

Splinted versus unsplinted overdenture attachment systems – no difference in clinical outcomes

Khaled Ahmed¹

A Commentary on

Leão RS, Moraes SLD, Vasconcelos BCE, Lemos CAA, Pellizzer EP.

Splinted and unsplinted overdenture attachment systems: A systematic review and meta-analysis. *J Oral Rehabil* 2018; **45**: 647-656. doi: 10.1111/joor.12651. Epub 2018 Jun 7. Review. PubMed PMID: 29761853.

Abstract

Data sources PubMed/Medline, Scopus and Cochrane databases supplemented by hand searches in the journals; *Clinical Oral Implants Research*, *Journal of Oral Rehabilitation*, *The Journal of Prosthetic Dentistry*, *Journal of Prosthodontics* and *Journal of Dentistry*.

Study Selection Randomised controlled clinical trials (RCTs), prospective studies with ≥ ten participants and follow-up periods ≥ six months, published in English, and comparing splinted and unsplinted attachment systems within the same study.

Data extraction and synthesis Two investigators independently performed the electronic search; of which one collected the data while the other investigator verified it. A third investigator was involved in cases of disagreement. The Kappa test was also used to determine the inter-examiner agreement. The risk of bias was analysed using the Cochrane Risk of Bias Tool and the Newcastle-Ottawa scale.

Results Nine studies were included; six RCTs, two prospective studies and one crossover study, involving the placement of 984 implants in 380 patients and a mean follow-up period of five years. All implants were placed in the mandibular arch. The included studies demonstrated a low or unclear risk of bias. Both splinted and unsplinted attachment systems performed similarly, with no statistically significant differences present in marginal bone loss, complications and implant survival.

Conclusions The choice of attachment system does not seem to influence marginal bone loss, the incidence of complications or implant survival in mandibular overdentures.

Commentary

Edentulism affects a substantial cohort of the world's population, with an estimated prevalence of 0.1% to 14.4% in younger age groups and 2.1% to 32.3% in older groups, and is significantly associated with depression and poor self-rated health.¹ The McGill consensus in 2002 established that mandibular two implant-retained overdentures are, not only a valid management modality but indeed a gold standard of care for edentulous patients. Nonetheless, the decision to rely on a splinted bar attachment system or an unsplinted system of ball, telescopic

Practice point

- This review provides some insight into the impact of splinting on treatment success but higher quality evidence is needed.

crown or magnetic attachments for overdenture retention remains challenging due to the range of existing variables and available options. Hence, this timely systematic review² aimed to assist the decision-making process, comparing three clinical outcomes of splinted versus unsplinted overdenture attachment systems. Implant survival rate and marginal bone loss were the primary outcomes compared, while prosthetic complications were a secondary outcome of the investigation.

The review was well performed; involving registration with PROSPERO, adherence to the PRISMA guidelines, the inclusion of three databases supplemented by hand searches, inter-examiner agreement evaluation and a clear assessment of bias using the Cochrane Risk of Bias Tool and the Newcastle-Ottawa scale. Nonetheless, the exclusion of retrospective studies and studies not published in English has limited the robustness of the review, resulting in only 380 participants in nine studies included in the review. Further complicating matters is the evident heterogeneity between the included studies, with variability in the number and type of implants, connection type, loading protocol, and follow-up periods. As a result, the authors rightly acknowledged the potential influence this evident heterogeneity and lack of standardisation had on the analyses of the meta-analysis, concluding that the findings of this review need to be interpreted with caution. Similarly, a recent Cochrane review investigating prosthodontic and patient-related outcomes of different attachment systems for maxillary and mandibular attachment systems was unable to perform any meta-analyses due to the heterogeneity of included studies. Accordingly, the Cochrane review determined that there is insufficient evidence to support improved performance and outcomes of any specific attachment system.³

The current review helps clinicians understand the limited influence splinting of overdenture attachments has on implant survival. Accordingly, as part of the decision-making process, other treatment planning considerations such as alignment and location of implants should guide the rehabilitation choice, as opposed to concerns of marginal bone loss.⁴ Furthermore, several other factors play a crucial role in the overall prosthetic management of edentulous patients and the intervention's long-term success. Oral hygiene,⁵ smoking,⁶ number, location and angulation of implants,^{7,8,9} connection type,¹⁰ existing type of bony defects¹¹ and loading protocol¹² are all potential risk factors with a more

GRADE rating



significant influence on the survival and success of implant-retained overdenture than splinting. Whilst the current review offers some insight into the limited impact of splinting on the success of treatment yet, an evidence-based, standardised guidance for prosthetic rehabilitation using overdentures remains lacking.

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Address for correspondence

¹School of Dentistry and Oral Health, Griffith University, Gold Coast Campus, Queensland, Australia

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