

British Prosthodontics Conference November 2004

Held at the Royal Zoological Society, London Zoo

Postgraduate BSRD prize winner for 2004

‘There were two entrants short listed for the prestigious postgraduate prize and the judges commented on the high quality of the research presented as well as the standard of the presentations. Due to this, it was difficult to choose one winner but Mr James Baker, from the Eastman Dental Institute was awarded the prize for his presentation entitled The Kavo Arcus Digma: Reproduction Of Articulator Settings And Movements. The judges felt that due to the standard of the second presentation, the Society would award Dr Ali Kassir from the University of Manchester, one-years free membership to the Society for his presentation entitled Conventional Adaptation of Flowable and Condensable Composites to Ultraconservative Preparations’.

The abstracts of the two presentations are shown below.



THE KAVO ARCUS DIGMA: REPRODUCTION OF ARTICULATOR SETTINGS AND MOVEMENTS

P. James Baker, Eastman Dental Institute, London

Statement of the Problem: Traditional methods of recording jaw relationships and movement for the purpose of setting articulators are complex and time consuming. Kavo have recently introduced a radically new method of cast mounting and articulator setting, which they claim is simple, quick to use and reduces the time required to adjust restorations at chairside. The system uses a novel, non-anatomical, mandibular movement-recording device the KaVo Arcus Digma (KAD). This ultrasonic device produces data that allows the programming of KaVo's Protar series of semi-adjustable articulators. Little is known about the accuracy of this new technique.

Purpose: The purpose of this observational study was to investigate the ability of the KAD to accurately reproduce articulator condylar control settings and movements.

Materials and Methods: The first part of the study examined the ability of the KAD to record condylar control values preset on Protar articulators that had been modified to hold the sensor array. The second part of the study involved the recording the movements of a "patient" articulator (Denar D5A) using a mechanical pantograph and the KAD simultaneously. The KaVo standardised sensor array to condyle relationship was reproduced in the D5A to allow direct comparison of condylar control settings and pantographic tracings. A KaVo Protar 7 articulator was then programmed using the KAD output from the D5A movements and then pantographic tracings were made on on the same recording papers.

Results: The mean deviation between preset and recorded values ranged between -1.2 to -0.6 degree (SD = 2.2) for sagittal condylar inclination (SCI), -3 to -2 degrees (SD = 3.6) for progressive side shift (PSS), -1 to -0.9 mm (SD = 0.35) for immediate side-shift (ISS), and 6.9 to 9.9 degrees (SD = 10.5) for shift angle (SA). The pantographic tracings showed a good overall correlation between the two articulators with respect to SCI. There was a lower correlation with respect to PSS and SA. A marked under provision of ISS was demonstrated.

Conclusions: The KAD demonstrated a high level of reproducibility of SCI with less accuracy and reproducibility of PSS. The rear wall (or SA) controls were very poorly recorded showing a large scatter of readings. The prescribed SA value may be a means of compensating for lack of intercondylar width adjustability in the Protar articulators. The persistent significant under provision of ISS may be of real clinical concern.

Conventional Adaptation of Flowable and Condensable Composites to Ultraconservative Preparations

Ali S.A. Kassir, Unit of Operative Dentistry and Endodontology, University of Manchester

Objectives: This laboratory study aimed to investigate the adaptation of flowable and condensable resin composites to ultraconservative proximal slot-type preparations using a hand instruments placement technique.

Materials and Methods: Twenty sound premolars of similar size were utilized. Standardised ultraconservative proximal slot-type preparations were completed mesially in each tooth using an ultrasonic technique (SONICflex[®], KaVo, Germany). Equal numbers of teeth were restored with FlowLine (Heraeus Kulzer, Dormagen, Germany) and SureFil (Dentsply, Germany) resin composites using Teflon-coated hand instruments (Dentsply, Germany). The marginal adaptation of the restorations was assessed visually and with a probe. Five teeth from each group were randomly selected, impressions taken and epoxy resin replicas produced. The replicas were examined by SEM to assess marginal adaptation. The restored teeth were embedded in epoxy resin and sectioned axially. Specimens were immersed in 0.5% basic fuchsin for 60s, rinsed, dried and examined (X10) by a stereomicroscope (S Wild M3Z, Heerbrugg Ltd, Switzerland). Digital micrographs were captured and transferred to a computer for image analysis using SigmaScan Pro 5.0. The tooth/restoration interface was examined and the percentage tooth/restoration interface occupied by voids was calculated. Data obtained were analyzed by an independent-sample t-test using SPSS 11.5. **Results:** All restorations exhibited over-filled margins of the overlapping type. However, a

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<i>Restorative material</i>	<i>percentage tooth/restoration interface occupied by voids</i>	
	<i>Mean (s.d.)</i>	<i>p-value</i>
FlowLine	80.95 (± 5.7)	<0.001
SureFil	64.10 (± 3.9)	

significant difference was found between the two restorative materials in relation to percentage tooth/restoration interface occupied by voids ($p < 0.001$) (Table 1).

Conclusion: The findings indicate that the restorations

of the condensable resin composite tested are better adapted than the restorations placed using the flowable resin composite tested.