Introduction

This article reviews the findings of the original papers related to the dentures published in the Journal of the Japan Prosthodontic Society (J Jpn Prosthodont Soc (Nippon Hotetsu Shika Gakkai Zasshi); Medline/Pubmed), Vol 50, 2006. A total of four articles focused on complete denture or prostheses for the edentulous were selected and summarized. The contents of picked up articles were summarized in Table 1. A variety of subjects in relation to removable prosthodontics were argued in the articles, i.e. stress analysis on tissue conditioner after implant placement, physiological and morphological, analysis in relation to denture prognosis.

Resilient material for provisional denture after dental implant placement

Although controversy persists as to the factors critical for provisional dentures after implant placement, some practitioners favor to use tissue conditioning or resilient materials during the healing periods, expecting their stress relaxation effects. Hence Yagi et al have examined the influence of the thickness and its longitudinal change within the limited denture space on the stress releasing effect in vitro.1 In the study, polymethyl methacrylate (PMMA) covered with Fit Checker (used as artificial mucosa; GC, Tokyo Japan), was used as the model for residual ridge, with the variety of the thickness in the artificial mucosa, i.e. 1-4 mm, and pressure sensor was placed in the artificial ridge to be just under the mucosa. The artificial ridge with sensor was covered with tissue conditioning material with denture base. As the resilient material, they used only one brand of commercially available product, Shofu Tissue Conditioner. In the preliminary study, they varied the thickness of both artificial mucosa and resilient materials, and have shown that relative relaxation effects by the use of resilient materials were significant in all of conditions, but stress-relaxation effects were much higher in the case with thin artificial mucosa, this result is consistent with the clinical observations described by Hamada and Murata.2 They further analyzed the effects of storage duration of resilient material and persistent pressurization, and concluded that the stress releasing effect did not change with change of the longitudinal material property up to two weeks.

Residual ridges and prognosis of dentures

A variety of factors is known to be involved in the prognosis of complete dentures, particularly lower dentures. Hanji et al have examined clinically the relationship between the shape and/or morphology of mandibular ridge and the number of times required for the adjustment of corresponding dentures with 77 patients.3 The working cast used for gothic arch tracing for each patients was used for the measurement of profiles of residual ridges. The height, width and inclination of the residual ridge were measured and calculated from the individual cast, as the parameters to represent the condition of alveolar ridge of respective patients. The criteria of the number of times to adjust the denture necessary for the patients’ comfort were as follows, good; within 3 times, moderate; 4-5 times, poor; more than 6...
Twenty seven percent of patients exhibited good prognosis, 48% were moderate, and poor prognosis was observed with 25% of participants. Surprisingly, ninety four percent of male patients exhibited good or moderate prognosis, though 42% of female denture wearers exhibited poor prognosis. The author suggested that this result was attributed to the finding that the average height of the residual ridge of female patients was significantly lower than that of male patients. In the study, all of parameters used in the study, were significantly greater with male patients than those with the female, but only one parameter, i.e. the height of the ridge, predicted well the prognosis of dentures.

**Evaluation food for removable prostheses**

Teeth and the neuromuscular apparatus are directly involved in the crushing of foodstuffs and consequently loss of teeth can be expected to lead to less efficient mastication. Hence, masticatory efficiency in denture wearers is reported to be less than half that of dentate subjects. Although the main role of mastication is not only to crush foods but also to transform foodstuffs into a bolus that is fit for swallowing, most of previous studies employed the crushing of foodstuffs to evaluate the masticatory efficacy of denture wearers. To overcome the discrepancy in the purpose and/or object for evaluating masticatory efficacy, this study employed the water-absorbing rice crackers. In the preliminary study, the authors examined accuracy of the methods to evaluate the amount of time or the number of strokes need to masticate and swallow the food (strokes need for swallowing) using 5 healthy volunteers. The results clearly showed that the strokes need for swallowing determined by laryngeal manipulation correlated well with that determined from either by EMG, laryngeal motion or swallowing sound. Subsequently, they compared the strokes need for swallowing among the groups (A, B, C) classified by Eichner’s classification, with 125 patients using the water-absorbing rice crackers. Although, without the denture, the strokes need for swallowing was greatest with group C, smallest with A, and group B was intermediate, the variety in the strokes need for swallowing was not observed, with denture wearing, suggesting that the removable prostheses improved the masticatory efficiency. In deed, they showed a significant decrease in the number of chewing strokes by the use of removable dentures. They also suggested that the water-absorbing rice crackers might be a helpful aid to evaluate quantitatively the masticatory efficiency in combination with measuring the strokes need for swallowing.

**Perception threshold of palatal mucosa**

The persistent load required for static denture support and retention, the oral mucosa must be resistant to various levels and durations of load during functional and parafunctional behaviours. Pain in the supporting mucosal tissue is one of the most common and critical problems directly affecting function and treatment outcomes of dentures. Hence, many studies have undertaken to quantify the pain thresholds of the oral mucosa. However, studies investigating the pressure-pain threshold (PPT) in the oral mucosa have been pointed out to be limited. Thus the authors tried to apply the current perception threshold (CPT) to detect the oral mucosal pain. Fourty healthy volunteers were employed to measure...
the CPT by the use of Neurometer® (Neutron, USA), and the CPT were measured at palatal mucosa corresponding to incisor foramen, and left and right greater palatine foramen. Frequency response, day-to-day variation, gender difference, age, and asymmetry in CPT were analyzed. The significant differences were observed in the frequency response among the sites of measurements. Further, the CPT was significantly lower with female than that with male. A good correlation was observed with CPT and age of volunteers, but there were no significant differences in CPT at left side and right side. In addition, intraoperator correlation coefficient was significant, suggesting the intraoperator variations may be negligible.

References