not be feasible due to certain factors such as underdeveloped alveolar bone, severe malocclusion, hypodontia/“cone” shaped teeth, disproportionate lips, tooth agenesis, and poor periodontal conditions. In such group of patients, especially among the elderly, an overlay denture presents as a viable treatment option that can significantly improve the function and esthetics.³

According to GPT 8 an overlay denture is defined as “as any removable dental prosthesis that covers and rests on one or more of the remaining natural teeth, on the roots of the natural teeth, and/or on the dental implants.” It is also called as over denture, overlay prosthesis, and superimposed prosthesis.⁴ This article presents a case report of an elderly female patient with surgically repaired cleft palate, rehabilitated by an overlay denture with twin occlusion.

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CASE REPORT

A 75-year-old female patient reported to the Department of Prosthodontics, Government Dental College, Thiruvananthapuram with a chief complaint of multiple missing upper teeth, depressed upper lip, and an inability to chew. Patient had undergone cleft repair surgeries at her young age following which the defect was completely closed. Furthermore, medical history disclosed that the patient is a known case of mitral stenosis for which she is under medication.

An extraoral examination revealed facial asymmetry, sunken upper lip, deviation of the chin to the left, disproportionate lips, a concave profile (Figures 1 and 2). While a thorough intraoral examination showed depressed pre-maxilla, collapsed bite with total disocclusion, missing 15, 13, 12, 11, 21, 25, 26, 27, and root stumps with 14, 22, 23 (Figure 3). The findings were confirmed by a digital orthopantomogram. Patient did not want any extraction or invasive procedure to be done. All the treatment

options were discussed with the patient and finally the option of an overlay denture over her remaining teeth in order to satiate her chief complaint of esthetics and function was decided.

Primary impressions were made using irreversible hydrocolloid (Zelgan, Dentsply, India) impression material. On the primary maxillary cast, a special tray was fabricated in autopolymerizing resin after blocking out the dentulous portion with modeling wax. Peripheral tracing was done with putty consistency polyvinyl siloxane impression material (Aquasil, Dentsply, India) in order to record the functional sulcus (Figure 4). Final impression was made in light body consistency (Figure 5). Casts were poured in Type IV dental stone (Elite Master, Zhermack). Record base and occlusal rims were fabricated on the maxillary cast after spacing out the tooth-bearing portions. Face bow transfer was done and the maxillary cast was mounted on a dentatus semi-adjustable articulator (ARL type). Horizontal and vertical maxillomandibular records were obtained and the mandibular cast was mounted using the centric relation record. Artificial teeth were selected and



Figure 1: Pre-treatment extra oral frontal view



Figure 3: Intraoral frontal view of maxillary and mandibular dentition

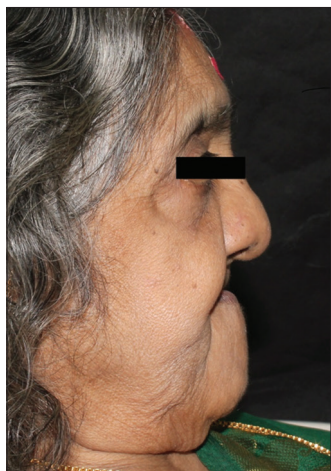


Figure 2: Pre-treatment extra oral profile view

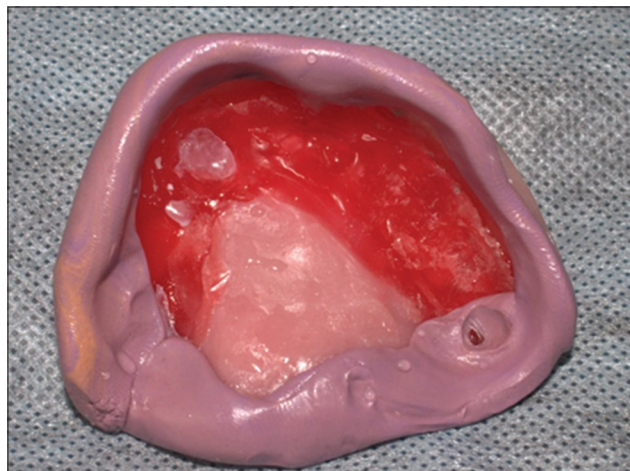


Figure 4: Border moulding

arranged; furthermore, an Adam's clasp was fabricated on right first maxillary molar in order to achieve additional retention. Trial denture was evaluated and checked for esthetics, vertical dimension of occlusion, phonetics, and occlusion. Patient's approval was also obtained. Finally, the trial denture was acrylicized (Lucitone 199, Dentsply International, NY), finished, polished (Figures 6 and 7). The prosthesis was comfortable to the patient and enhanced the overall esthetics (Figures 8 and 9).

DISCUSSION

The overlay/over denture is not a new concept, and its use dates back 100 years. Today with the stress on preventive measures the use of overlay dentures has increased to the point where it is now a feasible alternative to most complex treatment plans.³⁻⁶ Special emphasis should always be placed on the preservation of tissues, which support artificial teeth. The use of teeth as a means of support for dentures is aimed at reducing the load on the osseous

portions of the denture bearing area and minimizes the process of resorption.⁷

The mentioned case presented with the underdeveloped maxilla, complete buccal crossbite, deranged occlusion,



Figure 7: Intaglio surface of the finished prosthesis



Figure 5: Secondary impression



Figure 8: Post treatment intraoral view



Figure 6: Overlay denture



Figure 9: Post treatment extra oral view

poor esthetics, difficulty in mastication, and multiple roots stumps. Considering the constraints of old age, systemic diseases, and poor compliance, the most conservative option of a tooth-supported overlay denture with a twin occlusion was decided.⁸ The prosthesis was comfortable, esthetically pleasant and functionally effective which resolved the chief complaint of the patient. Furthermore, satisfactory retention was obtained due to precise interdental engagement of the denture and furthermore by the addition of an Adam's clasp.⁹

CONCLUSION

The goal of modern dentistry is to achieve prosthetic rehabilitation, which replaces missing teeth and lost supporting structures, as well as to restore proper esthetics and function. This article presents a case of preventive prosthodontics wherein a previously treated case of cleft, the rehabilitation was done by fabrication of an overlay denture to achieve adequate fullness and to correct the occlusal plane. Furthermore, a twin occlusion was planned to enhance masticatory efficiency as the patient had total

buccal non-occlusion. Upon review after 1-week, 4 weeks, and 2 months the prosthesis was found to be effective, and the patient was satisfied with the outcome.

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