Journal of Orthodontics, Vol. 29, 2002, 195–196

SCIENTIFIC SECTION

Commentaries on scientific papers published in this edition

A qualitative study of teenagers' decisions to undergo orthodontic treatment with fixed appliance
U Trulsson, M Strandmark, B Mohlin, U Berggren

This paper is an important contribution to the research literature in that it intensively examines the intricacies of adolescents' attitudes and decision-making regarding orthodontic treatment. The in-depth exploration of subjects' responses as well as the examination of gender differences is often a neglected area and one that is a welcome addition to the orthodontics literature.

The purpose of this study was to examine teenagers' thoughts and values associated with their decisions to undergo orthodontic treatment. The use of open, taped interviews, analyzed using the grounded theory method provides a much-needed qualitative approach to understanding this complex population.

Research findings suggest that while teenagers reported their decisions to be independently driven, motivation to undergo orthodontic treatment was the result of social processes involving their reference group (e.g., peers) as well as more global societal norms. With respect to perceived influence of the malocclusion, gender differences were noted. Specifically, boys tended to identify function as the most important aspect while girls identified aesthetics. These findings suggest that the motivations of teenage orthodontic patients may differ by gender and that practitioners may be wise to more closely examine the motivations and desired outcomes of patients prior to initiating treatment in order to determine if expectations are appropriate. This study also highlights the value of utilizing open interviews to assess motivation for treatment and treatment expectations.

Nancy Berk

Orthodontic adhesives: A systematic review
NA Mandall, DT Millett, CR Mattick, J Hickman, HV Worthington, TV Mcfarlane

This paper reports on a review of the literature covering the period 1970 – 2000, according to the Cochrane Systematic Review Methodology. The specific aims were to evaluate which orthodontic adhesives provide the most reliable bond and where possible to determine which are the most effective in reducing in-treatment decalcification.

Strict inclusion and exclusion criteria were applied to the reviewed papers. The principal inclusion criteria were randomised clinical trials and controlled clinical trials, which investigated at least two different bonding adhesives. Exclusion criteria were numerous but the use of inappropriate or unclear statistical analyses was a major reason for rejecting papers.

A major finding and disappointment expressed by the authors, is that spanning the 30 year review period, only 3 papers fulfilled the necessary selection criteria. This meant that a pooling of data and formal meta-analysis was not possible. Nevertheless, the three papers did provide data on bond failures for four adhesives, namely: chemically cured composites, light cured composites, a resin modified glass polyalkenoate cement, and a compomer. Only one paper provided data on decalcification rates.

The review reported the research findings that there is little difference in bracket bond failure rates between the composites and the compomer, but that the failure rate was higher for the resin modified glass polyalkenoate cement. Decalcification rates were lower for the compomer than chemically cured composite, but no data was available within this review process on the resin modified glass polyalkenoate cement.

The lack of suitable papers meant that firm conclusions as to the best orthodontic adhesive could not be drawn from the systematic review process. However, the authors do make suggestions as to how clinical trials might be performed so that the research findings may be used in future systematic reviews. Updated reviews on this important topic will hopefully be published every 2 years.

Tony Ireland

Methods of distalising maxillary molars: a systematic review of the literature
GJ Atherton, AM Glennie, KD O'Brien

The quality of the evidence available upon which we base our practise should be of interest to all clinicians. This

paper conducts a systematic review of five well known orthodontic journals, published between 1988 and 1998, on methods described to move maxillary molars distally. The quality of the evidence supporting these techniques was assessed in 105 articles selected from these five journals by two reviewers. The Authors chose their definition of distal movement as any movement distally of the maxillary molars compared to a vertical reference line.

Of the 105 articles, only 58 offered a higher level of evidence than a case report and only three were randomized controlled trials (RCT). The appliances used included a variety of functional appliances, fixed intra-oral devices, headgear, removable appliances and magnets. In the RCT most distal movement was achieved by the Bass appliance, (mean 1.6mm). In the controlled clinical trials most distal movement was provided by the Ni-Ti coil springs (mean 3.8mm) but no assessment was made of overjet change, which does tend to occur. In the cohort studies the Herbst appliance produced the most distal movement (mean 2.7mm). In the case series most distal movement was reported with the *en masse* appliance with headgear, (mean 5.7mm).

The Authors felt that the most important finding of their study was that the literature offered no strong evidence for the use of any appliance to bring about distal movement of maxillary molars. The impression they were left with was that the most distal movement of the maxillary molars that could be achieved was no more than 2 to 2.5mm. If any greater correction of molar relationship was required then this would involve some mesial movement of the mandibular molars.

This paper provides interesting food for thought, especially in treatment planning, anchorage requirements and molar movements. Realistically how much distal movement will *you* achieve with *your* chosen appliance?

Russell Samuels

The effect of pumicing on the in vivo use of a resin modified glass poly(alkenoate) cement and a conventional no-mix composite for bonding orthodontic brackets AJ Ireland and M Sherriff.

This paper outlines the results of a cross mouth clinical trial that aims to evaluate whether we need to pumice the teeth prior to acid etching of the enamel and bonding with glass poly(alkenoate) cements. The experiment involved sixty patients and placing 649 bonds using two cements (Right on and Fujii II LC). The authors then evaluated the number of bonds surviving at the end of an 18 month period.

They found that pumicing had no effect on the failure rate of the brackets that were bonded with Right On or Fujii II LC. In addition, there were significantly more bond failures with the Fujii II LC than with the Right On.

This was a good well-conducted investigation that revealed that it is not necessary to pumice the teeth prior to etching. This study also reveals that it is perfectly possible to carry out small scale randomised trials with little resource that will answer clinical questions for orthodontics. Furthermore, in a similar way to many RCTs, the data has suggested that new developments are not always superior to older and yet effective techniques.

Kevin O'Brien