

Palatal Obturator: An Update

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Abstract

The presence of a palatal defect can cause functional, aesthetic, and social distress to the patients. The design and fabrication of oral appliance (obturators) to occlude oral cavity from nasal passage/ antrum or to replace parts of the palate missing due to congenital defects or lost through tumours, infection or trauma has been a considerable challenge for clinicians however significant advances have been made in the past with regard to the techniques and materials in resolving the problem of fabricating satisfactory obturators to occlude oro-nasal/ antral passages and to restore function, esthetics and mental attitude of such patients. This paper discusses various aspects of palatal obturators.

Keywords: Palatal; Obturator

Introduction

Human face is the first point of identification in the society and forms the physical basis for personal and legal recognition. As the father of Indian surgery, Sushruta Samhitha said hundreds of years ago, "The love of face is next only to the love of our life and thus the mutilated cry for help" [1]. The role of pedodontists is continuous throughout the childhood from immediate birth to adolescence in correcting the oro-facial defects and saving the child from medical complications, vocal and functional rehabilitation along with social acceptance.

Intraoral defects are most common in the maxilla, in the form of an opening into the antrum and/ or nasopharynx. Defects in the maxilla may be divided into two; congenital defects resulting from malformations and the acquired defects resulting from surgery for oral neoplasms. These palatal defects can cause functional, aesthetic, vocal and social distress for patients [2].

Humans need for the artificial replacements of missing teeth and other parts of body has always been challenging task for any health care provider. Maxillo-facial rehabilitation with the help of prosthesis is an important contribution in the field of dentistry to the humanity [3]. To meet the problems of congenital or acquired disabilities, Dentists have continually tried to sort out the materials available for restoration.

Over the centuries, people have used their creativity and have adapted the available materials for use in prosthetic restoration [4]. Prosthodontic management of palatal defects has been employed for many years. The history of maxillary obturator prostheses is well

documented. Ambrose Pare, a French surgeon treated palatal perforations using an “obturator”. He was the first person to fabricate an obturator. The early obturators were used to close congenital rather than acquired defects. Claude Martin described the use of surgical obturator prosthesis in 1875. Fry described the use of impressions before surgery in 1927, and Steadman described the use of an acrylic resin prostheses lined with gutta-percha to hold a skin graft within a maxillectomy defect in 1956 [2].

The word ‘obturator’ is derived from the Latin verb, ‘obturare’, which means “to close” [2]. It is a maxillofacial prosthesis used to close a congenital or acquired tissue opening, primarily, of the hard palate and/or contiguous alveolar/ soft tissue structures (GPT 7) [5].

Indications for the use of an obturator [2,6]

- An obturator may be used to act as a framework over which tissues may be shaped by the surgeon;
- to serve as a temporary prosthesis during the period of surgical correction;
- to restore a patient’s cosmetic appearance rapidly for social contacts;
- when surgical primary closure is contra-indicated;
- when the patient’s age contraindicates surgery;
- when the size and extent of the deformity contraindicates surgery;
- when the local avascular condition of the tissues contraindicates surgery;
- when the patient is susceptible to recurrence of the original lesion which produced the deformity

Functions of an obturator [2]

- For feeding purposes
- Keeps the wound or defective area clean, and may enhance the healing of traumatic or post-surgical defects.
- Helps to reshape and reconstruct the palatal contour and/or soft palate
- Improves speech or, in some instances makes speech possible in the important area of esthetics, the obturator can also be used to correct lip and cheek contour
- Boost the morale of patients with maxillary defects
- When deglutition and mastication are impaired, it can be used to improve function
- Reduces the flow of exudates into the mouth
- The obturator may also be used as a stent to hold dressings or packs post-surgically in maxillary resections.

Obturators for congenital defects of palate

Cleft palate is a furrow in the palatal vault. Facial clefting results from a wide variety of genetic and environmental causes including hypoplasia, abnormal directional growth of mesenchymal process or failure of fusion or breakdown of fusion of mesenchymal process [7].

Cleft of the palate and lip may be syndromic or non-syndromic. Syndromic type of clefts are associated with Pierre Robin syndrome, Treacher Collins Malformation, trisomies 13 and 18, Apert’s syndrome, Stickler’s syndrome, as well as Waardenburg’s syndrome. Non-syndromic clefts are of polygenic/multifactorial inheritance [8].

Clefts lip and palate is associated constellation of problems that need to be solved for successful rehabilitation at the earliest from

time of detection to obviate the trachea pulmonary complications. Neonates with a cleft palate have difficulty in suckling which may lead to failure to thrive. The oro-nasal communication diminishes the ability to create negative pressure which is necessary for suckling. To compensate, the baby presses the nipple between the tongue and the hard palate to squeeze out the liquids and milk, but this mechanism is insufficient if cleft is wide and the nipple gets trapped inside the defect. The feeding process is also complicated by nasal regurgitation of food, excessive air intake that requires frequent burping and choking. Feeding time is significantly longer and tiresome both for baby as well as mother [9].

Feeding plate obturator (FPT) is totally tissue supported. The feeding plate obturates the cleft and restores the separation between oral and nasal cavities. It creates a rigid platform towards which the baby can press the nipple and extract the milk. It facilitates feeding, reduces nasal regurgitation, reduces the incidence of choking and shortens the length of time required for feeding. The obturator also prevents the tongue from entering the defect and interfering with the spontaneous growth of palatal shelves towards the midline. It also helps to position the tongue in correct position to perform its functional role in the development of jaws and contributes to speech development. The obturator reduces the passage of food into the naso-pharynx thus reducing the incidence of otitis media and nasopharyngeal infections. FPT restores the basic functions of mastication, deglutition and speech production until the cleft lip and/or palate can be surgically corrected [9].

Various modification in fabrication technique have been done to facilitate feeding of infants such as heat activated clear acrylic [9] and vacuum trays [8].

A variety of impression materials such as alginate, low fusing compound, and polysulfide impression materials have been used to make a definitive impression [8].

Obturbators for acquired defects of palate [2]

Almost all acquired palatal defects are precipitated by resection of neoplasms of the palate and paranasal sinuses. The extent of the resection is dependent on the size, location, and potential behaviour of the tumors.

Surgical Obturator

It is a base plate type appliance which is either purely tissue supported or tooth-tissue supported, depending upon the extent of resection. It is usually constructed from the pre-operative impression cast and inserted at the time of resection of the maxilla in the operating room.

Surgical obturbators have many advantages such as it provides a matrix on which the surgical packing can be placed, reduces oral contamination of the wound during the immediate post-surgical period, enables the patient to speak more effectively by reproducing normal palatal contours and by covering the defect, permits deglutition, thus the nasogastric tube may be removed at an earlier date and lessens the psychological impact of surgery by making the post-operative course easier to tolerate.

Principles related to the design of surgical obturbators

- The obturator should terminate short of the skin graft-mucosal junction.
- The obturator should be kept simple, lightweight and inexpensive.
- The obturator for dentate patients may be perforated at the interproximal extensions with a small dental bur to allow the obturator to be wired to the teeth at the time of surgery.

- Normal palatal contours should be reproduced to facilitate post-operative speech and deglutition.
- Posterior occlusion should not be established on the defect side until the surgical wound is well organized.
- In some patients, the existing complete or partial prosthesis may be adapted for the use as an immediate surgical obturator.

Temporary obturator

The temporary obturator is constructed from the postsurgical impression cast which has a false palate and false ridge and generally has no teeth. The closed bulb extending into the defect area is hollow. The patient is usually seen every 2 weeks because of the rapid soft tissue changes that occur within the defect during organization and healing of the wound. A definitive obturator is not indicated until the surgical site is healed and dimensionally stable and the patient is prepared physically and emotionally for the restorative care that may be necessary.

Definitive obturator

Given 6 months after surgery and constructed from post-surgical maxillary cast. This obturator has a false palate, false ridge, teeth and closed bulb which is hollow.

Conclusion

Quality of life of infants born with cleft palate and post maxillectomy patients can be greatly improved by the skill, knowledge and experience of oro-dental specialists. Sophistication in the surgical and prosthetic reconstructions of structural and functional defects in the cranio-maxillofacial region improves the final rehabilitation results. The primary objective in each case would be to fabricate a prosthesis which not only occludes the defect but also restores the function, improve aesthetics and thereby benefit the morale of patient.

Bibliography

1. S Padmaja. "An insight into the future beckons of maxillofacial prosthodontics: Anaplastology". *Journal of Dental Research and Review* 2.2 (2015): 91-96.
2. Keyf F. "Obturator prostheses for hemimaxillectomy patients". *Journal of Oral Rehabilitation* 28.9 (2001): 821-829.
3. Luthra R. "Prosthetic Rehabilitation of Maxillary Defects- Case Report". *Journal of Advanced Medical and Dental Sciences Research* 1.2 (2013): 137-143.
4. Sarin S., et al. "History of evolution of palatal obturators". *Journal of Advanced Medical and Dental Sciences Research* 3.2 (2015): 46-53.
5. Shetty NB., et al. "Management of Velopharyngeal Defects: A Review". *Journal of Clinical and Diagnostic Research* 8.3 (2014): 283-287.
6. Srivastava N., et al. "Palatal mucormycosis in an infant". *Journal of Dentistry for Children (Chic)* 82.3 (2015): 153-156.
7. Vijayaprasad KE., et al. "Impression making for feeding obturator appliances in cleft palate patient: case report". *Annals and Essences of Dentistry* 4.3 (2012): 23-25.
8. Chandna P., et al. "Feeding obturator appliance for an infant with cleft lip and palate". *Journal of Indian Society of Pedodontics and Preventive Dentistry* 29.1 (2011): 71-73.
9. M Rathee., et al. "Role of Feeding Plate in Cleft Palate: Case Report and Review of Literature". *The Internet Journal of Otorhinolaryngology* 12.1 (2009): 1-6.

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