J Indian Prosthodont Soc (December 2014) 14(Suppl. 1):S341–S344
DOI 10.1007/s13191-014-0375-x

CLINICAL TIPS

# A Simple Technique to Fabricate a Facial Moulage with a Prefabricated Acrylic Stock Tray: A Clinical Innovation

**Chandan Kumar Kusum · Indrajeet · Bhushan Ganesh Wankhade**

Received: 2 March 2014 / Accepted: 1 June 2014 / Published online: 15 June 2014


**Abstract** An accurate facial moulage helps in understanding the orientation and proper position of the facial prosthesis relative to other facial landmarks even in the absence of the patient. To make impression for fabricating facial moulage previously described techniques in literature made use of elastomeric impression material, alginate, and dental plaster directly over the patient's face to obtain the moulage which have their own disadvantages. Taking these into consideration a novel clinical technique is described herein to fabricate an acrylic stock tray for making accurate impression and to support the impression material while setting and pouring.

**Keywords** Facial moulage · Facial moulage impression · Maxillofacial Procedures

## Introduction

Facial deformity developed from congenital abnormalities, accidental trauma or acquired disfigurements may impose a psychological and/or social trauma to the patient and affects the quality of life [1]. Team work of the maxillofacial surgeon, the prosthodontist and a plastic surgeon plays a key role in restoring the defect functionally and esthetically [2]. One of the most important steps in fabricating the facial prosthesis is preparation of the facial moulage which to large extent affects the outcome of the treatment. An accurate moulage decreases the time required to complete the clinical trial of prosthesis on patient's face as the prosthesis' accuracy/orientation can be verified on the cast itself in the laboratory. A traditional approach of fabricating a facial moulage involves very cumbersome procedures, which may turn out to be frustrating for both the patient as well as the prosthetist [1–9]. Since the use of elastomeric impression materials in large quantity increases the treatment cost for the patient, in most of the reported techniques a thin layer of alginate in low viscosity was painted over the face and was picked up in the plaster of paris [10]. This procedure has the following drawbacks. Thin consistency of alginate would not be having sufficient body to support the weight of the poured plaster and may result in distortion of the moulage. It is difficult to control the flow of alginate while painting directly onto the face especially when a complete facial moulage is desired. The thin layer of alginate fails to protect the skin from the heat liberated during the setting of the plaster adding discomfort to the patient.

Hence, to overcome these drawbacks, a simple and innovative technique has been described here for the fabrication of the complete facial moulage using the irreversible hydrocolloid material and a novel stock acrylic tray.

## Technique

A readily available facial model with good retained anatomic details of the face was selected randomly from the museum of the maxillofacial rehabilitation centre.

This clinical tips has been presented as table clinic presentation under the title "An ingenious approach to prosthodontics revolution" at 41st National Indian prosthodontic conferrence, Ahmedabad on 17th November 2013 and awarded as "Best innovative technique".

C. K. Kusum
Department Of Prosthodontics Crown and Bridge, Subharti Dental College and Hospital, Meerut, Uttar Pradesh, India

Indrajeet (✉) · B. G. Wankhade
Department Of Prosthodontics Crown and Bridge, K.V.G. Dental College and Hospital, Sullia 574327, Karnataka, India
e-mail: indra_jeet.2009@rediffmail.com

**Fig. 1** Wax spacer adapted over facial model with tissue stoppers cut into it

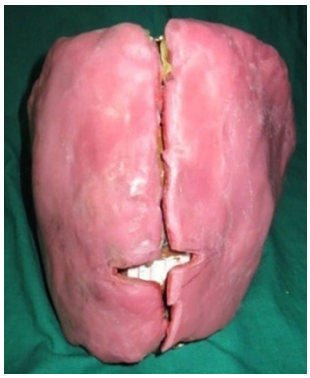

**Fig. 2** Two-part resin tray with vent in the region of mouth opening

**Fig. 3** Two part of the tray with retentive holes connected through hinge attachment

*Step-1* Apply 6–7 mm wax spacer (HIFLEX-Modelling Wax, Prevest Denpro Limited, Jammu, India) onto the facial model (Fig. 1). The spacer should be extended 10–15 mm beyond the anatomic ears present on the model. Cut open the tissue stops around the prominent bone of face (zygoma, frontal bone, chin etc.) to facilitate orientation of the tray on the face and also to avoid the distortion of the facial tissue during impression procedure (Fig. 1).

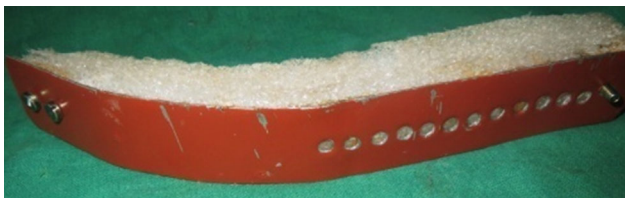

**Fig. 4** Metal strip Locking device

**Fig. 5** Metal strip connected to the tray with two bolts and crossing the hinge at right angle

*Step-2* Fabricate a tray in two parts (one on each half of the face) over this wax spacer using an auto polymerizing acrylic resin (Rapid Repair Powder; Dentsply, Gurgaon, India). Make a vent in the mouth region for inserting the breathing pipe at the time of impression making (Fig. 2).

*Step-3* Connect the two halves of the tray using the hinge attachment. Remove the wax spacer and make retentive holes in tray, to aid in retention of the irreversible hydrocolloid impression material (Fig. 3).

*Step-4* Designing the locking device: A specially modified metal strip is used for locking two halves of the tray. For this, select an iron metal strip of 100 × 15 × 3 mm dimension, which is easily available in any hardware shop, and bend at its center to follow the approximate contour of the tray surface using a metal bender. Attach a 5 mm thick foam sheet to the concave surface of the metal strip by using cyanoacrylate glue (Feviquick, Pidilite Industries Ltd., Uttar Pradesh, India). This foam sheet will act as filler between the strip and the tray and compensate for any discrepancy in contour of metal strip and the tray. Drill several holes of 3 mm diameter, spaced at 1 mm, in this metal strip using a mechanical drilling tool (Fig. 4).

**Fig. 6** Area of the face, to be impressed, beaded with impression compound

**Fig. 7** Margin of pre-fabricated tray adjusted with impression compound and oriented over the patient face. And metal strip locked to the other side of tray using bolt

Correspondingly, drill several holes in both halves of the acrylic tray using 3 mm diameter acrylic trimming cylindrical bur. Connect one end of the metal strip to one half of the tray using two bolts in such a way that metal strip crosses the hinge at right angle (Fig. 5).

*Step-5* Bead the area of the face to be impressed with a roll of impression compound (DPI PINNACLE, The Bombay Burmah Trading Corporation, Mumbai, India) (Fig. 6).

*Step-6* Try the tray on patient's face. Both halves of the tray will either open or close slightly around the hinge depending upon patient's face contour. If required, modify the tray borders by trimming it, if it is extended or; by attaching the impression compound, if it is short anywhere. At this stage, lock the unsecured end of the metal strip to the other half of the tray using a bolt (Fig. 7). To further rule out accidental loosening of the screw, secure the bolts and the metal strip to the tray by adding a small amount of pattern resin (Pattern Resin, GC Dental Corporation,

**Fig. 8** Loaded tray oriented over patient face

**Fig. 9** Facial moulage of patient

Kasugai, Japan) in dough stage around the bolts and the strip and allow it to set. The pattern resin and the metal strip will allow the fixed position to be maintained for rest of the procedure without movement of the tray.

*Step-7* Secure the hair of the face with the petroleum jelly. Mix a thin mix irreversible hydrocolloid impression material (Algitex Alginate Impression Material, The Bombay Burmah Trading Corporation, Mumbai, India) and pour over the beaded area of face and Load the tray with irreversible hydrocolloid impression material and orient gently over the face (Fig. 8).

*Step-8* Remove the impression from the face and pour the impression using type IV dental stone (Kalrock, Kalabhai Karson Pvt Ltd, Mumbai, India) and retrieve the facial moulage once set (Fig. 9).

## Summary

In this article the alginate was supported by the light weight acrylic tray. The position of two parts of tray was locked with the locking device and self cure acrylic resin. The dental plaster can also be used to lock the tray but the

chipping or flaking of the plaster, though rare, can be a matter of concern. In the present article the extensions of the stock tray made on the facial model was adjusted on the patients face by attaching the impression compound. This is a simple procedure and hence it can be used readily in all cases. This simple and cost effective procedure described here converts the hectic clinical appointment (both in respect to the patients as well as operator) into one of the simple routine appointment.

## References


1. Walter WS, Gelfand G, Gans BJ (1975) A new technique for making a moulage. J Oral Surg 33:220–222
2. Ma T, Taylor TD, Johnson M (1990) A boxing technique for making moulage of facial defects. J Prosthet Dent 63:564–566
3. Coleman AJ, Schweiger JW, Urquiola J (1995) A two stage impression technique for custom facial prostheses. J Prosthet Dent 73:370–372
4. Thomas KF (1994) Prosthetic rehabilitation. Quintessence, London, pp 176–181
5. Branemark PI, Tolman DE (1998) Osseointegration in craniofacial reconstruction. Quintessence, Chicago, pp 214–216
6. Beumer J, Curtis TA, Marunick MT (1996) Maxillofacial rehabilitation: prosthodontic and surgical considerations. Ishiyaku EuroAmerica, St Louis, p 401
7. Wolfaardt JF, Coss P, Levesque R (1996) Craniofacial osseointegration: technique for bar and acrylic resin substructure construction for auricular prostheses. J Prosthet Dent 76:603–607
8. Wolfaardt JF, Wilkes GH, Anderson JD (2000) Craniofacial osseointegration: prosthodontic treatment. In: Taylor TD (ed) Clinical maxillofacial prosthetics. Quintessence, Chicago, pp 286–291
9. Kubon TM, Anderson JD (2003) An implant-retained auricular impression technique to minimize soft tissue distortion. J Prosthet Dent 89:97–101
10. Alsiyabi AS, Minsley GE (2006) Facial moulage fabrication using a two-stage poly (vinyl siloxane) impression. J Prosthodont 15(3):195–197