

DENTINO
JURNAL KEDOKTERAN GIGI
Vol VI. No 1. Maret 2021

**PREPARATION FOR PALATOPLASTY SURGERY WITH AN ACRYLIC FEEDING
OBTURATOR: A CASE REPORT**

Christine Anita Wardaningrum¹⁾, Endang Wahyuningtyas²⁾, Titik Ismiyati³⁾, Sri Budi Barunawati⁴⁾

¹⁾Student of Prosthodontic, Faculty of Dentistry – Universitas Gadjah Mada, Yogyakarta, Indonesia

²⁾Department of Prosthodontic, Faculty of Dentistry – Universitas Gadjah Mada, Yogyakarta, Indonesia

³⁾Department of Prosthodontic, Faculty of Dentistry – Universitas Gadjah Mada, Yogyakarta, Indonesia

⁴⁾Department of Prosthodontic, Faculty of Dentistry – Universitas Gadjah Mada, Yogyakarta, Indonesia

ABSTRACT

Background: Clefts on the lips and palate are common cases to be found frequently in the field of dentistry. This gap connects the oral cavity and the nasal cavity so that it interferes with the nutritional intake in patients. The age and size of the oral cavity in patients become particular challenges for prosthetic rehabilitation. Another challenge lies at the impression procedure, because it is an essential part in the making of obturator. **Objective:** To provide information on the management of patient with cleft palate using feeding obturator from acrylic material. **Case:** A 13-months-old male patient arrived at Prof. Soedomo Gadjah Mada University Dental Hospital with his parents and was seeking for prosthetic therapy to cover the cleft on his palate because it had been muddling with food and beverage intake. Patient had undergone cheiloplasty surgery and further arranged for palatoplasty procedure. Intraoral examination exhibited a cleft extended from hard palate, soft palate, and uvula. **Case management:** Upper jaw impression was performed for individual tray fabrication, followed by impression procedure in an upright straight position until the patient bawled. The impression result was casted to construct an obturator using acrylic heat cure material. Fitting surface was covered with soft liner. Treatment result showed that the obturator was retentive, stable and able to assist the nutritional intake in patient. **Conclusion:** Acrylic feeding obturator can recover the condition in patient with cleft palate and improve nutritional intake as well as body weight to prepare patient for palatoplasty surgery.

Keywords: Cleft Palate, Feeding Plate, Obturator

Correspondence: Christine Anita Wardaningrum: Faculty of Dentistry – Universitas Gadjah Mada, Jl. Denta 1 Sekip Utara, Yogyakarta 55281, Indonesia. Email: c.anitawd@gmail.com

INTRODUCTION

Cleft lip and cleft palate are congenital disorders that are commonly discovered in the field of dentistry.¹ This anomaly will affect several systems and functions including eating, dentofacial development, mastication, speech or social and psychological ability in children and adult.² The etiology of cleft lip and cleft palate comprises of heredity or environmental factor. Environmental factor includes the influence of drugs such as excessive use of steroid, viral infection, insulin antibiotics, antiepileptic and radiation exposure at the first trimester of pregnancy.²

Veau's classification divides cleft based on the anatomy into four classes. Class I is the cleft on soft palate, class II is the cleft on soft and hard palate extending to the posterior part of incisive foramen, class III is a complete unilateral cleft lip and cleft palate, class IV is a complete bilateral cleft lip and cleft palate.³

Clefts on lips and palate will complicate food intake so that nutritional status cannot be pledged and affect overall individual health. One of the early treatment choices if surgical procedure yet to be performed is by making a feeding obturator.⁴ This device will cover the cleft on palate and re-establish masticatory, deglutition, and speech function until surgical procedure for palate reconstruction can be done.^{5,6}

This obturator is anticipated to promote nutritional intake therefore patient will possess enough body weight for future therapy. Improving optimal nutrition is the first priority in this treatment. Good nutritional intake will foster growth and development in patient to prepare patient for palatoplasty.⁵ The appropriate time to conduct surgery in children is at the age of 9-18 months when the condition is pertinent for surgical procedure.⁷

There are several difficulties which pose a major challenge in the making of obturator, namely the lack of cooperation from respective patients and inadequate size of the oral cavity.⁸ One of the challenges for prosthodontist comprehends the impression stage, because it is an essential step in the obturator fabrication.⁹ Hence, this report aims to provide information on the management of patient with cleft palate served with acrylic feeding obturator.

CASE

A 13-months-old male patient arrived at Prof. Soedomo University of Gadjah Mada Dental Hospital with his parents and complained about a cleft on his palate that was complicating with food and beverage intake. The body weight of the patient was 7.5 kg. History taking revealed that the mother experienced an accident in her pregnancy that she was unconscious and prescribed with several medications. Patient suffered from complete bilateral labiognatopalatoschisis and had undergone cheiloplasty surgery on his lips. Extraoral examination displayed a trace of cheiloplasty surgery in good condition. Recent intraoral examination exposed the presence of cleft on hard palate, soft palate, and uvula (Veau's classification class II). Patient condition before the treatment can be observed on Figure 1.

CASE MANAGEMENT

A patient with cleft palate was prepared for the fabrication of feeding obturator. The pivotal step within the procedure was the impression of the palate. The impression was performed with a dental wax sized 5x5 cm which was resembling the maxillary arch and further being softened. Dental wax was positioned on right middle finger and later inserted into the mouth and pressed lightly to the upper jaw.

The impression was casted with dental stone (type III) and outline setting was done by drawing the line for individual impression tray on the working model and the individual tray was constructed using

cold cure acrylic. The shape was adjusted with the jaw size on the model (Figure 2A).

Working model impression was carried out by laying the child on the mother's lap with his head in an upright position. Oxygen tube was prepared adjacent to the patient to anticipate the occurrence of anoxia. Impression procedure was performed using fast-set type alginate and covered with sterile gauze on top of the material so that it would not be swallowed. The head of the patient was fixated with left hand and the impression tray was inserted into the mouth of the patient with right hand of the operator. It was then pressed lightly until the alginate set. The impression process can be observed on Figure 2B.

It should be noted that the baby should wail during the impression process, posterior part should be pressed first so that the material would flow to the anterior border, and it should be mixed to obtain a thick consistency. After the impression material was set, impression tray was carefully pulled out of the oral cavity and then washed and dried. The impression result can be observed on Figure 2C.

The dental mold was casted using dental stone (type IV) for the making of working model (Figure 2D). Moreover, wax model was prepared for the construction of obturator on the working model (Figure 2E) and processed with heat cure acrylic. After the processing was completed, obturator was sterilized and trial procedure in patient was performed. When no part of the obturator was identified to irritate the soft tissue of the patient, soft liner was applied on the fitting surface (Figure 2F).

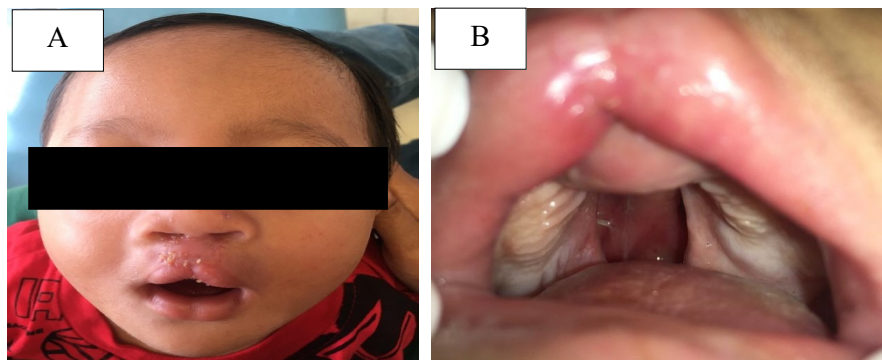


Figure 1. Patient condition before treatment, (A) Extraoral examination revealed a trace of cheiloplasty surgery, (B) Intraoral examination exhibited the presence of cleft on the palate.

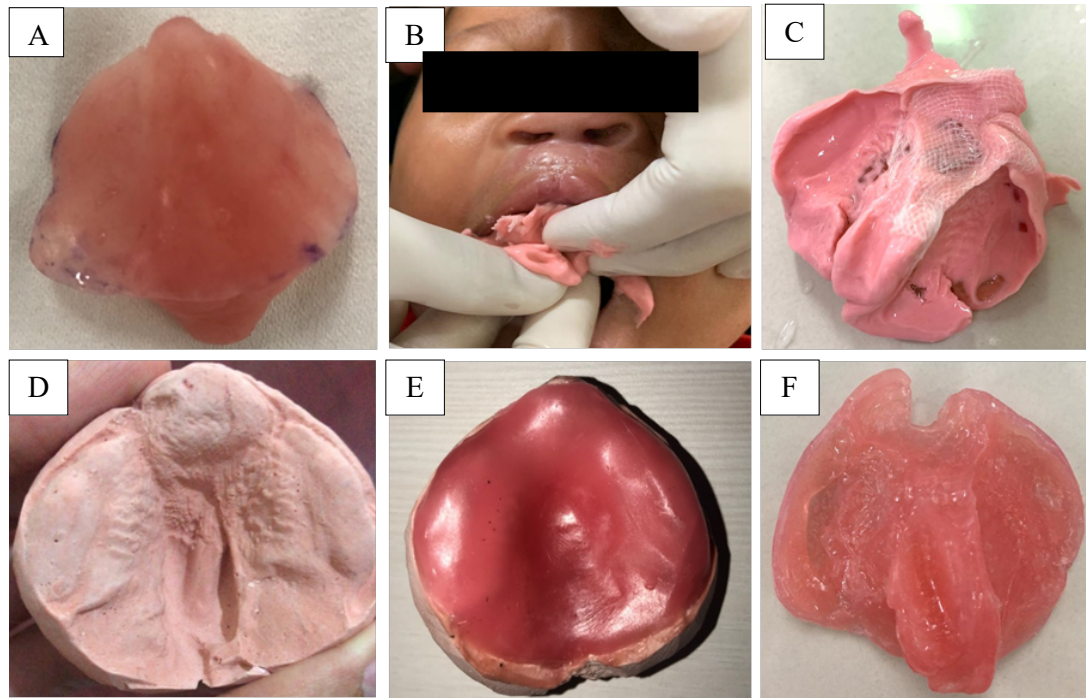


Figure 2. Impression procedure (A) Individual tray was made from self cure acrylic, (B) Impression process using alginate as the impression material, (C) Impression result, (D) Working model, (E) Wax model for the fabrication of obturator (F) Acrylic obturator was applied with soft liner on the fitting surface

Feeding obturator was inserted on the oral cavity of the patient (Figure 3A) and examined for its retention and stability. The parents were instructed to train the patient to dip milk using a bottle teat. They were also guided to attach and remove the device as well as to maintain the hygiene of the obturator. If pain occurs, it is expected to control the condition immediately.

Initial evaluation was carried on the following week after insertion. Subjective examination covered the question concerning any complain such as pain during the application to the parents. Correction was performed on the part of prosthetic device that was causing trauma or pressing the tissue. Another evaluation was done three months after the insertion (Figure 3B) including subjective and objective examination. Correction was completed on the part of prosthetic device which impede tooth eruption.

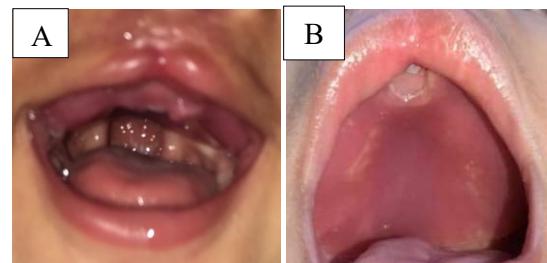


Figure 3. Patient condition after insertion (A) Acrylic obturator after being inserted in the patient, (B) Three months evaluation post insertion

DISCUSSION

Palatoplasty treatment can merely be done under several conditions to increase surgical safety and reduce the risk of complication. Appropriate time to perform surgery is between 9-18 months with 8.5 kg body weight (according to the age), hemoglobin level >10gr/dL, leukocyte level <10.000 cells/mm³, and no presence of upper respiratory tract disorder within the last 10 days^{7,10,11}. Feeding obturator may assist the patient to gain weight for palatoplasty surgical preparation¹².

Feeding obturator is a prosthetic device designed to close the cleft between the oral and nasal cavity¹³. This device is effective to separate oral with nasal cavity, so that the hurdle in nutritional intake may be managed¹⁴. The convenience in food intake will promote nutrition and weight gain, as well as reduce nasopharyngeal and middle ear infections¹⁵.

On the following week post insertion, no complain was expressed during the use of the prosthetic device. Intraoral examination demonstrated no changes in the color of soft tissues. Three-months post insertion evaluation revealed an increase in patient's body weight from 7.5 kg to 11 kg. Improvement in body weight portrayed that the nutritional intake in patient was adequate. Intraoral examination resulted in recent tooth eruption, so that the correction procedure was performed to prevent any hindrance in the eruption pathway. One factor that influenced the success of the prosthesis is the education or the knowledge of the parents concerning the prosthetic use itself⁸. Feeding obturator is a device that should be replaced periodically along with the growth of the children to adjust the condition of the oral cavity. Oral hygiene should also be maintained because feeding obturator is a plastic device which can irritate the palate of the patient¹⁶.

Lack of patient cooperation and inadequate size of the mouth may instigate the huge challenge to be conquered in prosthodontic management⁸. Impression procedure becomes a pivotal step in the making of obturator⁹. Patient should be triggered to wail during the impression process to eliminate any indication of respiratory obstruction¹³. The impression mold should present good details of the anatomical surface⁹. To promote such details, author applied a soft liner on the fitting surface so that it may foster better retention, stabilization, and patient comfort⁶. Acrylic feeding obturator may recover the condition in patient with cleft palate and promote the nutritional intake. Post insertion of the device may aid patient for better result in food and beverage consumption. Three months post obturator application, it was reported that there was an increase in the body weight of the patient which may assist the preparation for palatoplasty surgery.

REFERENCES

- Hansen PA, Cook NB, Ahmad O. Fabrication of a feeding obturator for infants. *Cleft Palate-Craniofacial Journal*. 2016;53(2): 240-244.
- Kumar A, Reddy E R, Rani S T, M K, MP S. Feeding Obturator with Presurgical Nasoalveolar Molding for a 2 Day Old Neonate with Cleft Lip and Palate. *Indian Journal of Dental Advancements*. 2017;09(02): 120-123.
- Cassio NA, Raposo-Amaral Editors E. *Cleft Lip and Palate Treatment A Comprehensive Guide*. 1st ed. Springer International Publishing, Switzerland; 2018: 38.
- Watted N, Watted A, Abu-Hussein M, Watted N, Hussien E, Watted A. A Feeding Appliance for a Newborn Baby with Cleft Palate. *International Journal Dental and Medical Sciences Research*. 2017; 1(6): 5-9.
- Goyal M, Chopra R, Bansal K, Marwaha M. Role of Obturators and Other Feeding Interventions in Patients with Cleft Lip and Palate: A Review. *European Archives of Paediatric Dentistry*. 2014;15(1): 1-9.
- Singh K, Kumar N, Gupta N, Sikka R. Modification of Existed Prosthesis into a Flexible wall Hollow Bulb Obturator by Permanent Silicone Soft Liner for a Hemimaxillectomy Patient with Restricted Mouth Opening. *Journal of Prosthodontic Research*. 2015;59(3): 1-5.
- Thomas C. Repair of Cleft Palate: Evolution and Current Trends. *Journal of Cleft Lip Palate and Craniofacial Anomalies*. 2015;2(1): 6-10.
- Shahapur S, Talikoti A, Basutkar N. Prosthetic Management of Nasoalveolar Clefts in Newborns: A Series of Case Reports. *Journal of Indian Prosthodontist Society*. 2011;11(4): 250-253.
- Rathee M, Tamrakar A. Single Visit Custom Made Flexible Feeding Obturator for an Infant with Tetralogy of Fallot. *Saudi Journal of Medicine and Medical Sciences*. 2015;3(3): 226-229.
- Efunkoya AA, Omeje KU, Amole IO, Osunde OD, Akpasa IO. A Review of Cleft Lip and Palate Management: Experience of a Nigerian Teaching Hospital. *African Journal of Paediatric Surgery*. 2015;12(4): 257-260.
- Zhang Z, Fang S, Zhang Q, et al. Analysis of Complications in Primary Cleft Lips and Palates Surgery. *Journal of Craniofacial Surgery*. 2014;25(3): 968-971.
- Narendra R, Purna SC, Deepth Reddy S, Reddy SN, Reddy SP, Prasad RB. Feeding Obturator-A Presurgical Prosthetic Aid for Infants with Cleft Lip and Palate-Clinical Report. *Case reports Annals and Essences of Dentistry*. 2013;5(2): 1-5.
- Chandna P, Adlakha VK, Singh N. Feeding Obturator Appliance for an Infant with Cleft Lip and Palate. *Journal of Indian Society of Pedodontics and Preventive Dentistry*. 2011;29(1): 71-73.
- Sivanagini Y, Ganapathy D, Jain AR. Anxiety Levels Among Mothers with Cleft Palate Children Receiving Feeding Plate Obturators. *Drug Invention Today*. 2018;10(10): 1986-1991.
- Naveen B, Prasad R, Kashinath K, Kumar S, Kalavathi S, Laishram N. An Innovative Modified Feeding Appliance for an Infant with Cleft Lip and Cleft Palate: A Case Report. *Journal of Family Medicine and Primary Care*. 2019;8(6): 2134-2136.
- Bargale S, Dave B, Patel N, Tailor B. Feeding Appliance for a Newborn Baby With Cleft Palate

A Novel Feeding Appliance of Ethylene Vinyl Acetate for Infant with Cleft Palate. *International Journal of Oral Health and Medical Research*. 2016;3(3): 56-58.