A Professional Courtesy of:

LeRoy R. Shaw, D.D.S., Cert. Prostho., F.N.G.S., F.A.C.P., F.G.N.Y.A.P.
Diplomate American Board of Prosthodontics, Surgical Implant Fellow (N.Y.U.)

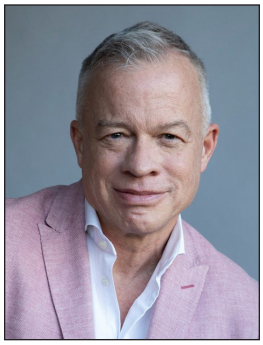
400, boul. Saint-Martin Ouest, Suite 402
Laval (Québec) H7M 3Y8
Tel: 450-500-0211 • Fax: 450-400-3971

1929, Russel Road, Suite 316
Ottawa (Ontario) K1G 4G3
Tel: 613-526-4656 • Fax: 613-526-4659

3535, chemin Queen-Mary, Suite 318
Montréal (Québec) H3V 1H8
Tel: 514-735-6963 • Fax: 514-735-8659

85, rue Belvedere Nord, Suite 300
Sherbrooke (Québec) J1H 4A7
Tel: 819-566-0225 • Fax: 819-416-2883

www.thesmiledoc.com
Practice Limited to Implant Surgery & Prosthodontics



Autumn 2024

Prosthodontics Newsletter™

Focusing on Dental Implants

Fixed vs Removable Implant Restorations and Quality of Life

The dental prostheses offered to edentulous and partially edentulous patients often reflect personal preferences rather than diagnostic factors that can lead to improved quality of life. Conventional vs implant-assisted and fixed vs removable prosthodontic therapies present advantages and disadvantages that vary broadly based on a patient's preexisting conditions. Evidence-based decision-making is key to successful, durable and appropriate prosthodontic treatment planning for these patients. This issue of Prosthodontics Newsletter *focuses on prosthodontics treatment related to our patients' ongoing quality of life.*

Overdentures vs Fixed Prostheses: Patient Preferences

The choice between implant-supported overdentures and fixed prostheses for the rehabilitation of edentulous arches involves many factors. Overdentures are more cost-effective, require fewer implants and components, and tend to be less surgically demanding. On the other hand, fixed restorations come with a reduced need for prosthetic maintenance while providing a higher maximum occlusal force. Both have high rates of implant survival and acceptable long-term bone loss. Little information exists for patient-reported outcome measures, such as oral health-related quality of life (OHRQoL).

To bring together the available knowledge, Borges et al from the University of Campinas, Brazil, undertook a systematic review and meta-analysis to compare both clinical and patient-reported outcomes for mandibular implant-supported overdentures and fixed prostheses. The authors found 10 studies (5 randomized clinical trials, 5 nonrandomized clinical trials) that met their inclusion criteria of studies that evaluated patient-reported satisfaction and quality of life (QoL), implant survival rate, probing depth and marginal bone loss.

The meta-analysis of the OHRQoL revealed a better QoL with fixed prostheses for the individual domains of function limitation, physical disability and physical pain. These patients reported greater satisfaction in the areas of comfort, ease of mastication, retention and stability, while patients who received overdentures reported greater satisfaction for ease of cleaning. No significant differences were found in reported ease of speaking or esthetics. Overall mean satisfaction scores were significantly greater for fixed prosthesis than for overden-

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Overdentures vs Fixed Prostheses: Patient Preferences

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tures. Survival rate, probing depth and marginal bone loss were equivalent in between groups.

Comment

These results suggest that patients tend to prefer implant-supported fixed prostheses to overdentures. Given that the clinical outcomes showed no differences between the groups, patient-reported outcome measures should be given significant weight when planning treatment.

Borges GA, Barbin T, Dini C, et al. Patient-reported outcome measures and clinical assessment of implant-supported overdentures and fixed prostheses in mandibular edentulous patients: a systematic review and meta-analysis. J Prosthet Dent *2022;127:565-577.*

Long-term Prosthesis Survival and Quality of Life

Although many studies have analyzed the impact of prosthetic restorations on patients' oral health-related quality of life (OHRQoL), they have tended to compare patients' status before and immediately after treatment. An evaluation of OHRQoL after several years may return additional valuable data.

Kurosaki et al from Okayama University Graduate School of Medicine, Dentistry and Pharmaceutical Sciences, Japan, conducted a study that evaluated prosthetic survival and patients' OHRQoL 6 years after treatment. The study included participants in a previous study with edentulous spaces corresponding to a loss of ≤4 teeth and a total of ≤8 missing teeth who had answered a validated OHRQoL questionnaire before and immediately after receiving either

- an implant-supported fixed denture (IFD; 58 patients)
- a fixed partial denture (FPD; 27 patients)
- a removable partial denture (RPD; 20 patients)

At their 6-year follow-up appointment, patients completed OHRQoL and quality of life questionnaires. They also underwent an intraoral examination that determined the number of present teeth, their periodontal condition and any prosthetic complications.

The 6-year cumulative prosthesis survival rates for the IFD, FPD and RPD groups were 94.7%, 77.4% and 33.3%, respectively. All differences between groups were statistically significant. In the IFD group, 4 patients lost their prosthesis due to disintegration or artificial removal of dental implant fixtures. In the FPD group, 7 patients lost their prosthesis due to dental caries, root fracture or the periodontal condition of the abutment teeth. In the RPD group, 15 patients lost their prosthesis due to extraction of abutment teeth, fracture of the denture base or discomfort from use. OHRQoL scores in the IFD group were significantly higher than baseline both immediately after treatment and at 6 years after treatment. No changes were seen in OHRQoL scores in the FPD and RPD groups (Table 1).

Table 1. Quality of life scores (range of possible scores 0–64) throughout the study period.

	IFDs	FPDs	RPDs
Before treatment	45.8 ± 14.8	49.1 ± 11.4	47.2 ± 13.8
Immediately after treatment	53.3 ± 11.7[a]	51.0 ± 11.9	48.5 ± 10.8
6 years after treatment	55.7 ± 7.6[a]	51.2 ± 10.5	53.1 ± 11.6

IFDs, implant-supported fixed dentures. FPDs, fixed partial dentures. RPDs, removable partial dentures.
[a]Significantly different from the before treatment score.

Comment

This study showed that IFDs had significantly longer survival and increased patient OHRQoL scores after 6 years compared with FPDs and RPDs in patients with relatively fewer missing teeth. The initial choice of restoration treatment was the only independently significant variable, even after adjusting for possible confounders.

Kurosaki Y, Kimura-Ono A, Mino T, et al. Six-year follow-up assessment of prosthesis survival and oral health-related quality of life in individuals with partial edentulism treated with three types of prosthetic rehabilitation. J Prosthodont Res *2021;65:332-339.*

Quality of Life After Restorations

As the prevalence of edentulism has fallen, the age at which patients become edentulous has risen, and functional problems can accompany tooth loss in these older patients. Treatment planning for fully edentulous patients involves choosing the prosthetic

option that best improves the patients' quality of life.

Oh et al from the Yonsei University, Korea, designed a study to compare patient satisfaction and oral health-related quality of life (OHRQoL) among fully edentulous patients aged 40 to 69 years who were treated with fixed implant-supported prostheses (FP), removable implant-supported prostheses (RP) or complete dentures (CD). The majority of patients in the FP and RP groups had an edentulous mandible, while a plurality of patients in the CD group were fully edentulous.

During a face-to-face interview ≥6 months after prosthetic treatment, patient satisfaction was measured using 14 questions related to chewing function, social function and overall satisfaction, while OHRQoL was measured using the 14-item Oral Health Impact Profile (OHIP-14) covering functional limitation, physical pain, psychological discomfort, physical disability, psychological disability, social disability and handicap. Each questionnaire had a range of possible scores from 0 to 56.

CD patients were significantly more likely to be from a lower socioeconomic group, to suffer from chronic diseases and to be less likely to receive regular dental checkups for prosthetic management. Satisfaction scores were significantly poorer for all domains in the CD group than in the other 2 groups. OHRQoL significantly improved after treatment for all groups; the improvement was significantly greater for the FP and RP groups than for the CD group (Table 2). The FP group showed significantly greater improvement in functional limitation, physical pain, psychological discomfort and psychological disability than did the CD group; the RD group showed significantly greater improvement in functional limitation.

Comment

FP and RP groups reported greater satisfaction with their restorations than did the CD group, possibly because patients in the CD group were less likely to have regular dental checkups. Moreover, most patients receiving fixed or removable implant-supported prostheses were edentulous only in the mandible while the largest group of patients receiving complete dentures were edentulous in both the mandible and the maxilla. Perhaps the most important finding of the study was that all prosthodontic restorations improved patients' OHRQoL.

Oh S-H, Kim Y, Park J-Y, et al. Comparison of fixed implant-supported prostheses, removable implant-supported prostheses, and complete dentures: patient satisfaction and oral health-related quality of life. Clin Oral Implants Res *2016;27:e31-e37.*

Table 2. OHIP-14 scores before and after treatment (lower scores indicate better results).

	Before treatment	After treatment
Fixed implant-supported prostheses	35	12
Removable implant-supported prostheses	35	14
Complete dentures	33.5	17

Differences in OHIP-14 scores before treatment were not significantly different; all differences after treatment were significantly different.

Prosthetic Function and Hygiene in Edentulous Patients

Most edentulous patients report some level of satisfaction with implant-supported prostheses. A study by Martín-Ares et al from the Complutense University of Madrid, Spain, evaluated long-term patient satisfaction with 3 types of prosthetic restoration, focusing on the areas of oral hygiene and function.

Their cross-sectional retrospective study recruited 150 completely edentulous patients aged ≥66 years who had received either conventional complete dentures, implant-supported fixed prostheses or implant-retained overdentures ≥5 years previously (50 in each group). Patients with fixed prostheses received 8 implants in the maxilla and 6 in the mandible; those with overdentures received 4 implants in the maxilla and 2 in the mandible. At the 5-year recall visit, patients completed a questionnaire that consisted of 9 questions from the Oral Health Impact Profile (OHIP-14) and 2 questions from the Dental Impact Profile designed to evaluate functional and oral hygiene aspects of their prostheses.

No significant differences in plaque and gingival indices were seen between the 2 implant-supported groups; however, significantly more bone loss occurred around implants supporting fixed prostheses. Only 14% of patients with conventional dentures expressed almost complete satisfaction, compared with 36% of patients with overdentures and 46%

of patients with fixed prostheses, a significant difference. Patients with conventional dentures suffered functional limitations, particularly difficulties in pronouncing certain phonemes, alteration in the flavor of foods and interruption of meals due to impacted food; patients with fixed prostheses reported significantly lower levels of satisfaction with oral hygiene and a higher incidence of halitosis.

Comment

The ease of oral hygiene with removable prostheses may explain the significant difference in bone loss around implants between the fixed prosthesis and overdenture groups. Overall, patients receiving implant-supported prostheses reported a good level of general satisfaction.

Martín-Ares M, Barona-Dorado C, Guisado-Moya B, et al. Prosthetic hygiene and functional efficacy in completely edentulous patients: satisfaction and quality of life during a 5-year follow-up. Clin Oral Implants Res *2016;27:1500-1505.*

Attachment-Retained Removable Prostheses

Several treatment options are available for partial edentulism, including removable dental prostheses, fixed dental prostheses and implant-supported or retained prostheses. However, conventional clasp-retained removable dental prostheses have a low level of patient acceptance due to poor retention and unesthetic metal clasps. The use of attachments can improve esthetics. Swelem and Abdelnabi from King Abdulaziz University, Saudi Arabia, designed a nonrandomized prospective within-subject crossover clinical trial to determine patient satisfaction and patient-reported oral health-related quality of life (OHRQoL) with various removable dental prostheses and conventional overdentures in patients with partially edentulous mandibles. All participants completed the short version of the Oral Health Impact Profile (OHIP-14) and a patient satisfaction assessment. Fifty-six participants then received conventional cobalt–chromium clasp-retained removable dental prostheses; 18 received conventional overdentures. After 2 months, participants again completed the OHIP-14 and the patient satisfaction assessment. Subsequently, new removable prostheses were fabricated for the 56 participants who originally received clasp-retained prostheses retained with a

- bar attachment (n = 15)
- extracoronal attachment (n = 24)
- telescope (n = 17)

Participants who originally received conventional overdentures were given ball attachment-retained overdentures. After 2 months of wearing the attachment-retained prostheses, participants completed the patient satisfaction assessment and the OHIP-14.

All prosthesis types significantly improved OHRQoL in all domains and significantly increased overall patient satisfaction. The use of attachments was associated with significant improvement in functional limitation, psychological discomfort and physical disability. Physical pain improved significantly in the overdenture group. Patient satisfaction scores for comfort, ability to masticate and general satisfaction were significantly higher after conventional treatment and continued to improve with the use of attachments. Similar improvements were seen with esthetics except for the overdenture group (no significant difference) after receiving attachments. Attachment-retained prostheses were more stable in all groups. Conventional prostheses were easier to clean than those incorporating attachments.

Comment

All treatment modalities significantly improved OHRQoL and patient satisfaction compared with baseline. Replacing conventional clasp-retained removable dental prostheses with various attachment-retained prostheses, as well as replacing conventional overdentures with ball attachment-retained overdentures, further increased both OHRQoL and patient satisfaction.

Swelem AA, Abdelnabi MH. Attachment-retained removable prostheses: patient satisfaction and quality of life assessment. J Prosthet Dent *2021;125:636-644.*

In the Next Issue

Considerations for the severely atrophic edentulous maxilla

Our next report features a discussion of this issue and the studies that analyze them, as well as other articles exploring topics of vital interest to you as a practitioner.

Do you or your staff have any questions or comments about **Prosthodontics Newsletter**? Please write or call our office. We would be happy to hear from you.