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Do traditional techniques produce better conventional complete dentures than simplified techniques?

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Summary *Objectives*: To compare the quality of conventional complete dentures fabricated with two different techniques. A randomized controlled clinical trial was conducted to compare traditional (*T*) and simplified (*S*) methods of making complete conventional dentures on patients' ratings of satisfaction, comfort and function at 3 and 6 months following delivery. The quality of the prostheses was rated by prosthodontists at 6 months.
Materials and methods: One hundred twenty-two male and female edentulous individuals, aged 45–75 years, were randomly allocated into groups that received dentures made with either *T* or *S* methods. Following delivery, patients' ratings of several denture-related factors were measured using 100 mm visual analogue scales, and denture quality was assessed by blinded prosthodontists using ratings on a validated quantitative scale.
Results: There were no significant differences between the two groups in patient ratings for overall satisfaction (3 months: mean $T=83$ mm, mean $S=83$ mm, $P=0.97$; 6 months: mean $T=79$ mm, mean $S=79$ mm, $P=0.96$) or in prosthodontists' ratings of denture quality ($T=66$, $S=63$; $P=0.38$).

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Conclusion: These results show that the quality of complete dentures does not suffer when manufacturing techniques are simplified to save time and materials. Dental educators should consider these findings when re-designing prosthodontic training programs.

Introduction

There are many millions of people throughout the world who replace their missing teeth with dentures.[1] In addition to improving facial appearance, conventional dentures provide assistance with chewing and speaking. Despite increasing evidence that prostheses retained by dental implants are substantially better than conventional dentures in improving chewing ability, comfort, and oral health related quality of life,[2,3] the vast majority of patients will continue to wear conventional dentures for a variety of reasons, particularly cost,[4,5] and lack of access to care.[6,7] Thus, the societal need for conventional complete denture prostheses will remain for the foreseeable future.

Cross-sectional studies in the UK[8-10] and the USA[11,12] suggest that there are two common ways to fabricate conventional complete dentures, a traditional (*T*) and a simplified (*S*) method. The *T* method, which uses more complex and time consuming techniques,[13-15] is favored by prosthodontists and is taught in most North American dental schools. Meanwhile, most general dentists treat edentulous patients with *S* techniques[16,17] which reduce the number of visits and time required to fabricate the prostheses. From an educational and public health standpoint, determination of the most effective method of complete denture fabrication is highly important.[18,19]

Duncan and Taylor[20] compared retrospectively the number of visits for fabrication and post-delivery adjustments between traditional and simplified impression techniques, and found a significant reduction in the number of visits required by the simplified method. Although the prevalence of techniques and materials used has been noted in other cross sectional surveys,[8-12] the only prospective study comparing different techniques was non-randomized and carried out with a small sample;[21] thus, potential differences in patient satisfaction and denture quality remain uncertain.[22,23] Therefore, this study was conducted to evaluate the efficacy of the two different methods of making complete conventional dentures on patients' ratings of satisfaction with a large number of variables, as well as on the quality of the prosthesis as assessed by blinded prosthodontists. A detailed economic analysis that included microcosting of time and materials was carried out in parallel, but this will be presented in a future paper.

Methods

Study hypothesis and clinical significance

The null hypothesis was that there is no between-group difference in the level of the primary variable, general satisfaction with the set of dentures expressed by the patients. Satisfaction was measured on a Visual Analogue Scale (VAS), and a between group difference of 15 mm was sought because previous work suggests that this would be clinically meaningful.[24] Between group differences in secondary variables were also investigated.

Study design, sampling procedures and ethical consideration

A randomized controlled single blind clinical trial was conducted between December 2000 and December 2002, with a follow up through May 2003 at the Montreal General Hospital, Montreal, Quebec, Canada. The sample population consisted of male and female edentulous French Canadians, recruited from the city of Montreal and surrounding areas through advertisements in local newspapers. The study protocol and consent form for this trial were accepted by the Institutional Review Board.

Study subjects, randomization, clinical procedures and follow-up

Subjects were eligible if they were aged between 45 and 75 years, edentulous, had significant problems with at least one of their existing dentures, possessed an adequate understanding of written and spoken French, and were able to understand and respond to a test questionnaire. After a preliminary examination, patients were excluded if they exhibited symptoms of temporomandibular disorders, xerostomia, orofacial motor disorders, severe oral manifestations of systematic disease, or