Resin-bonded Cantilever Partial Dentures are Effective in Terms of Patient Satisfaction in the Restoration of the Mandibular Shortened Dental Arch

**SUMMARY**

**Subjects**

The study sample was derived from dental hospital patients awaiting the provision of a mandibular bilateral free-end removable partial denture (RPD). Inclusion criteria included the following: (1) maximum of 8 remaining mandibular teeth; (2) 1 to 2 anterior teeth spaces allowed, provided they were restorable using resin-bonded fixed partial dentures (FPDs); and (3) plaque score of 20% or less. Exclusion criteria were the following: (1) presence of maxillary molars; (2) maxillary tooth or teeth that would be unopposed by a proposed mandibular prosthesis; and (3) medical condition that precluded active treatment or prescribed diet.

Before randomization, all potentially eligible participants had received a preparatory treatment including oral hygiene and restorative and periodontal treatment, if necessary.

Sixty participants (25 men and 35 women; median age 67 years; range 39-81 years) were enrolled in the study and randomly allocated into 2 treatment groups (n = 30 per group) matched for age and sex. The dates of the recruitment to the study were not given, but all new prostheses were constructed and fitted between June 1995 and July 1997.

**Key Exposure/Study Factor**

The primary treatment of interest was the distal cantilever resin-bonded FPDs. The control treatment was RPDs. Cantilever resin-bonded FPDs restored 1 occlusal unit, up to but not beyond the second premolar, using single pontic cantilevers from a single abutment whenever possible.

**Main Outcome Measure**

Patient satisfaction was assessed using self-administrated questionnaires, piloted for this study, at baseline, 3 months, and 1 year after the provision of the new prostheses. A lower median satisfaction score indicated a higher level of satisfaction. These questionnaires included items about overall satisfaction with teeth, appearance of teeth, ability to chew, and bite and level of satisfaction, as well as comfort with the prosthesis.

**Main Results**

The mandibular shortened dental arches opposed a complete maxillary denture in 51 participants, opposed partial maxillary dentures in 7 participants, and opposed natural maxillary teeth in only 2 participants. Fifty-two patients attended the 3-month and 1-year follow-up assessments. There were no differences in the baseline satisfaction of the 2 treatment groups. The within-group changes in summary satisfaction scores indicated significantly higher satisfaction for both treatment groups from baseline (median FPD = 17.5, RPD = 16.5) to the 3-month (median FPD = 13.5, RPD = 13.0) and 1-year follow-up assessments (median FPD = 11.0, median...
RPD = 13.0). No between-group differences were detected (Wilcoxon signed-rank test, \( P < .05 \)). Improvements in levels of general satisfaction with teeth (\( P = .05 \)) and the appearance of teeth (\( P = .12 \)) were significant only for the FPD group. Significant improvements in perceived masticatory ability and perceived levels of comfort were found in both groups (\( P \leq .05 \)).

Conclusions
The authors concluded that resin-bonded cantilevered FPDs are an effective means of restoring a mandibular shortened dental arch in terms of patient comfort and acceptance compared to treatments with RPDs.

COMMENTARY AND ANALYSIS
Whether a shortened dental arch (SDA) impairs function is still being debated in the dental literature. The World Health Organization (WHO) guidelines\(^1\) suggest that restoration of SDAs should not always be carried out, which conflicts with traditional beliefs that unrestored SDAs will result in tooth migration, masticatory deficiency, and temporomandibular disorders. Kanno and Carlsson\(^2\) carried out a comprehensive review of clinical and epidemiologic studies on this issue. Their review supports credible work by a Dutch research group\(^3\)\(^-\)\(^2\)\(^1\) demonstrating that people can adapt to shortened dental arches in which 3 to 5 occlusal units remain. However, extreme cases with only 0 to 2 remaining units (1 unit = a pair of occluding premolars; 2 units = a pair of occluding molars) should be individually assessed based on a patient’s needs and demands as well as oral characteristics, such as periodontal health, type of occlusion, parafunctional habits, and temporomandibular disorders.

The primary goal of each dental treatment is to achieve a high level of function, comfort, and esthetics. There is no doubt that the individual is the best evaluator of these factors. This is why research using patient-based outcomes, such as patient satisfaction, is most clinically relevant. The present study involved extreme cases of SDAs and 2 different treatment options: bilateral free-end RPDs and resin-bonded cantilevered FPDs restoring up to the second premolar. The results of this randomized control trial, following appropriate methodological quality (adequate sequence generation, allocation concealment, report on follow-up and withdrawal) and a low risk of bias, supports the SDA concept in terms of patient satisfaction. Removable partial dentures, although inexpensive, are not always the treatment of choice for many patients. Long-term studies have demonstrated that to maintain oral and dental health, as well as function of individual RPDs, regular check-up visits should be maintained.\(^2\)\(^2\)\(^2\)\(^3\) In this RCT, as well as in an ongoing pilot multicenter randomized clinical trial carried out by Wolfart et al.,\(^2\)\(^4\) there were no differences between individuals with SDAs who wore or did not wear RPDs in terms of summary satisfaction score and oral health–related quality of life. We agree with the authors that the lack of significant findings, for example, the ability to detect statistically significant differences in overall satisfaction between patients with SDA treated with FPDs compared with those treated with RPDs, could have been because of inadequate power, as revealed by post hoc power analyses. This is an important study limitation and does highlight the need for appropriately sized clinical studies to evaluate patient-based outcomes.

In general, treatment planning for individuals with SDA should be initiated by a full assessment of oral condition and patients’ needs, demands, and preferences. All treatment options available for the SDA should be presented in detail to patients and discussed regarding cost-effectiveness, risks, and benefits.

REFERENCES


REVIEWERS

Elham Emami, DDS, MSc, PhD
Professor, Oral Health and Rehabilitation Research Unit
Faculté de médecine dentaire
Université de Montréal
C.P.6128, Succursale Centre-ville
Montréal, QC, H3C3J7
Phone: (514) 343-6053, Fax: (514) 343-2233
Elham.emami@umontreal.ca

Jocelyne S. Feine, DDS, HDR
Professor, Oral Health and Society Research Unit
Faculty of Dentistry, McGill University
3550 University St.
Montreal, QC, H3A2A7
Tel: (514) 398-7203, ext 00052, Fax: (514) 398-7220
jocelyne.feine@mcgill.ca