FEATURES SECTION

British Orthodontic Society, UTG session abstracts

Abstracts of Research Projects

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1st Prize winner

A clinical trial of a single component self-etching system

K.A. House* , M. Sherriff, A J Ireland (Bristol Dental Hospital, University of Bristol, UK).

Objective: The aim of this study was to compare clinical bond failure of a single component orthodontic self etching primer system (SEP), Ideal 1 (GAC Orthodontics), with conventional 37% *o*-phosphoric acid etching, rinsing and drying regimen.

Design and Setting: The study was a prospective randomized clinical trial undertaken at Bristol Dental Hospital during 2003-2004.

Materials and methods: Following sample size calculation, ethics approval and consent; 20 consecutive patients undergoing fixed orthodontic treatment entered and completed this study. Diagonally opposite quadrants were randomly allocated to SEP or conventional etch groups. Metal brackets were bonded with Ideal 1 light-cured adhesive. Bond failures and their locus were recorded at 1, 6 and 12 months.

Results: Enamel pretreated with SEP demonstrated significantly more bond failures at each time interval, 29.41, 38.98 and 37.5% respectively. At 1 and 6 months bond failures in control quadrants were below 3%. The locus of failure was principally at the enamel surface for the SEP group, but mixed for the control group with more adhesive remaining on the enamel surface at debond.

Conclusion: Enamel pre-treatment with the Ideal 1 SEP system results in a high and clinically unacceptable bond failure rate when compared to conventional enamel acid etching.

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2nd Prize winner

Nurse-led telephone supervision of orthodontic retention. A randomized controlled trial[1]

M.R. Hatfield*, S. J. Littlewood, L. Mitchell (St. Luke's Hospital, Bradford, UK).

Objective: To assess the effectiveness of nurse-led telephone supervision of the first twelve months of the retention period.

Design: Single centre randomized controlled clinical trial.

Setting: The orthodontic department of a district general hospital.

Subjects: 40 patients entering the retention phase following dual arch fixed appliance therapy.

Materials and methods: Ethical approval was obtained from the local ethics committee. Vacuum formed retainers were provided for night wear. Subjects were randomized into two groups. The study group was supervised by three monthly telephone calls from a trained dental nurse. The control group was supervised by three monthly visits to the treating orthodontist. Data were collected on the duration of each appointment or phone call, and any advice or treatment given. After twelve months all patients returned for records and a self-administered questionnaire.

Results: Little's Index was measured on the study models at the start and end of the retention period and compared using the Wilcoxon Rank test. Secondary outcomes were the cost effectiveness of, and patient satisfaction with, the two approaches.

Conclusions: The study will show if telephone supervision is viable during the retention period, from a point of view of preventing relapse, cost effectiveness, and patient satisfaction.

[1] *World J Orthod* 2005; 6 (Supplement), 269. Abstract Ref. P241

3rd Prize winner

Effects of orthodontic adhesives on the composition of plaque biofilm[2]

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Objective: The aim of the study was to examine the influence of orthodontic cements (with antimicrobial agents) on the plaque biofilm around fixed orthodontic appliances.

Design and Setting: The study was a laboratory based investigation carried out at the Leeds Dental Institute during 2003-2005.

Materials and Methods: 24-hour and 48-hour biofilms were generated on cylinders of orthodontic adhesives (with and without anti-microbial agents) using whole saliva as the inoculum. Four-week biofilms were generated on devices which consisted of orthodontic brackets bonded to human enamel shards with the same adhesives. The biofilms were harvested for determination of viable counts. Student T-tests were used to examine if differences in viable counts were significant at a 95% confidence level. Biofilms were examined qualitatively under confocal microscopy. The shards were subjected to micro-hardness testing before and after biofilm formation and were examined by micro-radiography to determine demineralization.

Results: There was a statistically significant reduction in viable counts of biofilms grown using adhesives with 5% w/w chlorhexidine dihydrochloride $P<0.05$. These biofilms appeared less dense microscopically.

Conclusions: The addition of 5% w/w chlorhexidine dihydrochloride to orthodontic adhesives reduced bacterial viable counts and may be effective at reducing demineralization during fixed orthodontic treatment.

[2] *World J Orthod* 2005; **6** (Supplement), 287. Abstract Ref. P343

An RCT to compare the clinical effectiveness of two retainers

H.N. Rowland*, A. C. Williams (Bristol Dental Hospital, University of Bristol, UK).

Objective: There has been increasing use and popularity of vacuum-formed retainers (VFRs) in the British NHS. There is however, no good evidence that these retainers are more effective then conventional Hawley retainers. The aim of this study was to compare the clinical effectiveness of Hawley and VFRs over a six month period of retention.

Design: A prospective randomised clinical trial in a specialist orthodontic practice in Bristol.

Method: Three hundred and eighty nine consented eligible patients treated by a single specialist orthodontic practice, were randomly allocated to Hawley ($n=192$) and VFRs ($n=197$). Two technicians fabricated both retainers to standardised designs. Impressions were taken at debond and at the six-months review appointment for the construction of study casts. One blinded, dentally qualified examiner undertook the analysis of all records. Upper and lower debond and six months into retention study casts were assessed for tooth rotations mesial to the first permanent molars, the intercanine width, the intermolar width and Little's Index of irregularity.

Results: There was more incisor irregularity in the Hawley group than the VFR group after six months.

Conclusion: VFRs appear to be clinically more effective than Hawley retainers.

Supporting agency: UBHT (DE/2202/1331).

An RCT comparing the cost-effectiveness between Hawley and vacuum-formed retainers

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Since their introduction into the NHS, VFRs have become increasingly popular, compared to Hawley retainers. The aim of the study was to compare the cost-effectiveness of Hawley versus VFRs over six months, from the perspectives of the NHS, orthodontist, laboratory, and patient.

Objectives: To calculate costs incurred by the NHS, orthodontist, laboratory, and patient in each retainer group over six months. To measure patient satisfaction; and to use data on the clinical outcome (Little's Irregularity index) from a parallel study to calculate the incremental cost-effectiveness ratio (ICER) between retainer groups, from each perspective.

Design and Setting: Randomized clinical trial in a specialist orthodontic practice.

Subjects and methods: 389 subjects due to have their fixed appliances removed were randomly allocated to Hawleys ($n=192$) and VFRs ($n=197$). All subjects were invited to complete patient satisfaction questionnaires; and interviewed about costs incurred, at three- and six-month intervals.

Results: Subjects were less satisfied with Hawleys than VFRs in terms of speech and aesthetics. The

ICER showed that VFRs were more cost-effective from each perspective, having the greatest impact on the NHS, followed by the orthodontist, laboratory and patient.

Conclusion: VFRs are better tolerated by patients and more cost-effective than Hawleys

Supporting agency: UBHT(DE/2202/1331).

The development and validation of an orthognathic psychological questionnaire

N.Y. Houghton*, A. Beese, D.O. Morris (Orthodontic Department, Leeds Dental Institute, Leeds, UK).

Objectives: To develop, validate and assess the reliability of a specific patient-centred questionnaire assessing the psychological aspects of surgical-orthodontic treatment.

Design: Prospective questionnaire-based study

Setting: Hospital-based orthodontic department, Leeds, UK

Subjects: 30 pre-surgery and 30 post-surgery orthognathic adult patients attending Leeds Dental Institute.

Materials and methods: Ethical approval was obtained from the local ethics committee. An item (question) pool was generated with the use of a literature review, feedback from staff and interviews with patients. The initial questionnaire was piloted on 26 patients. Item reduction was carried out to produce the final version. Test-retest reliability was assessed by carrying out telephone ''interviews'' on a random sample of 20 patients. Validity was assessed by comparison with the Hospital Anxiety and Depression (HAD) and Rosenberg's self-esteem questionnaires.

Results: The questionnaire was found to be valid and reliable with good patient acceptance. Test-retest analysis produced highly consistent results.

Conclusions: This newly developed psychological questionnaire has the potential to provide useful patient-orientated outcome data on orthognathic treatment in future clinical trials.

Informed consent in orthodontics: a prospective, randomized, controlled study

P.K. Sharma* (Royal London Dental Hospital, London, UK).

Aims: To assess the influence of two different methods of information delivery during the consent process for orthodontic treatment. To explore and compare the views of children and parents with regard to consent for orthodontic treatment.

Design and Setting: A prospective, randomized, controlled questionnaire based study conducted at the Royal London Hospital and Central Middlesex Hospital during 2003-2004.

Subjects and Method: 64 patients starting fixed appliance treatment aged between 10 and 15 years were recruited. The control group ($n=31$) and their parents received verbal information only regarding fixed appliance treatment. The study group ($n=33$) and their parents received verbal supplemented with written information concerning fixed appliance therapy. Supervised completion of questionnaires was conducted immediately after the consenting process and subsequently to coincide with the first change of archwire.

Results and conclusions: The study group was better informed than the control group with respect to certain aspects of treatment. Patients and parents differed on the age of consent with children setting the age of self-determination lower than parents. Children want to be involved in joint decision-making for orthodontic treatment.