The management of cleft palate in children using obturator

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ABSTRACT

Background: Cleft palate causes deficiency in swallowing and speech. Obturator was needed to rehabilitate this condition. In making the obturator for children, there were obstacles during the impression process. The specific method was needed in making the impression to solve the problems. Purpose: Improve the impression technique in children with cleft palate. Case: A 3 years old-girl came to Universitas Muhammadiyah Yogyakarta Dental Hospital Yogyakarta to make a lid for her open palate. She complained of difficulty of swallowing and unclear speech. The intraoral examination showed that there was defect 1 cm in diameter on her palatum durum. Case management: The treatment for this condition was making an acrylic resin obturator. Work model impression was taken using the baseplate-wax impression tray with alginate as the impression material. The obturator was, subsequently, inserted to her mouth. The follow-up was held one month later. The patient could swallow well and more clear speech. Conclusion: The success in making the obturator for children depends on the intraoral impression process. Baseplate-wax can be used as a tray for making an intraoral impression for children.

Keywords: Obturator; cleft palate; children; impression tray

ABSTRAK


Kata kunci: Obturator; celah palatum; anak-anak; sendok cetak
INTRODUCTION

Cleft palate is a type of orofacial cleft that occurs when there is incomplete or no fusion of the palate, premaxilla, and related soft tissue during the 6th to 8th week of embryologic development. The patient with a cleft palate is burdened with variety of problems, some obvious and some less so. The most obvious problem is the clinical appearance, which may lead to psychosocial difficulties. Feeding and speech difficulties are inherent. Malocclusion is caused by collapse of the maxillary arch, possibly along with missing teeth, supernumerary teeth or both.

The cause of cleft palate is still debated. It is considered to have a multifactorial cause, including both enviromental and genetic elements. Incidence of cleft palate is about 1 in 800-child births. Generally cleft palates are corrected surgically at the age of 18 months or immediatelly after that. To prepare the patient’s speech, however, in some cases surgery fail to close up the cleft completely resulting in oronasal fistula. In such cases the gap need to be closed with obturator to help the patient in swallowing and speech.

The case report presented below describes how to making obturator in children, especially in intraoral impression process.

CASE

A 3 years-old-female patient came to Universitas Muhammadiyah Yogyakarta Dental Hospital Yogyakarta, to have her cleft palate covered. According to the parents, the patient could not swallow the food properly.

From the medical history, it was known that the patient had been diagnosed with cleft lip and palate at birth. At the age of 1 year, the patient began to undergo a series of operation to repair the abnormalities. Six months ago, a team of doctors who had treated patient stated that the operation had been completed with the remaining gap in the palate 1 cm wide. The patient was advised to have a lid made on the palatal gap. Intra oral examination showed that there was a defect in the hard palate with a 1 cm in diameter, missing teeth 62, while other deciduous tooth erupted perfectly. In order to rehabilitate the patient, the treatment plan is construction of the obturator prosthesis.

The first stage was making the work model. Since the age of the patient was 3 years old and the oral cavity was quite narrow, the impression was made by using a baseplate wax custom tray. The baseplate-wax custom tray was made by putting the baseplate wax in the smallest tray (stock tray number 4), it was then softened and formed following the contours of stock tray number 4. The edge of the tray then was trimmed to avoid injury to the mucosa. Some holes were made in the baseplate wax custom tray by using heated crownmess to release the excess of impression material (Figure 1). The custom tray was tested in the patient’s mouth firstly. Irreversible hydrocolloid materiala alginate was used as the impression material. The impression was done carefully since the patient was lack of cooperation. The mold was then filled with the dental stone type III (Figure 2).

Figure 1. Base plate wax custom tray. Some holes were made over the palatal and alveolar surface to improve retention of the impression material to the tray.

Figure 2. Impression result. Irreversible hydrocolloid materiala alginate was used as the impression material. The mold was then filled with the dental stone type III.
Obturator was made from heat cured acrylic resin with 4 C clasp as the retention. Obturator was made without the hollow bulb. Obturator was polished then tried on patient, C clasp retention and obturator periphery were checked. Patient was asked to speak to ensure the retention and sound production. The patient’s parents were taught about how to insert and remove the obturator.

The patient was followed-up one week after. The examination result showed that the patient began to swallow food properly. Similarly, the patient had already started speak clearly.

DISCUSSION

The formation of the face and oral cavity is complex in nature and involves the development of multiple tissue processes that must merge and fuse in a highly orchestrated fashion. Disturbances in the growth of these tissue processes or their fusion may result in the formation of orofacial clefts. Defective fusion of the medial nasal process with the maxillary process leads to cleft lip. Likewise, failure of the palatal shelves to fuse results in cleft palate.2

Numerous surgical and other medical and dental treatments are necessary to correct cleft palate. The surgeries are scheduled starting at about 3 months of age and ending at about 1 year to correct simple clefts.3

In the case above, the patient was suffering from congenital cleft palate, and was diagnosed as complete cleft palate, due to defects of the palate and lip. After a series of operation to repair the abnormalities, resulting a remaining gap in the palate 1 cm wide. The defect condition causes the difficulty in food swallowing and less clear speech. In order to solve the problems, an obturator then was made. Since the defect was not too wide, the obturator that used in this case was obturator without hollow bulb.

The aims of obturator appliance are to cover the cleft in the palate so that the child can have balance nutrition for health and growth/development, as an assist appliance in drinking so the child will not choked, hold the optimal conditions of the maxillary segments to develop and grow, controlled the position of the tongue so that the process of swallow will be better and give positive psychological effects since the parents will feel calm.5

The impression of work model in this case was used a baseplate-wax custom tray. The characteristic of baseplate-wax is soft, so that it was easy to put into the mouth of a child with less cooperation. Baseplate wax will not hurt the patient or injure the soft tissue.6

The eligibility of support, retention and stabilization are important factors in mounting an obturator. Support of obturator can be obtained from the remaining teeth, the alveolar ridge and the hard palate. Retention can be obtained from the remaining structure and defect itself. Stabilization is determined by the teeth and the remaining hard tissue, expansion of the obturator and a balanced occlusion.7 Completely erupted deciduous teeth, except for teeth 62 increased support and retention in this case. The use of C-clasp on teeth 53, 55, 63 and 65 will provide adequate retention on the obturator.

Obturator may need to be replaced in accordance with the growth of the maxilla. Orthodontic appliance can also be other option if maxillary expansion is needed, which also serves as palatal obturator.

The successful of obturator in children depends on the impression process of the oral cavity. Impression in pediatric patients should consider the comfort of the child, so that the necessary techniques and specific modifications might be needed. Baseplate wax can be used as custom tray in impressing the oral cavity of child.
REFERENCES