

Which final impression technique and material is best for complete and removable partial dentures?

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A Commentary on

Jayaraman S, Singh B P, Ramanathan B, Pazhaniappan Pillai M, MacDonald L, Kirubakaran R.

Final-impression techniques and materials for making complete and removable partial dentures. *Cochrane Database Syst Rev* 2018; CD012256. DOI: 10.1002/14651858.CD012256.pub2.

Abstract

Data sources Cochrane Oral Health's Trials Register, the Cochrane Central Register of Controlled Trials (CENTRAL), Medline, Embase, the US National Institutes of Health Trials Registry (ClinicalTrials.gov) and the World Health Organization International Clinical Trials Registry Platform databases

Study selection Randomised controlled trials (RCTs) comparing different final-impression techniques and materials for treating people with complete dentures (CD) and removable partial dentures (RPD) were included.

Data extraction and synthesis Two reviewers independently extracted data and assessed risk of bias. Results were expressed as risk ratios (RR) for dichotomous outcomes, and as mean differences (MD) or standardised mean differences (SMD) for continuous outcomes, with 95% confidence intervals (CI). Meta-analysis used a random-effects model.

Results Nine studies were included, eight involving CD. Six of the CD studies were at high risk of bias, two at low risk. For complete dentures there was low-quality evidence that silicone was a better final-impression material for oral health-related quality of life than alginate. There was also very low-quality evidence of no clear differences between the single-stage impression alginate and the two stage- two step elastomer groups in participant-reported quality of life using OHIP-EDENT. The RCT involving RPD altered-cast technique versus one-piece cast technique found low quality evidence of no difference between groups, for general satisfaction at one-year follow-up.

Conclusions There is no clear evidence that one technique or material has a substantial advantage over another for making complete dentures and removable partial dentures. Available evidence for the relative benefits of different denture fabrication techniques and final-impression materials is limited and is of low or very low quality. More high-quality RCTs are required.

Practice point

There is very little evidence to inform selection of final impression techniques and materials for complete and removable dentures.

Commentary

This is a typical Cochrane review in the positive sense. It was conducted with a high standard that is hard to match. Every section was very well described: objectives, selection criteria (randomised controlled trials [RCTs] comparing different final-impression techniques and materials for treating people with complete dentures [CD] and removable partial dentures [RPD]), outcomes (primary and secondary), search strategy, data extraction and management, assessment of risk bias, and data synthesis. The review attempted to answer the question 'which technique and material should be used for the final impression when making complete and partial removable dentures, to increase the quality of the denture, and improve oral health-related quality of life for the individual?'

Based on the selection criteria, nine RCTs were included. Eight RCTs were on CD and one RCT was on RPD. These studies were conducted in Japan, Brazil, the UK, Canada and the USA. The studies generally included small sample sizes and many of them reported patient-reported outcome measures. The assessed materials included alginate, elastomers, and zinc oxide eugenol. The authors conducted meta-analysis depending on data characteristics. They also emphasised the importance of adhering to some design features so that valid conclusions can be made including following parallel groups designs, the use of validated outcome assessment tools, reporting results stratified by patients' clinical condition and restricting the follow up duration in complete denture studies to less than one year to avoid confounding by ridge resorption.

The conclusion of the review was that 'there was no clear evidence that one technique or material had a substantial advantage over another for making complete dentures and removable partial dentures and that there was limited evidence of low or very low quality for the relative benefits of different denture fabrication techniques and final-impression materials.' The authors called for more high-quality RCTs. Hence, we are still largely dependent on the clinician's judgment regarding which material to use or which technique to apply during construction of CDs or RPDs since this decision cannot yet be based on the results of RCTs.

This systematic review, like many others, points indirectly to a very important issue: the quality of RCTs in dentistry. Systematic review after systematic review end with the almost the same statement: more high-quality RCTs are required. So, can we really

GRADE rating



conduct high-quality RCTs in all aspects of clinical dentistry? Can we apply the rigorous criteria of RCTs in clinical dentistry the same way they are applied in RCTs for drugs/medications? Do we, in the dental field, need more guidelines to guide researchers and ensure that they conduct and report RCTs up to the required standards? Or do we need to set new -and perhaps practical-standards for RCTs in clinical dentistry?

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Evidence-Based Dentistry (2019) 20, 70-71. doi: 10.1038/s41432-019-0039-0