

**SCIENTIFIC  
SECTION**

## Commentaries on scientific papers published in this edition

### **'Temporomandibular disorders, occlusion and orthodontic treatment' by T. Henrikson and M. Nilner**

This is a timely paper because children and adolescents with temporomandibular disorders (TMD) are presenting to TMD clinics in increasing numbers and the letter columns of journals offer ample evidence of the controversy about the role of malocclusion and orthodontic treatment in the aetiology of TMD, especially if extractions are involved. The debate on the role of orthodontic treatment in the development of a TMD is often conducted between those with an interest in TMD but little knowledge of orthodontics, and orthodontists who would admit to scant knowledge of TMD.

This paper, by an orthodontist and a well-known TMD specialist, sheds some very important light on the debate. Their description of a TMD specialist as 'a specialist in stomatognathic physiology' reflects the need for dentists to understand the whole 'system' in health, rather than simply know a list of disorders.

The subjects were examined for signs and symptoms of a TMD within three groups:

- orthodontically-treated Class II patients (both extraction and non extraction cases);
- untreated Class II patients;
- those with normal occlusions.

The numbers and the robust analysis of their finding means that this prospective study is scientifically sound.

The results show the importance of prospective studies. I particularly appreciated knowing that, although there was a higher prevalence of TMD in the 'extraction' as opposed to the 'non-extraction' sub-group at completion of orthodontic treatment, the difference before treatment was even greater. This, the authors suggest, may mean that the selection criteria for an 'extraction case' are more significant than the extractions themselves.

The results make this an important paper for orthodontists and those interested in TMD. The incidence of TMD in this age group and the natural individual

fluctuation of the clinical signs and symptoms they report means that all orthodontists should have the interest, knowledge and means to at least diagnose TMD before, during and after treatments.

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### **'In vivo evaluation of two new moisture-resistant orthodontic adhesive systems: a comparative clinical trial' by A. Mavropoulos, A. Karamouzou, G. Kolokithas, A. E. Athanasiou**

Bond failures are one of the commonest causes of unscheduled orthodontic appointments. How might they be reduced? It is widely held that many bond failures, in practice, derive from lapses in moisture control. Do new materials have anything to offer in this area?

The authors of this article tested the use of moisture-resistant adhesives as a means of reducing bond failures. They undertook a randomized controlled trial of bond failures with a split-mouth design, comparing a compomer and a composite combined with a hydrophilic primer. At the end of the trial they found the respective bond failure rates had been 13.8 and 7.3 per cent. They mention that in a parallel study under similar conditions, a normal acid-etch composite gave a bond failure rate of only 5.1 per cent. A little caution is needed, of course, in making the latter comparison and still more caution would be needed in comparing with other studies, but in general the failure rates reported here do not indicate an obvious improvement. One cannot conclude that the adoption of moisture-resistant adhesive systems will provide a useful reduction in bond failures, although a further trial comparing the acid-etch composite directly with the composite/hydrophilic primer combination would be helpful. At a more basic level, the results do cast some doubt on whether moisture contamination is even the primary cause of everyday bond failures.

Of course, the adhesives were only used here on carefully etched and dried enamel. It remains to be seen how

far moisture-resistant adhesive systems are beneficial in more difficult situations where moisture contamination is likely.

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### **The validity of computerized orthognathic predictions** by R. R. J. Cousley, E. Grant and J. D. Kindelan

This retrospective cephalometric study sought to assess the accuracy of orthognathic predictions using OPAL™ prediction software.

The authors selected the records of 25 Class II patients, all of whom had undergone mandibular advancement surgery. They digitized lateral cephalometric radiographs to establish the actual orthodontic and surgical moves and, using these values, a prediction was undertaken. Finally, the actual and the predicted changes were compared.

The authors conclude that, on average, many of the variables were reasonably accurate. However, there was large individual variation, particularly for some of the vertical changes. The authors also wisely suggest caution when using predictions, particularly in the presence of patients. The findings further reinforce the need to base orthognathic treatment plans on clinical findings with the cephalometric prediction acting as supplementary information.

This is an interesting and well-planned paper. It would have been interesting to see some data for the changes

in the area of the lips, as this often seems to be a problem area. Nevertheless, it provides considerable 'food for thought'. Most of us use such cephalometric predictions routinely. Yet, to date, there has been very limited research into their accuracy. These types of studies are long overdue and should be encouraged.

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### **'A prospective randomized clinical trial to compare pre-coated and non-pre-coated brackets'** by M. Wong and S. Power

This paper, as the title suggests, describes a well-designed randomized clinical trial comparing two bracket/adhesive systems. The two measurement parameters under test were time to bond up and the band failure rate over the 6-month observational period. A total of 33 patients took part in the study and 746 bonds were placed. Following statistical analysis, no significant difference was found in the bond failure rates between APC and non-APC brackets. Interestingly, there was also no difference in the time to bond up.

This study once again shows how relatively straightforward it is to perform a randomized prospective clinical trial, the results of which are always going to be of greater significance to the clinician than a purely laboratory-based study that tries to predict clinical outcome.

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