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Prongs Denture for Alveolar Defect – A Case Report

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ABSTRACT:
Rehabilitation of completely edentulous patient in a conventional manner is a routine step. But, when the patient presents with abnormal conditions, the task becomes challenging. This case report presents rehabilitation of complete edentulous patient with alveolar defect in the labial vestibule with fabrication of prongs denture.
Keywords: Prongs Denture; Alveolar Defect; Oro-Nasal Fistula; Complete Denture; Cleft Lip and Palate.

INTRODUCTION

Rehabilitation of a completely edentulous patient is a challenging task, but in the presence of an unusual morphology the task is accentuated. Some abnormal conditions can be surgically treated before the fabrication of complete denture. In some of the cases, surgical reconstruction is not possible. Unconventional complete denture is a variable option for prosthetic rehabilitation. Alveolar defect is seen in 12% of population. It is sometimes associated with cleft lip[1].

EMBRYOGENETICS

Failure of normal disintegration of the nasal fin by apoptotic cell death or epithelial-mesenchymal transformation is a cause of cleft upper lip, alveolar clefting, and anterior primary palate clefting by preventing the merging of the medial nasal and maxillary mesenchyme. This merging defect may be described as a "differentiation defect," as opposed to a "fusion defect," that becomes clinically significant in the varying degree of dysmorphology exhibited in cleft lip, alveolar clefting, and primary palate clefting[1].These different degrees of anomalous formation are the result of different time frames in their embryological development that are related to different genes and molecular biological mechanisms operating on lip, alveolus, and primary palate formation (Krapels et al. 2006; Meng et al. 2009 ; Luijsterburg and Vermeij-Keers2011) . Alteration of developmental timing (heterochrony) accounts for various gradations of severity of anomalous development, from incomplete formefruste to complete clefting.

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CASE REPORT

A 61 year old male patient reported to the Department of Prosthodontics, Crown & Bridge and Oral Implantology, Dasmesh Institute of Research and Dental Sciences, Faridkot, Punjab with complaint of an ill-fiiting denture. Patient was not satisfied with the retention, function and aesthetic of the current denture and wanted a new denture fabricated. The history revealed that denture was not fulfilling patient's need and was fabricated 1 year back. Medical history revealed history of cleft lip and alveolar cleft. Cleft lip was repaired surgically at a very young age. But alveolar cleft was not surgically repaired due to an unknown reason. On intraoral examination, u shaped maxillary and mandibular arch was seen with the presence of alveolar cleft in the right labial vestibule (Fig. 1). After complete examination, the fabrication of new denture was finalized.

Fig 1 – Intraoral View

A conventional complete denture would have resulted in same problem. So atypical path for achieving the goal was perused. Now a complete denture with unconventionally designed and intentionally modified labial flange was planned to fulfill the needs of patient. Maxillary and mandibular primary impressions were made (Fig. 2). Maxillary impression was made in irreversible hydrollocollod alginate (Algitex, Dental Products of India, Rudrapur, Uttar Pradesh) and mandibular impression was made using reversible hydrocolloid impression compound (Rolex impression compound, API ASHOOSONS). While making the maxillary impression, the defect was covered with a sterile gauze piece dipped in saline and coated was petroleum jelly, so that excess material doesn't flow through the defect.

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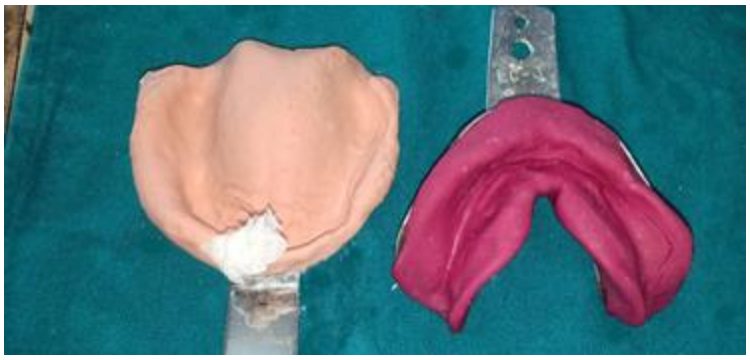

Fig 2 – Primary Impression

Special trays was fabricated on the primary cast. Border moulding was done with green sticks (Tracing sticks, DPI Pinnacle). And final impression for maxillary arch was made with medium body (Aquasil Ultra Monophase, Dentsply) (Fig. 3). Before making the final impression, the defect was again covered with sterile gauze piece dipped in saline and coated with petroleum jelly.

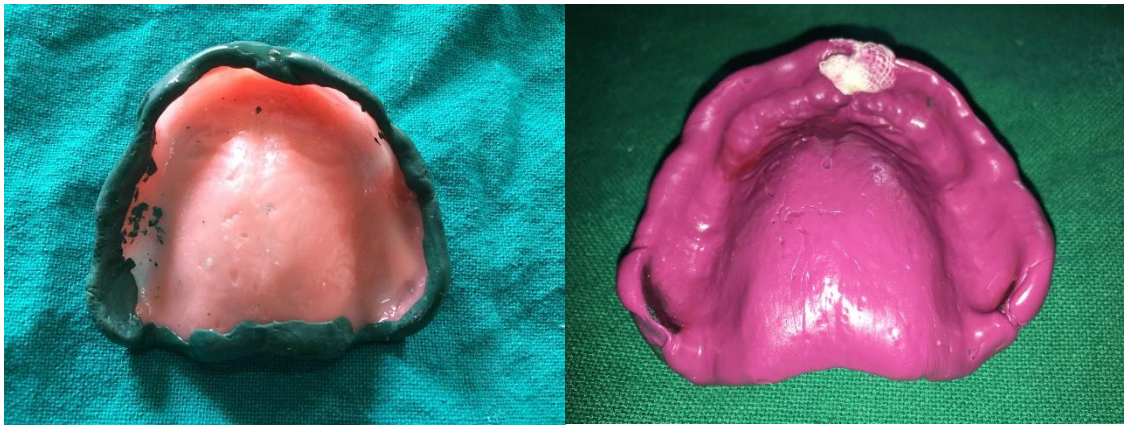

Fig 3 – Border moulding and the final impression of the maxillary arch.

The master cast was obtained (Fig. 4). To preserve the master cast, a working cast was made and temporary record base were made according to the decided design. The jaw relation was recorded and teeth selection was done was done in the conventional manner.

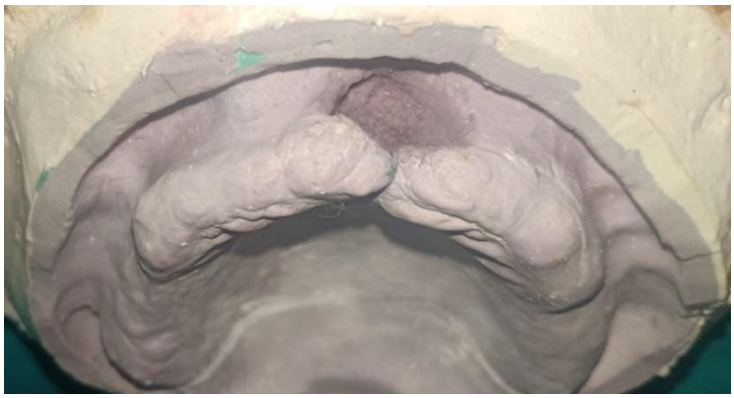

Fig 4 – Master Cast

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Rest of the laboratory procedure was carried out in a conventional way. For mounting, a semi adjustable articulator was used. Precaution were taken to satisfy the aesthetic demand of the patient without hampering the functional aspect. Wax-up and processing of the denture was done in the conventional manner. After processing, finishing and polishing was done, the denture insertion was performed. Patient was highly satisfied with the appearance and function (Fig 5). The prongs like projections aid in retention and stability (Fig. 6). It was kept within limit in terms of height and width, so that it doesn't impinge the oro-nasal defect.

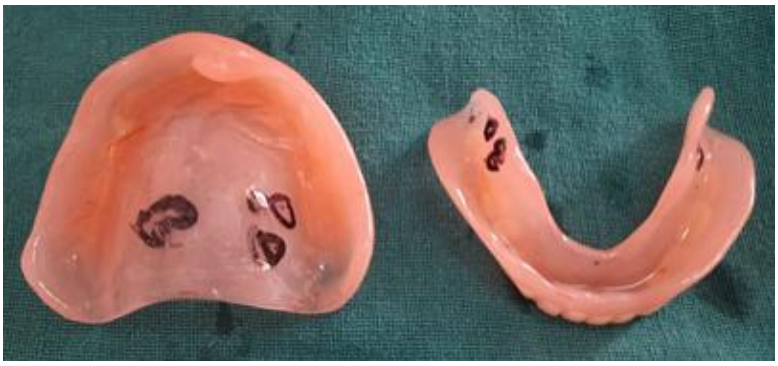

Fig 5 – Final Denture

Fig. 6 – Prongs like projections helps in retention and stability of the denture.

Fig. 7 – Complete Denture Insertion

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DISCUSSION

For many years, the rehabilitation of clefts is related to the solution of sequelae caused by surgical treatment.The alveolar bone graft is performed in young individuals before completion ofdevelopment[3].Secondary bone grafting in cleft lip and palate patients is performed preferably before the eruption of permanentcanine in order to provide adequate periodontal support foreruption and preservation of the teeth adjacent to the cleft[4].Early secondary bone grafting, between the ages of 2 and 6 is done primarily to provide alveolar bone support for theeruption of the lateral incisor[5]. 95% of the anteroposterior and transverse growth is completed by the age of 8 and therefore the most common time for alveolar cleft grafting is betweenthe ages of 9 and 11 before the eruption of the canine whenthe root is 1/2 to 2/3 formed. But in few cases, where they fail to fuse or any surgical rehabilitation couldn't be carried on, causes troublesome for the patients.

The oro-nasal fistula and alveolar cleft is one such complications. Oro-nasal fistula results in improper speech, improper mastication by the patient due to the passage of air and food particles through the fistula. Managing such patients prosthetically is challenging in terms of improving speech and mastication. Prongs aided in retention and stability in such cases. Following placement, patients experience greatly increased retention. The maintenance requirements of the prong denture must be reinforced by daily cleansing of the soft tissues and all surfaces of the prong denture. These daily measures and recall visits every 4 months, thus helps us to ensure the success of the treatment. An advantage of the prong denture technique is the improved esthetic appearance due to the additional support that the prongs give to the anterior maxillary lip, along with the anterior border of the denture. Masticatory efficiency is also increased. In function, the maxillary prongs seat in an apical direction and do not overload the bone supporting structures. Speech is improved due to the excellent retention provided by the prongs' ability to resist horizontal forces.

CONCLUSION

In conclusion, rehabilitating the patient with oro-nasal fistula and alveolar defect is quite challenging. But with prongs denture, we can give the patient aided retention and atbility and added increaded masticatory efficiency. Careful selection of the patient is a must. Proper hygiene maintenance is also a must.

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