



PEDIATRIC REHABILITATION OF CLEFT LIP AND PALATE USING PALATAL OBTURATOR

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| Article Info | ABSTRACT |
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| <p>Received 15/08/2015 Revised 27/08/2015 Accepted 5/09/2015</p> <p>Key words: cleft lip, cleft palate, palatal obturator, rehabilitation.</p> | <p>A cleft palate is a genetic disorder that occurs when an oro-nasal communication is present between the palate and the base of the nose. Single genes, chromosomal disorders or environmental factors may cause clefts. The other possible causes are hormonal imbalances, nutritional deficiencies, infections, radiation during pregnancy, alcohol or cigarette consumption, the ingestion of other teratogenic substances by the mother, and heredity. A palatal obturator covers the opening and contributes to normal speech production. It eliminates hypernasality and assists speech therapy for correction of compensatory articulations. This prosthesis is often used as an interim measure until the residual communication can be surgically closed. If the oro-nasal opening cannot be surgically repaired, the palatal obturator may serve as a definitive treatment. This article describes the rehabilitation of a bilateral cleft lip and palate child using a palatal obturator.</p> |

INTRODUCTION

The dictionary meaning of cleft is a crack, fissure, split or a gap. It can be defined as congenital abnormal gap in the palate that may occur alone or in conjunction with lip and alveolus cleft. The orofacial clefts are congenital deformities, which manifests at birth. Any disturbances during the embryological formation and development and growth of orofacial region will result in the formation of orofacial clefts. Orofacial clefts are the most frequently occurring craniofacial birth defects. The zones affected by common orofacial clefts are as upper lip, alveolar ridge, hard palate, soft palate, nose and eyes [1,2].

The old terminology *lagocheilos* meaning harelip is credited to Galen around 120- 200 A.D. The commonly accepted terms now used are cleft lip, cleft palate or cleft lip and palate. It is very distressing for the parents, once the child is born with this deformity. The psychological and socioeconomic implications of these congenital deformities can be severe and their management becomes a major issue for health care system. Facial aesthetics, speech, mastication, deglutition (swallowing) and dental occlusion, dental set up can be impaired because of the

orofacial clefts. The management of these deformities is challenging and requires multidisciplinary approach, complex long term treatment plan and a rehabilitation programme designed for the individual case [3,4].

A palatal obturator is a prosthesis that totally occludes an opening such as an oronasal fistula. They are typically short-term prosthetics used to close defects of the hard/soft palate that may affect speech production or causes nasal regurgitation during feeding. Following surgery, there may remain a residual oronasal opening on the palate, alveolar ridge, or labial vestibule. A palatal obturator may be used to compensate for hypernasality and to aid in speech therapy targeting correction of compensatory articulation caused by the cleft palate. In simpler terms, a palatal obturator covers any fistulas (or "holes") in the roof of the mouth that lead to the nasal cavity, providing the wearer with a plastic/acrylic, removable roof of the mouth, which aids in speech, eating, and proper air flow [5,6]. The case presented here demonstrated the paediatric functional rehabilitation in cleft lip and palate patient using palatal obturator.



CASE REPORT

An 8 year old male child was presented with complaint of poor feeding abilities to the Department of Pedodontics and Preventive Dentistry, Post Graduate Institute of Dental Sciences, Rohtak. The past medical history of the child revealed that the child was born with bilateral cleft lip and palate and was being operated for cleft lip and palate. There was no past family history of clefts or any other cranio-facial anomalies to any other family members. The patient has normal intelligence.

Extraoral examination revealed that the patient was operated for cleft lip surgery at around 6-8 months after birth. The nostrils were normal in shape with reduced length of columella (Figure 1). On intra oral examination revealed child to be in mixed dentition phase with presence of was a median cleft in anterior part of the palate bilaterally (Veau classification, Class IV). The cleft extends from anterior portion of palate to the base of nose separating premaxilla from the rest of the palate bilaterally. Furthermore, there was complete overbite (Figure

2a,b,c,d). The oral hygiene status was fair. The patient had speech difficulties and problems in feeding. Since the child was not scheduled for any cleft palate surgery in near future, so the fabrication of palatal obturator was planned.

All routine laboratory investigations have been normal. A preliminary impression of the maxillary arch was made using alginate impression material. The impression was poured in a type IV dental stone. The cast was inspected for any presence of undercut and blocked with utility wax. The customized tray was prepared and modified to take the secondary impression. The final impression was taken using polyvinyl siloxane putty material. The final cast was prepared using dental stone. The palatal obturator was prepared using heat cure acrylic polymer (Figure 3) and placed inside the patient mouth (Figure 4a,b). The patient was instructed regarding use and maintenance of palatal obturator/feeding appliance. The patient was put under regular dental follow-ups (Figure 6).

Figure 1. Pre-operative Extra-Oral View.



Figure 2a,b,c,d. Pre-Operative Intraoral View showing Premaxillary bilateral cleft lip and palate.



Figure 3. Palatal Obturator



Figure 4a,b. Intra-operative View showing palatal obturator in position.



Figure 5. Post-operative view



DISCUSSION

Cleft lip and palate are among the most common congenital anomalies affecting the population since child is born. These congenital anomalies are quite frequent although their prevalence among the general population depends on racial, ethnic and geographic factors, as well as on socio-economic status. It has been estimated to range from 1:500 to 1:2500 live births. Cleft lips occur in 20-30% of cases; a cleft lip and palate in 35-50% and cleft palate alone in 30-45%. About 3 to 5 % of the cleft lip and palate may be associated with congenital deformities of the

other parts of the body [1,7].

Clefts may be caused by hereditary or environmental factors. Transmission is said to be caused through a male, sex-linked recessive gene. With a family history of cleft lip and palate, preponderance of occurrence is about 40 %, whereas it is only 18- 20% with cleft palate alone. The environmental factors includes viral infections, exposure to radiation, Influence of drugs such as excessive use of antibiotics, steroids and insulin (it is a potent teratogenic agent) and antiepileptic drugs, deficiency of

Vitamins A and B, anaemia, stress and excessive consumption of alcohol, tobacco chewing and smoking [7].

The clinical manifestation in cleft lip and palate patients includes difficulty in feeding, speech, hearing, personality disorders, dental anomalies and malocclusion. These defects have been taken into consideration and advanced research has been undertaken pertaining to the causative factors and its role in development of clefts. The medical approach towards the cleft lip and palate has advanced to such an extent that could cure all defects associated with cleft lip and palate. The multidisciplinary approach has been undertaken as a gold standard to treat these defects. Treatment provided in this approach connects different faculties in order to attain definite results. Parental attitudes towards children with developmental anomalies like cleft lip and palate need to be altered to a vast extent. These children no more have to be looked down in society due to the drastic transformation given to them by our modern advanced medical technology [8,9]. Rehabilitation with a palatal obturator is mainly indicated when the closure of the fissure is not complete after corrective surgery. Proper planning, coupled with early intervention will result in aesthetic and functional restoration for patients with a cleft palate. The use of a palatal obturator restores patient function, aesthetics and well-being. It seems that changes related to aesthetics, function and psychological well-being has an impact on patient's personal lives and is also a great satisfaction for care-givers. A coordinated team approach is preferred to

help the child achieve ideal speech, occlusion, facial appearance and self esteem. Unnecessary, unproductive, and unproven interventions, whether speech therapy, orthodontic or prosthetic treatment or surgical procedures should be avoided as they exhaust the patient, family, and health care system, produce unfulfilled expectations, and often introduce secondary deformities [10].

CONCLUSION

The satisfactory rehabilitation of a patient with cleft lip and palate presents challenges. Close cooperation among the dental and medical specialties that each focus on just one aspect of the patient's care is required for patient's overall well being. A thoughtful approach is required to achieve ideal speech, occlusion, facial aesthetics, and self-esteem.

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CONFLICT OF INTEREST:

The authors declare that they have no conflict of interest.

STATEMENT OF HUMAN AND ANIMAL RIGHTS

All procedures performed in human participants were in accordance with the ethical standards of the institutional research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. This article does not contain any studies with animals performed by any of the authors.

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