Prosthetic Rehabilitation of a Patient with Congenital Oro-Nasal Defect: A Case Report

SEEMA B. PATTANAIK, AARTI P. WADKAR, BIKASH K. PATTANAIK

ABSTRACT

The rehabilitation of the patients with facial defects requires a multidisciplinary approach involving a head and neck surgeon, a maxillofacial prosthodontist and a reconstructive surgeon. Here, we discuss a case of a mid-facial defect due to a congenital anomaly, for which a sectional impression was made. A removable nasal prosthesis which obturated a oro-nasal defect, along with an overlay partial maxillary denture for the correction of malocclusion, was given to the patient till a definitive reconstructive surgery was performed.

Key Words: Oro-nasal defect, Sectional impression, Overlay partial denture

KEY MESSAGE

- A sectional impression was made to record a nasal defect and a maxillary dentate arch together, which were having different paths of placement and removal. A single prosthesis was given to rehabilitate the nasal as well as the oro-dental defect, by providing a minimal disto-palatal extension of the prosthesis. Thus, the need for a sectional prosthesis was avoided.

INTRODUCTION

A multidisciplinary approach is required in patients with congenital anomalies, post-surgical cancer patients, and in a few trauma patients. It involves a team constituting a head and neck surgeon, maxillofacial prosthodontist and reconstructive surgeon. In most of these cases, the planning and the preparation for rehabilitation is done prior to the surgery by using a coordinated approach of the entire team which is involved in the management of the cases. Making the impression presents the initial difficulty in prosthetic rehabilitation. Several techniques based on flexible, modified standard trays and sectioned trays have been proposed, [1],[2],[3],[4],[5],6]. We present here, a case of prosthetic rehabilitation for a patient with a congenital oro-nasal defect.

CASE REPORT

A seven year old boy reported to the Department of Prosthodontics with severe midfacial hypoplasia with a oro-nasal defect. The chief complaint of the patient was disturbed speech, regurgitation of food and an unaesthetic appearance. The patient had already undergone surgery for upper lip reconstruction, but the nasal reconstruction was planned after two years. It was advised to maintain the patency of the nasal cavity with a prosthesis, which would prevent its collapse. Till that time, he was to be prosthetically rehabilitated by a nasal prosthesis which obturated the oro-nasal defect and overlaid the partial denture for the correction of the dental malocclusion.

On extra-oral examination, a gross disfigurement of the middle third of the face was observed [Table/Fig-1]. The intra-oral examination showed a large oro-nasal defect in the pre-maxillary region with a malocclusion (open bite) and carious, left, maxillary, deciduous canine and molar teeth. The oro-nasal defect resulted in a communication between the oral and the nasal cavities [Table/Fig-2]. The main objective was to record the area of the defect accurately and to provide the patient with an interim prosthesis which would facilitate the closure of the intraoral defect, thus improving the swallowing and phonetics and maintaining the petency of the nasal cavity, as well as overcoming the psychological trauma. It was decided to provide a removable acrylic prosthesis which would obturate the oro-nasal defect and also serve as an overlay partial denture.

TREATMENT PROCEDURE

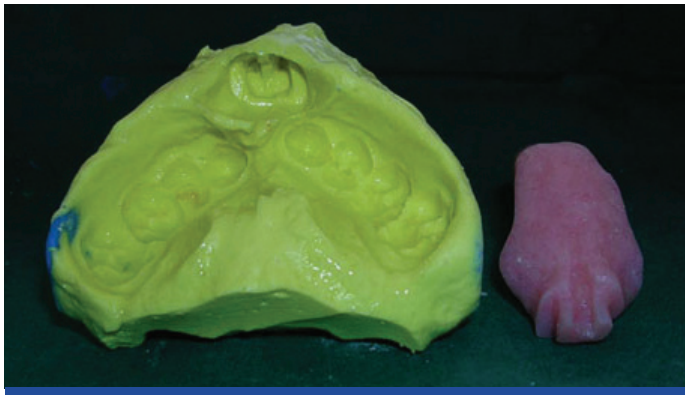
The restoration of the carious, left, maxillary, deciduous canine and molar teeth was done. A preliminary impression of the nasal defect was made with a modeling plastic impression compound (Y-Dent Impression compound, MDM Corporation, New Delhi, India). It was

[Table/Fig-1]: Extra-oral pre-treatment photographs.
a) Front view, b) Lateral view

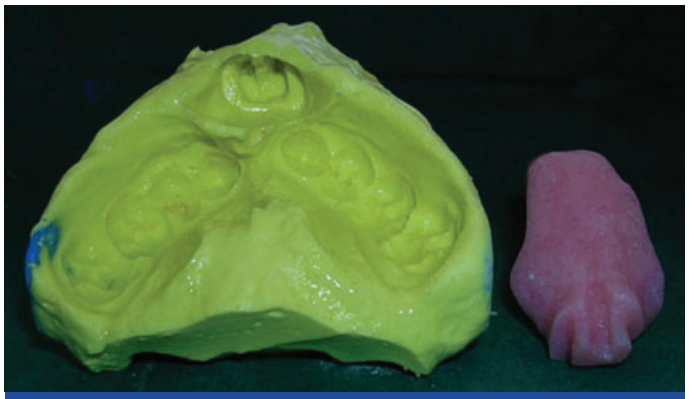
[Table/Fig-2]: Intra-oral view of the defect

then acrylized by using a heat cure polymerizing resin (Lucitone 199, Dentsply, York division, PA.). As the path of insertion and removal was different for the nasal defect and the maxillary arch, it was decided to record it by a sectional impression method. An acrylic nasal prosthesis having orientation grooves was placed in the defect. [Table/Fig-3]. The impression of the maxillary dentate arch along with the nasal prosthesis, was recorded with irreversible hydrocolloid (Tropicalgin; Zhermach Inc. products, California) in a perforated stock metal tray. It was removed separately from the mouth [Table/Fig-4], assembled outside the mouth [Table/Fig-5] and then poured with a dental stone (Kalastone; KalaBhai Pvt., Mumbai, India.). The cast was sectioned bilaterally at the canine region for the easy removal and placement of the pattern without the breakage of the working cast. A minimal palatal coverage was planned to facilitate the easy placement and removal of the prosthesis, which also avoided the need for a sectional prosthesis. The acrylic nasal prosthesis was trimmed according to the contour of the adjacent tissues and a wire loop was provided in the acrylic portion for its easy removal. A wax-up and teeth arrangement was done and a try-in was carried out in the patient's mouth [Table/Fig-6]. After acrylization, external characterization was carried out in the presence of the patient which was followed by finishing and polishing. [Table/Fig-7],[Table/Fig-8]. The patient was given training on how to wear the prosthesis and about its maintenance. A regular recall was done till the definitive surgery was performed.

[Table/Fig-3]: Acrylic nasal prosthesis having orientation grooves placed in the defect



[Table/Fig-4]: Sectional impression



[Table/Fig-5]: Assembled sectional impression

[Table/Fig-6]: Try-in of the waxed-up denture

[Table/Fig-7]: Patient with interim prosthesis. (Intra-oral view)

[Table/Fig-8]: Patient with interim prosthesis (Front view)

DISCUSSION

Congenital anomalies of the maxillae may result in a communication between the oral and nasal cavities, which may cause a difficulty in swallowing and the nasal reflex, unintelligible speech and an unaesthetic appearance. Along with this, it can also be psychologically debilitating to the patient. While the mandibular growth is essentially normal in a cleft patient, the maxillary growth is restricted in a downward and forward vector when the cleft involves both the primary and the secondary palates, thus exhibiting a restricted maxillary arch with an anterior open bite [7]. The collective efforts of the maxillofacial surgeon and the prosthodontist have given these physically and psychosocially incapacitated patients some level of social acceptance. It is the responsibility of the prosthodontist to restore the lost aesthetics, function and speech to normal or near normal and to provide a prosthesis which should be simple to handle, easy to maintain, light in weight and convenient for future adjustments.

Ohkubo C [8] described a sectional stock tray system for making preliminary impressions which could be used for individual dental arches, as well as for patients with microstomia or constricted oral openings. Benetti R [9] described the fabrication of a collapsible, maxillary, removable, complete overdenture by using a sectional impression tray technique and a custom-made palatal hinge mechanism for a partially edentulous woman with microstomia which resulted from scleroderma, to assist the patient in removing the prosthesis. Geckili O [10] described a modified impression procedure and a method of fabricating a two-piece collapsible denture for a patient with limited oral opening as a result of the resection of a precancerous lesion on the maxillary lip, which enabled the patient to place and remove the denture.

In the present case report, though the mouth opening was adequate, a sectional impression was made to record the nasal defect and the maxillary dentate arch together, which were having different paths of placement and removal. A single prosthesis was given to rehabilitate the nasal as well as the oro-dental defects by providing a minimal disto-palatal extension of the prosthesis. Thus, the need for a sectional prosthesis was avoided.

The remaining natural teeth also helped in the retention and they needed to be evaluated for the restorative and periodontal requirements periodically, to preserve the treatment. Polymethyl methacrylate resin was used for making a temporary prosthesis during the period of healing and wound organization as it had the advantages of being non invasive, cost effective, tissue tolerant, aesthetic, comfortable to use and easy to clean. The nasal prosthesis which was made for this patient had good aesthetics and it went unnoticed in public, thus allowing him to go about life without drawing attention to his oro-nasal defect.

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AUTHOR(S):

1. Dr. seema Pattanaik
2. Dr. Aarti P. Wadkar
3. Dr. Bikash K. Pattanaik

PARTICULARS OF CONTRIBUTORS:

Department of Prosthodontics, Nair Hospital Dental College, Mumbai, Maharashtra, India.

NAME, ADDRESS, TELEPHONE, E-MAIL ID OF THE CORRESPONDING AUTHOR:

Dr. Seema Pattanaik
Address : Flat # 102, Vaishnavi Apartment,
Mahatmanagar, Nashik, 422007
Mobile no -09657671098
E-mail : pattanaik_seema@ yahoo.co.in

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