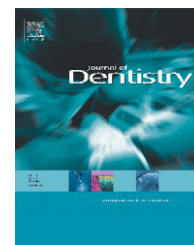


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Review

What is the evidence base for the efficacies of different complete denture impression procedures? A critical review[☆]

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ARTICLE INFO

Article history:

Received 23 April 2012

Received in revised form

23 November 2012

Accepted 24 November 2012

Keywords:

One-step impression procedure

Border moulding

Impression materials

Post-dam

General practice

ABSTRACT

Objectives: Many procedures used in prosthodontics, including the materials and methods used for complete denture impressions, lack support of good evidence. The aims were to systematically, and critically, review the literature on complete denture impression materials and methods to identify an impression procedure that can be considered expedient for achieving a satisfactory clinical outcome for complete denture wearers.

Data and sources: MEDLINE/PubMed and the Cochrane Library were searched for studies on impression procedures used in the clinical fabrication of complete dentures. The search focused on best available evidence with respect to clinical outcome.

Study selection: PubMed listed 1201 titles for the combination terms of complete denture and impression. Five relevant randomized controlled trials were identified. No review of complete denture impressions was found in the Cochrane Library.

Results: Two-step procedures for complete denture impressions dominate all textbooks, teaching and specialist practice, despite an absence of convincing evidence of its superiority. No controlled studies supporting the use of border moulding, post-dam, and functional and mucostatic impressions, were identified. Two studies showed that a one-step method using alginate in a stock tray offers a similar clinical result to more complicated, expensive and time-consuming two-step material and technique combinations.

Conclusions: There was no support for the frequent textbook statement that the two-step procedure is necessary and superior to the one-step method. While some special clinical situations may benefit from other combinations of materials and techniques, the results suggest that the simple and inexpensive one-step procedure can serve the needs of the majority of edentulous patients.

Clinical significance: In spite of the fact that two-step procedures for complete denture impressions dominate textbooks, teaching and specialist practice, the results of this review suggest that a simple and inexpensive one-step procedure can serve the needs of the majority of edentulous patients.

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[☆] A preliminary report of this study was presented at the annual conference of the Swedish Dental Association in Stockholm, Sweden, November 17, 2011.

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<http://dx.doi.org/10.1016/j.jdent.2012.11.015>

1. Introduction

The impression stage of fabricating complete dentures aims to customize the denture bases to the optimal denture-supporting area and to ensure that the border form of the prostheses provides a peripheral seal. It is generally agreed that meeting these objectives achieves denture stability and retention, and enables effective function. It follows that textbooks on the subject emphasize the critical importance of impressions in the fabrication process. Many different concepts and approaches have been described to achieve these goals, along with specific materials and techniques by which the given objectives might be accomplished. Even though there are wide variations in individual preferences for a particular material or method, most authorities believe that, for a successful outcome to be achieved, a two-step procedure is required. However, whether any one combination of material and technique produces any better long-term results in terms of complete denture performance than another is a question that remains open due to a lack of strong evidence.

Thus, conventional wisdom on the topic has been formed by a variety of opinions, resulting on the one hand in some entrenched ideas, and on the other a lack of consensus regarding a technique for making impressions that can be said to be generally applicable.¹ The situation appears to be no different for other stages in the fabrication of complete dentures. Yet, even among prosthodontists there is lack of agreement on how best to obtain complete denture impressions. In a survey conducted among 41 prosthodontists from 24 countries, using the Delphi technique to provide guidelines for a minimum acceptable protocol for the construction of complete dentures, consensus was only reached by avoiding advocacy of specific techniques and materials. Regarding impression procedures there was agreement only on some rather vague general recommendations.²

In a critical review of the literature on the same topic (up to February 2005),³ only one randomized controlled trial (RCT) was identified, but which failed to give clear clinical guidance regarding a recommendable option among the wide variety of impression techniques available. Based on the lack of specific evidence, as well as on factors such as the observation that most edentulous patients report satisfactory oral and masticatory function with their complete dentures, and the fact that there is poor correlation between patient acceptance of prostheses and their technical sophistication or exactness, the review boldly suggested that comparisons between dentures made with varying impression techniques, be they complex or simpler, may not lead to significant differences in long-term clinical results.³ Given the strong preferences expressed by some clinicians for specific methods and materials, an updated systematic review on the broad clinical outcomes of the various impression procedures used in the fabrication of complete dentures would seem warranted.

The aim of this study was to systematically, and critically, review the literature on the relative efficacies of different impression materials and techniques used in complete denture construction in order to obtain information that might better inform clinical practice. The working hypothesis was that the literature search would provide evidence to recommend a

combination of material and technique for complete denture fabrication that might be considered expedient for the management of the majority of edentulous patients.

2. Data and sources

A MEDLINE/PubMed search was conducted for studies on impression procedures used in the clinical phase of fabricating complete dentures. The search focused on best available evidence for clinical outcome in articles published up to 22 November 2012. If publications of the highest levels of evidence, i.e. RCTs and systematic reviews of RCTs, were not available, then other studies of lower level of evidence were considered. The following terms were used in various combinations in the search: complete denture, impression, material, method, technique, functional, mucostatic, selective pressure, border moulding, post-dam, stock or custom impression tray, general practice. The Cochrane Library was searched for reviews on studies related to impressions for complete dentures. The electronic search was extended to include a manual search of references in some modern textbooks on complete dentures, as well as the reference lists of the articles that had been selected for possible inclusion. Studies of possible interest were selected based on the relevance of the title, the abstract, and eventually the full text of the article according to the inclusion criteria (Table 1).

3. Study selection

3.1. General results of the literature search

The combination of the terms complete denture and impression resulted in 1201 titles in the search of PubMed. Other combinations revealed relatively small numbers and added only a few new titles (Table 2). In the Cochrane Library, no review of complete denture impressions was found. Limiting the search to RCTs produced 8 articles. However, among these, 3 dealt with implant restorations and 1 with removable partial dentures, leaving 4 for complete dentures.⁴⁻⁷ When applying the combination terms of complete denture and impression method, 7 RCTs were identified, with those 4 referred to above being again the only relevant ones. Hand search identified 1 more RCT.⁸ Although these studies provided valuable contributions to our knowledge, they were not able to answer the central question relating to a generally expedient method for complete denture impressions. Thus, the findings from the 5 studies and some other selected related articles were

Table 1 – Inclusion criteria used in the review of impressions for complete dentures.

Human clinical study
Edentulous subjects
Clinical outcome measures
Comparison between methods
Comparison between materials
Peer reviewed articles
English, German or Scandinavian language

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