Global Journal of Medical Research: J
Dentistry & Otolaryngology
Volume 16 Issue 3 Version 1.0 Year 2016
Type: Double Blind Peer Reviewed International Research Journal
Publisher: Global Journals Inc. (USA)
Online ISSN: 2249-4618 & Print ISSN: 0975-5888

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GJMR-J Classification: *NLMC Code: QY 35*

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A Simple Cost-Effective Technique for Chair-Side Facial Moulage in Cleft Infants

Ajay Jain [α] & Ugrappa Sridevi [σ]

Abstract- **Patients with cleft lip and palate undergo various problems and managing these patients by prosthesis has been a challenge for many years and the problems begin with making of impression. The authors describe a chair-side technique for facial moulage in cleft infants that is simple, efficient and inexpensive while still being safe for the infant.**

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I. Introduction

Rehabilitation of maxillofacial defect is a challenging task at each and every step of the treatment. But, most difficult job is to make impression and replicate the defect. Various techniques have been mentioned in the literature for making impression by using different methods and materials employed. The first stage of management would be the fabrication of a feeding plate or passive maxillary obturator. The crucial step in fabrication of any appliance or obturator is the impression procedure. Patient positioning, tray, and impression material selection are the important factors to consider in any impression procedure[1-4].Facial moulage as a diagnostic, treatment planning and outcome assessment tool for craniofacial dysmorphology provides accurate three dimensional representation in a simplified, convenient and cost effective manner. Although the validity and reliability of recent clinical innovations in facial morphometry such as 3D stereophotogrammetry and laser scanning systems have been well established[5,6]but high cost, low mobility and accessibility and requirement of working knowledge of sophisticated software have been a major deterrent towards their widespread usage. The value of maintaining serial facial casts for monitoring the treatment progress in cleft infants during Nasoalveolar Molding therapy cannot be understated. Presurgical Nasoalveolar Molding (PNAM) is a non-surgical method of reshaping the gums, lips and nostrils previous to cleft lip palate surgery, thus lessening the severity of the cleft. The technique mentioned below has been incorporated by the authors in their PNAM protocol[7].

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II. Technique

The patient visited to the private clinic, Delhi, India with the chief complaint of defect in his upper lip since birth. On examination, there was intraoral palatal defect in line with the lip defect. Patient was referred to the government hospital in oral and maxillofacial unit for the treatment. Treatment planned for the patient to perform pre-surgical nasoalveolar molding procedure before go with surgical procedure of cleft lip and palate. After taking consent from the patient's parents, diagnostic impression was made by using modified tray with Impression compound. The authors advocate the use of red wax type II impression compound to fabricate an oval, concave and perforated specialized impression tray **(Figure 1)**. The appliance is made from a single cake of impression compound (Y-Dents Impression Compound, MDM Corporation, New Delhi, India). The dental material is first placed in hot water (60*C) for approximately 30 seconds in order to soften it followed by thorough kneading to obtain workability. It is then molded into the desired contour and extended from the upper lip to the hair line and up to the lateral canthi on either side. The handle, also made from red wax type II impression compound is attached along the length of the appliance. The tray is now perforated using a tapered carbide bur on a laboratory low speed hand piece.

All impressions are recorded in the outpatient department which is in close proximity to the operation room, if any airway emergency arise. A high speed suction machine is kept accessible. While recording an impression, the infant is fully awake and placed supine with the head tilted upwards. A thin smear of petroleum jelly is applied on the face, particularly around the nose to facilitate easy removal of the impression. Fast setting alginate (Cavex CA37 Normal Set/ Dustfree) is used to record the negative impression **(Figure 2)**. It is loaded in 2 steps: a thin mix directly placed over the nose for accurate recording of surface details followed by a slightly thicker mix loaded onto the impression tray. The tray is carefully positioned over the face such that the oral airway is left patent while recording the impression. Tissue distortion is prevented by avoiding excess pressure while seating the tray. Casts are prepared using type III dental stone (Kalstone, Kalabhai, Mumbai, India) **(Figure 3)**.

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III. Discussion

The authors have successfully used the above mentioned technique in cleft infants aging from 4 days – 7 months achieving uniformly good results in a large series of patients. The oval shape (instead of circular) of the impression tray allows it to be positioned either with its greatest dimension vertically (in case of older infants: e.g. 3 - 7 months) or horizontally (in case of younger infants) depending upon the child's facial dimensions, thereby facilitating its use as a universal stock tray in most instances. Moreover, the stock tray can easily be customized by immersing in hot water, softening the compound and then molding it to the required contour.

The appliance can be conveniently fabricated chair-side in approximately 10 – 15 minutes while incurring little cost to the operator (pack of 5 cakes costs about $1.00). Type II impression compound has superior bio-compatibility, is less allergenic than heat or chemically cured acrylic resin and is easily available worldwide.

This technique does not require the use of general anaesthesia. The authors concur with the views of Aizenbud and Ronen[8] that while recording the impression, positive nasal airflow pressure prevents alginate from entering the nasal cavity while spontaneous closure prevents alginate from entering the eyes.

The utility of facial moulage in quantifying congenital/ acquired facial defects as well as understanding the effects of clinical intervention cannot be denied. Furthermore, it presents potential research applications. The chair-side technique for facial moulage in cleft infants presented in this article is simple, efficient and inexpensive while still being safe for the infant.

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Figure Legends

Figure 1: Use of the specialized impression tray for facial moulage in an infant with complete unilateral cleft lip and palate.

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Figure 2: Impression obtained using fast setting alginate.

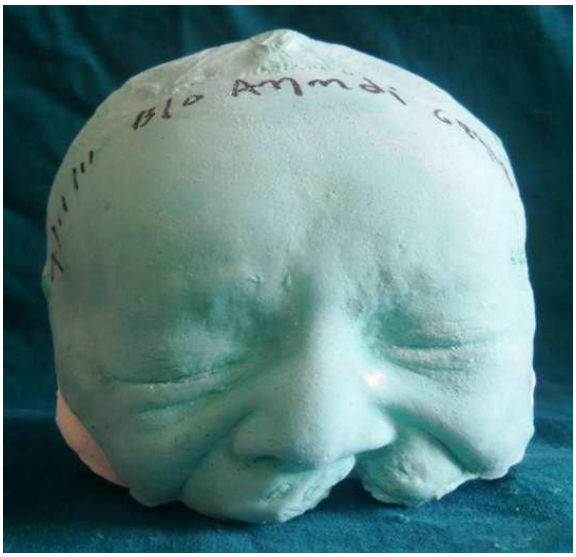

Figure 3: Facialmoulage using type III dental stone. Spontaneous closure of the eyes is evident.

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