

Evaluation the presence of border molding in final impression for fabrication of removable prosthesis by general practitioner in Tripoli, Libya

▪ Mohamed Ali Elmaroush* ▪ Sarra Abdulhamid Ben Hamida**

▪ Zieneb Saleh Elgarboae***

Abstract:

The aim of this study was to examine the final impression for the presence of border molding, which had been made by private dental practitioner in purpose of fabricating removable dental prosthesis in the Tripoli, Libya. The study had been conducted within 5 dental laps that work with 25 private dental clinics. The inclusion criteria: the impressions of the same day, impressions for removable prosthesis that is done with custom trays. Exclusion criteria: the old impressions, the impressions that has been done by prosthodontic specialist and impressions for fixed prosthesis. The evaluation of border molding has been done by three prosthodontic specialists based on the presence of border molding or no. One hundred and fifty final impressions for completely and partially edentulous patients were evaluated, 20% of the evaluated final impressions (n= 30) were showed that the border molding were present and 80% of evaluated final impressions (n= 120) were showed that the border molding were not present.

Keywords: Elastomeric impression material; single step border molding; sectional border molding.

* Department of Prosthesis, Faculty of Dentistry, Tripoly University

** Depatment of Prosthesis, Faculty of Dentistry, Tripoly University

*** Department of Prosthesis, Faculty of Dentistry, Tripoly University

Introduction:

Complete dentures are primarily mechanical devices but since they function in the oral cavity, they must be fashioned so that they are in harmony with the normal neuromuscular function ^[1]. Success of complete dentures largely depends on accuracy of impression ^[2]. Making of accurate final impression for complete dentures is a multistages process that involves a preliminary impression, a final specialized or individualized final impression tray and a final border impression, border molding of an individual tray is an essential step in impression making ^[3]

Border molding is the shaping of the border areas of an impression tray by functional or manual manipulation of the tissue adjacent to the borders to duplicate the contour and the size of the vestibule ^[4]

The construction of well-arranged mandibular complete denture is commonly more difficult than that of the maxillary one ^[5]. The mandibular denture is more likely to be displaced during tongue and muscle movement than that of the maxillary one ^[6]. Without recording the functional width and depth of the lingual sulcus, a stable and retentive denture cannot be constructed ^[7]. The denture border should be appropriately extended in areas where possible and the border should be limited otherwise ^[8]. It can also trace the future denture's periphery by molding the peripheral of the individual tray and by asking the patient to make functional trimming exercises ^[3]. The peripheral tracing with tracing compound of an individual tray is an essential step in impression making ^{[9][10]}. But it is time consuming and often difficult for beginners to master as it require skill and experience ^[2].

Elastomeric impression material has the advantage of single step border molding using putty and accurately recording the minute details during final impression using light body. These properties were consistent with the results as the retention of the mandibular denture fabricated after final impression with elastomeric impression showed the second highest mean value of retention ^[11]. This was because the entire peripheral seal was recorded simultaneously in single insertion, borders of uniform thickness with smooth continuity, the elasticity of the material also helped in accurate adaptation of the border tissues, the simultaneous muscle movement resulted in an uniform recording of periphery bilaterally which helped in achieving all-round peripheral seal ^[12].

The aim of this study was to examine the presence of border molding ,

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which had been made by private dental practitioner before making of master impression.

Materials and Methods:

The study had been conducted within 5 dental laps that work with 25 private dental clinics. One hundred and fifty final impressions for partially and complete edentulous patients were evaluated for the presence of border molding or no (Figure1&2).The inclusion criteria were the impression of the same day, impression for removable prosthesis that use of custom tray. We excluded the old impression, the impression that has been done by prosthodontic specialists and impression for fixed prosthesis. The evaluation of the presence of border molding has been done by three prosthodontic specialists.

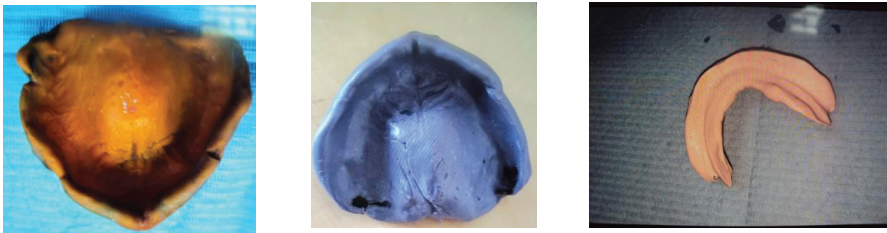


Figure 1: The impressions with border molding



Figure 2: The impressions without border molding

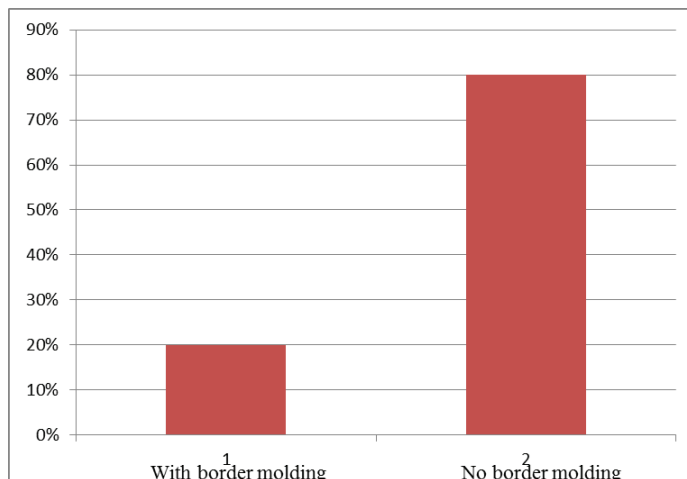
As no such study has been previously carried out in Libya, this investigation sought to provide baseline data in the area. Hypothesis tests were carried out to evaluate the presence of border molding in final impression that has been done by private practitioner.

Result :

One hundred and fifty final impressions were evaluated, 46.6% of the final impressions (n=80) were made for the upper jaw and 53.4% of the final impressions (n=70) for the lower jaw. All the impressions had been evaluated

on a private basis. The evaluation of the impressions had been done by three prosthodontic specialists.

As it show in paragraph 1 the high percentage were no border molding (n=120) 80% of the evaluated impression , while 20% of evaluated final impression (n=30) were the border molding is present



Paragraph.1 showed the percentage of impressions that have border molding or no.

Discussion:

A good and accurate impression will always ensure satisfactory retention, stability and comfort to the complete denture patient. There are various factors associated with the retention of complete denture, which may be broadly grouped as biological, physical and mechanical. These factors of retention can be achieved by means of meticulous border molding and an accurate final impression ^[4].

Border molding impression trays by modeling plastic has been used since 1907^[13]. Around 1950, border molding with tracing compound was accepted as standardized technique by most prosthodontists ^[3]. In literature, various authors have recommended the use of elastomeric impression materials for border molding and final impression. Woelfel et al.^[14] reported that it required an average of 17 placements to obtain a maxillary final impression using modeling plastic as the border molding material. These limitations of the conventional method are consistent with results of the present study as the mandibular dentures fabricated using conventional method showed the least mean value of retention.

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Smith et al.^[15] described a technique using a polyether impression material for border molding the complete denture impression trays. The major advantages of this technique were that the border molding could be accomplished in one-step and that the patient's functional movement was used in forming the borders.

Tan et al.^[16] concluded that polyether impression material requires less time to complete the border molding process; the border recorded was longer and of less operator variability when compared with modeling plastic.

Lu et al.^[17] and Applebaum et al.^[18] concluded that polyvinyl siloxane putty and light-body impression material are well suited for making complete denture impressions.

In this study One hundred and fifty final impressions for partially and complete edentulous patients had been evaluated for the presence of border molding by three prosthodontic specialists.

This study showed that the percentage of the presence of border molding in the evaluated final impressions was low (20%), while the percentage of absence of border molding in the evaluated final impressions was high (80%). This indicates the widespread use of final impression without border molding indicated that the lack of education of the general dental practitioner and the introduction of guidelines from prosthodontic specialists is essential in purpose to produce a high quality of removable prosthesis.

Conclusion:

In this study, we found that the evaluation of the presence of border molding in final impression that had been sent to the dental laboratories for fabrication of removable prosthesis was lack of border molding in the final impression that had been done in dental laboratories in Tripoli, Libya.

There was a widespread use of final impression without border molding and lack of education of the general dental practitioner.

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تقييم وجود عمليه تشكيل الاخدود في الطبعه النهائيه لغرض صناعه الطقم المتحرك بواسطه اطباء اسنان الغير مختصين في طرابلس , ليبيا

■ د. محمد علي المرعوش* ■ د. ساره عبد الحميد بن حميده**
■ د. زينب صالح الجربوعي***

المستخلص:

الهدف من الدراسه فحص وجود عمليه تشكيل الاخدود في الطبعه النهائيه التي تم اخدها بواسطه اطباء اسنان في عيادات خاصه لغرض صناعه الاطقم المتحركه في طرابلس ، ليبيا. الدراسه اجريت داخل خمسه معامل اسنان تتعامل مع خمسه و عشرين عياده اسنان خاصه.

المواصفات المطلوبه لادراج الطبعه في الدراسه: الطبقات التي اخدت في نفس اليوم، طبقات لصناعه الاطقم المتحركه التي اخدت بحوامل ماده الطبعه الخاصه.

المواصفات الغير مطلوبه لادراج الطبعه في الدراسه: الطبقات القديمه، الطبقات التي اخدت بواسطه اخصائي التركيبات المتحركه و الطبقات الخاصه بالتركيبات الثابته.

تقييم عمليه تشكيل الاخدود اجريت بواسطه ثلاثه اخصائيين من التركيبات المتحركه علي اساس وجود عمليه تشكيل الاخدود او لا .

قيمت 150 طبعه نهائيه لمرضب ذوي فقدان جزئى للأسنان و فقدان كلي للأسنان، 20% من الطبقات النهائيه المقيمه (عدد=30) اظهرت ان عمليه تشكيل الاخدود موجوده و 80% من الطبقات النهائيه المقيمه (عدد 120) اظهرت عدم وجود عمليه تشكيل الاخدود

* عضو هيئة التدريس، بكلية، طب و جراحه الفم و الاسنان ،جامعه طرابلس

** عضو هيئة التدريس، بكلية، طب و جراحه الفم و الاسنان ،جامعه طرابلس

*** عضو هيئة التدريس، بكلية، طب و جراحه الفم و الاسنان ،جامعه طرابلس