#FROM THE PEOPLE WHO BROUGHT YOU DENTAL SUMMARY

REVIEW

DENTAL RESEARCH DIGEST

INCLUDES 1 HOUR OF eCPD

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Free Edition

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Chapter 1

INTRODUCTION

Welcome to the first issue of *Dental Research Digest* an online only eCPD educational publication. Regular members of our website, of whom there are over 30,000 now registered, will recognise the format from previous publications. Summaries of recent research are followed by multiple choice questions which, when answered with a 50% pass mark or higher, will earn verifiable eCPD.

Chapter 1 (10 summaries and questions) provides 1 hour of eCPD for free; Chapter 2 (20 summaries and questions) provides a further 2 hours of eCPD for £5.99 (inc. £1 VAT). We have created *Dental Research Digest* due to popular demand following the demise of a similar publication, in both print and online versions, due to withdrawal of the sponsorship.

This is a new venture and the addition of Chapter 2 as a paid option, will, we hope help us to cover the costs of writing the publication and keeping it online. If successful we aim to produce more issues in the future, always with a free eCPD element to help the whole dental team in fulfilling their CPD requirements. We welcome your feedback and hope that you will find *Dental Research Digest* of interest and value.

Stephen Hancocks
Editor-in-Chief of the *British Dental Journal*

Periodontology

1. **Periodontology and psoriasis**

This randomised controlled clinical study aimed to evaluate the effect of non-surgical mechanical periodontal therapy on the inflammatory status and severity of psoriasis in subjects with that condition. The study population consisted of 92 periodontitis patients with psoriasis vulgaris who were also suffering from untreated periodontal disease from which two randomised groups were formed: immediate periodontal therapy (test group, n = 46) and delayed periodontal therapy (control group, n = 46). Periodontal clinical measures, on salivary interleukin 2, interleukin 6 and secretory immunoglobulin A levels and the Psoriasis Area and Severity Index (PASI) scores were evaluated at baseline and on the 8th week in both groups. After 8 weeks completion of non-surgical periodontal therapy (test group) or initial examination (control group), a significant decrease was observed in interleukin 2, interleukin 6 level and in PASI score, whereas a significant increase was observed in secretory immunoglobulin A levels in the test group. Within the limits of this study, the results suggest that effective periodontal therapy improves the psoriasis condition in patients afflicted by both diseases.

Ucan Yarkac F, Ogrum A, Gokturk O. Effects of non-surgical periodontal therapy on inflammatory markers of psoriasis: A randomized controlled trial. *J Clin Periodontol* 2019; Sep 30. doi: 10.1111/jcpe.13205

Prevention

2. **Expectant mothers quizzed**

Early childhood caries (ECC) has devastating effects on the health of young children. This study sought to evaluate, by questionnaire, the awareness, knowledge, and beliefs about the condition among a sample of expectant mothers attending for antenatal care at a large public hospital. The pre-tested, validated questionnaire contained questions about risk factors, presentations, management, and complications of ECC. Participants were also asked about their preferred method for relevant oral health education. A total of 380 of the 400 approached agreed to participate: 59% reported brushing twice or more daily, 10% attended the dentist regularly, 16% thought that tooth brushing should start as soon as primary teeth erupt. Most (68%) thought that bottle-feeding does not need to stop before the age of two. The majority believed that sugar is better consumed between meals (81%) and in portions throughout the day (85%). Only 12% thought that a child should have their first dental visit by the age of one. Educational level influenced knowledge and the participants suggested leaflets (38%) and social media (24%) as methods for oral-health-education delivery.

ElKarmi R *et al*. Do expectant mothers know how early childhood caries can be prevented? A cross-sectional study. *Euro Archives Paediatric Dent* 2019; Apr 19.

Endodontics

3. **How small is access-efficient?**

The optimal size of an access cavity needs to balance efficiency against weakening effect of tissue removal. To evaluate the influence of ultraconservative endodontic cavities (UEC) compared with traditional endodontic access cavities (TEC) on various aspects of endondontic treatment this research used extracted teeth placed in a phantom head to simulate clinical conditions. After canal preparation, filling and cavity restoration, the time required to perform root canal treatment was recorded and the specimens were loaded to fracture in a universal testing machine. Untouched canal areas, accumulation of hard-tissue debris (AHTD), voids in root fillings and cleaning of the pulp chamber were analysed. The percentage of untouched canal area did not differ significantly between the groups. However, UECs were associated with a greater percentage of AHTD after canal preparation, had a greater percentage of root filling remnants in the pulp chamber after cleaning procedures and took longer to perform. There was no difference regarding the mean load at fracture between the groups. No true benefit accrued with ultraconservative endodontic cavities.

Silva AA *et al*. Does ultraconservative access affect the efficacy of root canal treatment and the fracture resistance of two-rooted maxillary premolars? *Int Endodontic J* 2019; Sep 13.

Paediatric dentistry

4. **Digital impressions for children**

The advent of digital impressions has brought about beneficial changes for adult dental treatment but how have children related to it? Digital impressions were taken by using an intraoral scanner, and conventional impressions were taken by using alginate from 28 patients by the same operator. In each impression-taking process, comfort was assessed by both the child and the clinician, and the chairside times were recorded. The digital impressions were considered to be more comfortable in the assessments by both the children and the clinician. The total time for the digital impression was 465.89 +/- 76.71 second(s) while that of the conventional impression was 450.25 +/- 64.08 s. When the chairside times of the two methods were compared there was no statistically significant difference. The overall conclusion was that the digital impression method compared with the conventional impression method was found to be both more comfortable and preferable by the children, although there was no time saving in terms of the procedures.

Yilmaz H, Aydin MN. Digital versus conventional impression method in children: Comfort, preference and time. *Int J Paediatric Dent* 2019; 29: 728-735.

Implants

5. **Short measures**

Short (6 or 8 mm long) one-piece mini-implants (MDIs) have been used in edentulous patients with extremely resorbed alveolar ridges (interforaminal height <10 mm). This research aimed to assess peri-implant bone level, survival and success rates of short mandibular implant overdentures and to compare them with patients having standard length MDIs in a 1-year prospective clinical study. The short MDI group consisted of 28 participants with interforaminal height <=10 mm in whom implants being, both, short and slim (short MDIs: 6 or 8 mm long, 2 or 2.5 mm wide) were inserted. The Standard-MDI group included 35 participants (interforaminal height >13 mm) who received MDIs (10-14 mm long, 2 or 2.5 mm wide). Primary outcomes were assessments of MDI peri-implant bone level, survival and success rates; secondary outcomes were assessments of peri-implant tissue, oral hygiene, and prosthodontic maintenance. Within the limitations of this study, short MDIs (6 or 8 mm long) in extremely atrophied mandibles (interforaminal height <10 mm) showed good clinical results in the first year of function.

KovacicI *et al*. A cohort study on short mini-implants for mandibular overdentures compared to those of standard length. *Clin Oral Implants Res* 2019; Sep 21.

Restorative

6. **Staining potential**

What are the effects of cigarette smoke (CS), electronic cigarettes (EC),red wine, coffee, and soy sauce on the colour of enamel, dentine and composite resin restorations, as well as the effects of whitening treatments? This study aimed to find out by using 70 premolars with composite restorations exposed to these environmental influences for 56 min/day for 15 days. Two whitening sessions with 6% and 35% hydrogen peroxide (H2O2) were performed on the exposed samples. Teeth exposed to CS and EC aerosol were also brushed with whitening toothpaste for 3 weeks. Discolourations in enamel, dentine and composite resin were observed in the order of red wine > CS > soy sauce > coffee > EC. Colour mismatch between enamel and resin restorations occurred only in red wine and CS groups. Brushing with whitening toothpaste removed discolouration caused by EC aerosol; H2O2 treatments were necessary to eliminate discolourations caused by coffee and soy sauce. Discolorations of dentine and resin restorations could not be completely removed by whitening treatments, and colour mismatch remained in teeth exposed to red wine and CS.

Zhao X *et al*. Effects of different discoloration challenges and whitening treatments on dental hard tissues and composite resin restorations. *J Dent* 2019; 103182, Aug 17.

Orthodontics

7. **Can Mum help with ortho?**

Very little is known about the role of socioeconomic and psychosocial factors in predicting orthodontic treatment duration. Thus, this study aimed to test whether socioeconomic position (SEP) and psychosocial factors, namely, family environment and resiliency can predict orthodontic treatment duration. Data were analysed from a hospital-based, prospective, longitudinal study that recruited 145 consecutively selected 12- to 16-year-old male and female adolescents. Baseline SEP and psychosocial data were collected by a validated child self-completed questionnaire before the placement of fixed appliances. Linear regression analysis was used. Maternal emotional support was an important predictor of orthodontic treatment duration with high levels leading to a shorter orthodontic treatment duration by nearly four months. Parental SEP, paternal emotional support, maternal and paternal control, as well as resiliency were not significantly associated with orthodontic treatment duration. Maternal emotional support is an important predictor of orthodontic treatment duration and may be explained by a higher maternal involvement in the orthodontic treatment.

Nakhleh K *et al*. Can socioeconomic and psychosocial factors predict the duration of orthodontic treatment? *Euro J Orthodontics* 2019; Oct 03.

Oral surgery

8. **Too much antibiotic?**

The aim of this prospective study was to determine the antibiotic bioavailability of a prophylactic protocol in third molar surgery patients. Samples from 25 patients were analysed after receiving single-dose prophylaxis of 2 g amoxicillin orally 1 hour prior to surgery. Samples of venous blood and blood from the third molar socket (1.5 ml each) were obtained and the amoxicillin plasma concentration was determined. The associations with demographic variables (age, height, weight, body mass index (BMI), sex) and antibiotic exposure time were also analysed. The mean amoxicillin plasma level detected in the venous blood was 1.21 +/- 1.17 mug/ml and in the third molar socket was 4.14 +/- 2.24 mug/ml. The prophylactic administration of 2 g amoxicillin in third molar surgery showed greater bioavailability in the molar socket than the concentrations established as necessary to inhibit the growth of microorganisms that cause oral infections. The results show the need to review the current infection control protocols in oral surgery in light of the overestimated doses observed.

Aravena PC *et al*. Assessment of the bioavailability of an antibiotic prophylactic protocol in patients undergoing third molar surgery. *Int J Oral & Maxillofacial Surg* 2019; 48: 1470-1474.

Prosthodontics

9. **Longevity assessed**

This prospective study evaluated the clinical long-term outcome over 15 or more years of crown-retained fixed dental prostheses (FDPs) made from a lithium disilicate ceramic (IPS e.max Press, Ivoclar Vivadent AG). Thirty-six three-unit FDPs replacing anterior (16%) and posterior (84%) teeth were inserted in 28 patients. Abutment teeth were prepared following a standardised protocol. FDPs were cemented either conventionally with glass-ionomer cement (n=19) or adhesively with composite resin (n=17). The following parameters were evaluated at baseline, 6 months after cementation and then annually (at abutment and contralateral teeth): probing pocket depth, plaque index, bleeding on probing, and tooth vitality. Three FDPs were defined as drop-outs. The mean observation period of the remaining 33 FDPs was 167 months (range: 79-225 months). The survival rate (defined as FDPs remaining in place either with or without complications) was 48.6% after 15 years. The success rate (defined as free of complications and remaining unchanged) was 30.9% after 15 years. Fatigue and crack propagation caused by clinical ageing in monolithic lithium disilicate ceramics seem to take considerable time, as shown by the presented survival and success rates after 15 years.

Garling A *et al*. Fifteen-year outcome of three-unit fixed dental prostheses made from monolithic lithium disilicate ceramic. *J Dent* 2019; 103178, Aug 05.

Infection control

10. **Banded about**

The aim of this study was to evaluate and compare the efficacy of various pre-cleaning methods, prior to reuse, for orthodontic bands that had been tried-in. A total of 130 bands were included which comprised 10 controls and 120 equally divided into three groups according to the pre-cleaning methods, i.e. manual scrubbing, enzymatic solution and a combination of both. The bands were incubated in brain heart infusion broth at 370C for five days after pre-cleaning and sterilisation in a steam autoclave and were assessed for any bacterial growth. The enzyme method revealed 5% of the sample to exhibit bacterial growth, whereas manual scrubbing and the combination of both showed no growth. There was no statistically significant difference among the three methods. Further investigations showed the presence of Staphylococcus non-aureus bacterial species in the contaminated bands. All pre-cleaning methods were found to be equally effective in the decontamination of bands. Hence, the tried-in bands can be safely reused after pre-cleaning and sterilisation without fear of cross-infection.

Irfan S *et al*. Contamination assessment of orthodontic bands after different pre-cleaning methods at a tertiary care hospital. *J Orthodont* 2019; 46: 220-224.

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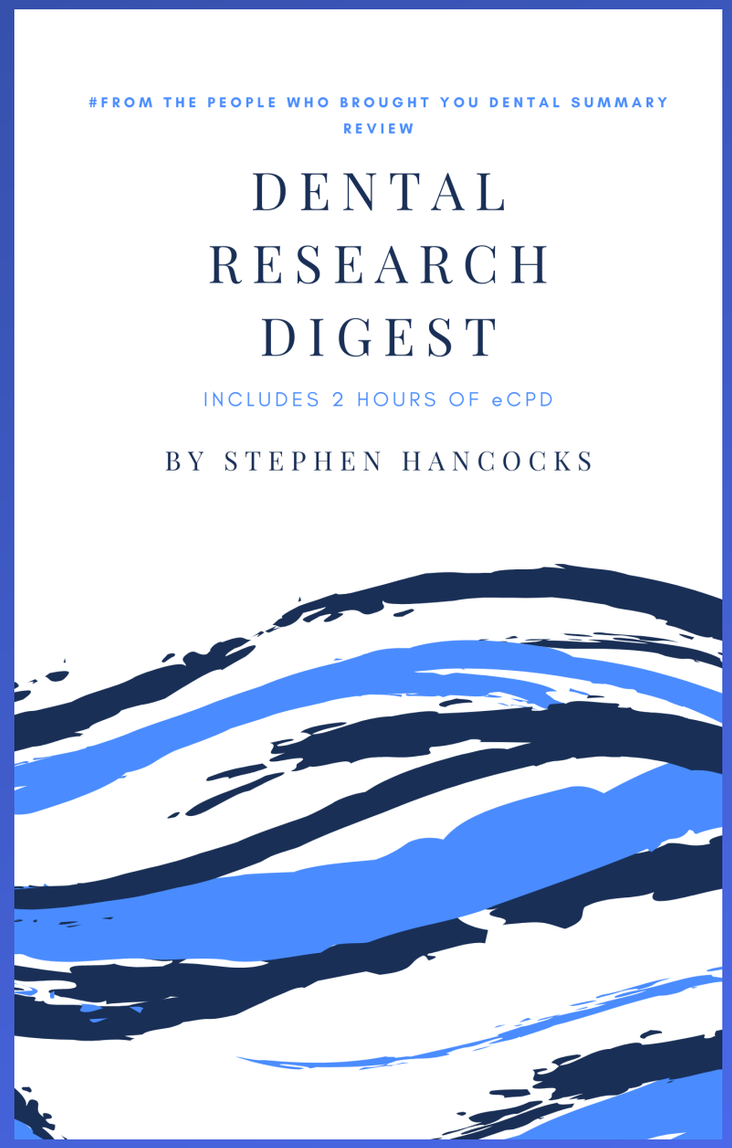

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