

**SCIENTIFIC
SECTION**

Commentaries on scientific papers published in this edition

Smile aesthetics and malocclusion in UK teenage magazines assessed using the Index of Orthodontic Treatment Need (IOTN)

C. R. Mattick, T. J. Gilgrass, P. H. Gordon

This paper reports on a small, but interesting study on smile aesthetics in UK teenage magazines. The authors attempted to evaluate the level of dental attractiveness of the mouths of teenage models. They did this by applying the aesthetic component of IOTN to the photographs of the models' teeth that were published in a sample of teenage magazines.

They found that most of the smiles were highly attractive and only 7% exhibited low attractiveness. Importantly, only one person was wearing a fixed appliance.

We conclude from this study that the appearance of models in UK teenage magazines is not representative of the same group in the general population, particularly when we consider the high proportion of teenagers wearing fixed appliances. Importantly, the portrayal of such images may further compound adolescent girls' anxiety regarding body image.

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Orthodontic treatment and its impact on oral health-related quality of life in Brazilian adolescents

C. M. de Oliveira, A. Sheiham

This study is a timely addition to the quality of life literature, at a time when dentistry still lags behind medicine in this area of research.

The study looked at the impact of orthodontic treatment on oral health related quality of life in a group of Brazilian adolescents. It utilized a large sample (1675 subjects) with an excellent response rate (100%). The subjects were divided into three groups: those who had completed orthodontic treatment; those who were currently undergoing treatment; and those who had never had treatment. All subjects underwent a clinical examination

to ascertain the IOTN DHC and they also completed two previously validated questionnaires (the Oral Impacts of Daily Performance and the Oral Health Impacts Profile).

The authors found that those subjects who had completed orthodontic treatment had fewer oral health related impacts and a better oral health-related quality of life, when compared with the other two groups.

This study was well designed: it has a large sample size, an excellent response rate, all the examinations were undertaken by one researcher and the questionnaires used had been psychometrically tested in previous studies. There is no reason why the study could not be repeated in other places. The findings are important to the profession at a time when we are increasingly being asked to show evidence of our treatment outcomes.

S. J. Cunningham
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Management of unerupted maxillary canines where no orthodontic treatment is planned: a survey of UK consultant opinion

J. W. Ferguson, S. K. J. Pitt

This paper describes a survey that looks at the management of unerupted maxillary canines. Questionnaires were sent to the Consultant Orthodontic Group and there was a 76% response rate. The results showed that most were in favour of removal of the canine, although it was interesting that there was a significant variation in the other recommendations. The authors, one of whom has had a number of publications on the management of the ectopic canine, felt that this variation required more research. They reported that, where the canine is left in place, there is little agreement in the frequency and duration of radiographic review.

Recent investigation into the management of third molars has led to a rethink and a change in clinical practice has occurred. A more conservative approach to third molars has produced many benefits, including saving money and reduced morbidity. The authors suggestion that more research into the effects of leaving unerupted teeth in place is a timely one.

The authors conclude that there is wide variation in management, but little written on the effects of leaving unerupted teeth *in situ* and this paper highlights the need for research in this area.

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An *ex vivo* assessment of gingivally offset lower premolar brackets

B. S. Thind, C. J. Larmour, D. R. Stirrups, C. H. Lloyd

The effect of bracket design on modulating the bond strength of brackets shown in this sound and well-designed paper may stimulate discussion on the actual purpose of bond strength studies. This type of testing focuses on revealing the performance of the material during wire activation, rather than loading during mastication.

This limitation emanates from two protocol deficiencies: first, various investigations have utilized crosshead speeds ranging from 1 to 10 mm/min with a notable impact on the comparability of the results of different studies. Also, the actual clinical relevance of the findings has been strongly questioned since the rates employed in the literature are irrelevant to the velocity of teeth occluding during chewing. A masticatory cycle (sequential opening and closing) of a healthy individual lasts about 800 ms, which is translated to over 2000 mm/min; this velocity bears no relevance to the rate employed in conventional protocols. Although this effect may not alter the strength ranking of the materials reported in this study, it would affect the overall survival of bonds, since high loading rates eliminate the visco elastic response of the polymeric adhesive, decreasing bond strength.

A second issue relates to the comparison of the findings of the article with the proposed minimum acceptable bond strength. This threshold is conjectural, and depends on the mechanics and materials applied 3 decades ago and, although the article by Reynolds has been cited some 150 times, the value he proposed does not take into account two critical factors:

- the exceedingly high loads developed during mastication at high velocities;
- the adhesive aging induced by cyclic loading, exposure to microbia, saliva, acidic beverages and alcohol-containing liquids, which decrease the glass transition temperature of the material.

Therefore, ‘threshold strengths’ may not cover the requirements for a sound bond throughout the entire period of treatment.

The foregoing discussion indicates that the interpretation of bond strength data should be limited to reporting the relative effectiveness of the adhesives under testing. Extrapolating absolute values and weighing them against a vaguely defined standard may be of questionable validity.

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Fluoridated elastomers: effect on disclosed plaque

P. E. Benson, A. A. Shah, I. F. Campbell

Clinical trials have shown the value of fluoride-releasing elastomers in reducing decalcification during fixed appliance therapy, although the mechanism is not clear. This prospective clinical trial investigated their effect on the quantity of plaque accumulating around brackets bonded to maxillary incisors and mandibular canines.

The study used a randomized split-mouth crossover design on 34 patients and a total of 204 teeth. After two 6-week periods at the start of fixed appliance treatment (separated by a ‘washout’ period of a further 6 weeks), the amount of disclosed plaque around the specified brackets was measured by a standardized photographic technique and subsequent computerized quantification. The authors correctly discussed the potential disadvantages of the split-mouth design and the difficulties of calculating the sample size prospectively in this study.

The results show that fluoridated elastomers had no influence upon the quantity of plaque present around the brackets. This is an interesting finding that suggests an alternative mechanism in the beneficial effects of fluoride released, perhaps by directly influencing the ion exchange at the enamel surface. It was also interesting that the only significant influence upon plaque quantity was the individual patient’s oral hygiene and the tooth type. Lateral incisors accumulated more plaque than centrals, although the possible influence of archwire hooks — typically adjacent to the former — was not discussed.

This article provides useful additional evidence on the clinically important subject of enamel decalcification associated with orthodontic treatment.

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