

Inovative Impression Technique For Complete Denture Patients

Abstract

Purpose of this article is to achieve uniform border moulding with putty silicone impression material in single stage border moulding technique. This single stage border moulding technique is an alternative substitute for incremental border moulding in which low fusing impression compound is routinely used. Since several years it has been practice to use low fusing impression compound for incremental border moulding. This technique has many limitations. Thus in this article authors have described elaborately single stage border moulding technique with putty silicone impression material. This technique is easy to practice, has rapid approach and is much accurate.

Key Words

complete denture impression technique , single stage border molding , heavy body putty silicone , low fusing impression compound ,light body silicone impression material.

Introduction

Impression making for complete denture Prosthodontics has matured from the art of carving wooden or ivory blocks that accommodate the intra oral contours to the more sophisticated methods in use today^[1]. A complete denture impression is a negative registration of the entire denture bearing, stabilizing, and border seal areas present in edentulous mouth. The art and science of impression making is an ancient endeavor. Since 20 th century onwards so much has been written and published about impression techniques for completely edentulous situations^[2]. This subject has still remained confused among dentists, reason behind is that all research works and subsequent publications were theoretically based, not scientifically approved in the research laboratory. No true research work was done and subsequently published to prove or disapprove the advantages, disadvantages and limitations of various impression techniques. Impression techniques must adhere to biologic principles, objectives and theories dictated by the anatomic (gross and microscopic) and the physiology of the edentulous mouth. Impression techniques for complete denture should never violate important biological principles, if they are violated, denture lose retention, stability, create soreness or cause resorption of the underlying bone.

For getting successful treatment^[3] dentist must (1) Understand the histology and pathology of the living tissue that make up the basal seat (2) Use a clinical technique in making impression that selectively distribute pressure(selective pressure theory) to the basal seat . These biologic principles, objectives and theories enhance the retention, stability and support of the denture, which are all interrelated. Dentist should always remember the two most important factors in making satisfactory impressions for complete denture patients , that is accurately fitting custom impression tray and proper positioning of the special impression tray^[3].

The number of variable factors associated with impression techniques is so many that a single standard technique is not possible for all completely edentulous situations. The variable factors are number of impression materials each having their own manipulative qualities, individual patient having variable anatomy and operator's skill and experience^[2].

This article presents impression technique which is substitute for conventional impression technique using incremental border molding , this single stage border moulding using putty silicone impression material technique is easy to practice , has rapid approach and

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is much accurate.

1 - Single Stage Border Molding Using Putty Silicone Material As Alternate Substitute For Incremental Border Molding Technique.

This technique has some advantages over conventional impression technique i.e. stage by stage border molding using low fusing impression compound. It is preferable that border molding material is placed continuously along the entire border of a special impression tray and that the border molding procedure is completed in a single stage to record the width and depth of entire length of the sulcus^[4]. Border molding material should possess a homogenous consistency so that it can offer uniform resistance to displacement by the vestibular tissues. This is not possible with low fusing impression compound. It is usual practice to soften the low fusing impression compound on an open flame, and later to temper in warm water before it is placed

in patient's mouth . The softening and hardening rate of low fusing impression compound varies from one portion of the special impression tray to another depending on the application of external heat .Thus the viscosity of softened low fusing impression compound may differ from one area to another. As a result, that part of the special impression tray having softened low fusing impression compound of higher viscosity may offer greater resistance to displacement by the tissues than that part having low viscosity material^[4]. As Low fusing impression compound lacks thixotropicity, this material when unsupported for more than 2mm cannot maintain its height when bulk is added along the borders . One of the limitations of using low fusing impression compound for border molding is its short manipulation time. It hardens quickly in patients mouth and does not remain in a plastic stage till the functional movements of the vestibular and alveo - lingual sulcular tissues are completed .Thus stage by stage border molding using low fusing impression compound is a questionable . Preferably border molding should be completed in a single stage .The heavy body putty silicone appears to be a good material for single stage border molding^[4].

Ideal material which will allow simultaneous molding of all borders has two general advantages, the number of insertions of the special impression trays for maxillary and mandibular border molding could be reduced to two, is a great time and motion advantage^{[3],[5]}. The development of all borders simultaneously avoids propagation of errors caused by a mistake in one section, affecting the borders contours in another section^{[3],[5]}.

In view of these limitations of low fusing impression compound the heavy body putty silicone has been tried. The ideal requirement of a material to be used for simultaneously molding of all borders are that it should have sufficient body to allow it to remain in position on the borders during loading of the tray , allow some time for preshaping of forms of the borders without adhering to the fingers, have a setting time of 3- 5 minutes , retain adequate flow while seating in the mouth , allow finger placement of the material into deficient parts after seating the tray and be readily trimmed and shaped so that excess material can be carved out to shape the borders before the final impression is made^[5].

The advent of heavy body putty silicone for single step border molding presents an important advancement in impression technique 3,4. Heavy body putty silicone materials have many advantages over low fusing impression compound these include

(1) Elimination of the water bath (2) Ease of manipulation as it is viscous and knead able (3) Accurate placement to the borders as slumping does not take place while recording functional width and depth of the sulcus (4) Elimination of the multiple insertions and removal of the special impression tray while border molding as heavy body putty silicone has long setting time 2-4 minutes (5) Homogenous consistency and (6) Superior accuracy in recording borders .

Border Moulding The Special Impression Tray

Make primary cast in the usual manner. Block out undercuts on the cast with base plate wax(D.P.I- modeling wax ; Dental product of India Mumbai, India). One thickness of base plate wax relief (Sharry's design) was provided over the cast , no relief wax was placed on the sulcus areas except where undercuts were present . Total four tissue stops were placed two in the canine region and two in the molar region^[6]. Autopolymerising acrylic resin custom impression trays (D.P.I -RR cold cure ; Dental Product of India ; Mumbai , India) was constructed over the relieved primary casts . The extension of the custom impression tray

was checked intra orally, borders were kept 2mm short of the periphery^[5]. The extension of the posterior palatal seal area was marked with indelible pencil.

Putty base and catalyst was taken out as per requirements and kneaded as per manufacturer's instructions for 1 minute with the help of fingers and than a roll of 3-5 mm width ,after that the putty was placed on the entire periphery of special impression tray including the posterior palatal seal area. The material was placed on the borders , making certain a minimal width of 5mm exist on the special impression tray. The material was reshaped quickly to proper contours with fingers . Later special impression tray was immediately inserted in the patients mouth .All borders were inspected to make certain that sufficient heavy body putty silicone material was present in the vestibule. Desired movements were done for 3 - 4 minutes to record functional depth and width of the sulcus .

When the fingernail fails to make indentation into the material it was assumed that material had finally set^[5]. Molded special impression tray was removed from the mouth and border molding was inspected , any deficient sites can be corrected with the small mix of putty material , if there is any over extension than it can be detected as the molded tray will show through the heavy body silicone putty border molding material [Fig -1].

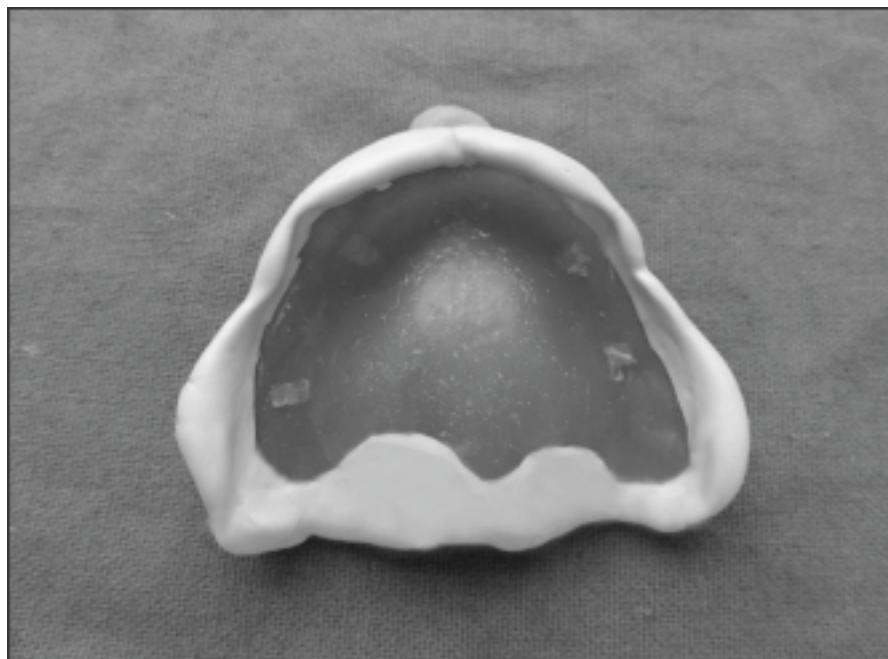


Fig -1 Border molded special impression tray using heavy body Putty silicone impression material.

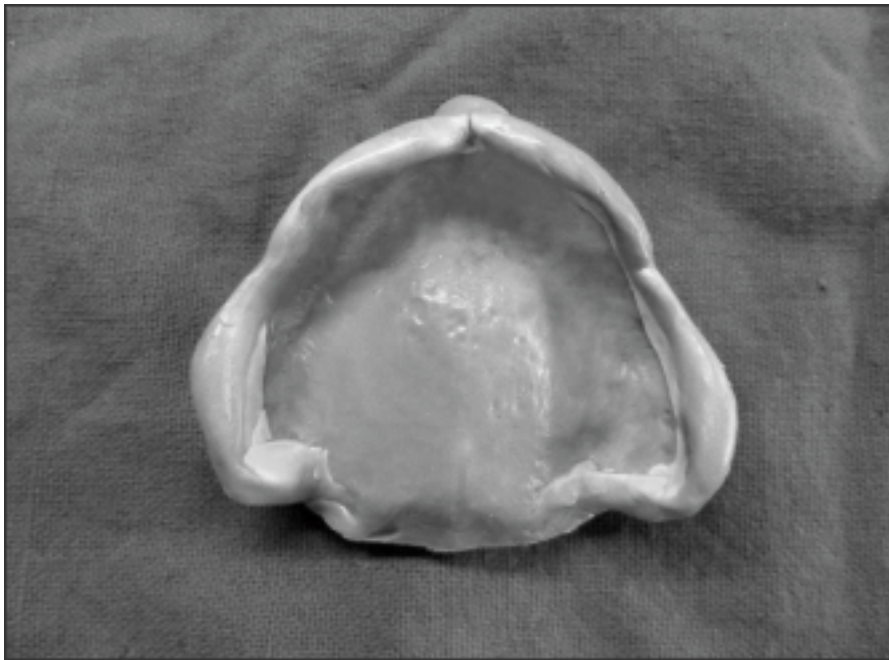


Fig -2 Final impression made using Light body silicone impression material.

Preparation Of The Maxillary Special Impression Tray To Secure The Final Impression

Borders were reduced on the special impression tray which show through the heavy body putty silicone material, as they indicate overextension or pressure spots. scalpel was used to remove any of the material that extends internally within the tray more than 6 mm.

8- The wax spacer (D.P.I - modeling wax) was removed from the special impression tray and any heavy body putty silicone material extending into an undercut was also removed so that the special impression tray can be seated comfortably in place. Thickness of the flange was reduced all over its borders to approximately 2.5 to 3 mm.

Making Of Final Impression

In the final impression tray holes^[7] were made as prescribed by Boucher and tray adhesive (3 M) was applied on the tissue surface of special impression tray, 5-6 mm inside the border and 3mm outside the special impression tray for chemical adhesion between special impression tray and light body silicone impression material^[3]. Light body silicone impression material (3M ESPE Express TM XT Light body) was squeezed out from auto mixing gun and directly placed on tissue surface area and on the outer border of special impression tray, loaded

custom impression tray was placed in the patient mouth. The desired movements were performed to record the functional sulcus depth. When final impression material has set, impression was removed and thoroughly washed under running tap water and then it was inspected^[3] [Fig 2]. A technique of completing border molding in single stage, open mouth impression method using heavy body silicone putty (3 M) followed by final wash impression using light body silicone impression material is described above 3. Dentist can also use this technique in making single stage, close mouth impression technique^[4].

Summary And Conclusion

This article outlines single stage border molding technique and materials required to achieve predictable complete denture final impression using selective pressure philosophy. It is recommended that regardless of the material selected for the use, the clinician select a method and use it consistently.^[8] Functioning of the complete denture depends on the impression technique. Several

impression techniques have been described in the literature since the turn of the century when Green brothers introduced the first scientific system of recording dental impression. Advocates of each technique have their own claim of superiority over the other.^[4] Since several years it has been the practice to use low fusing impression compound for border molding, the technique of border molding with this material has many limitations thus putty silicone was used for single stage border molding.

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