

## FEATURES SECTION

# Letters to the Editor

## Observations on the use and clinical effectiveness of lacebacks

Dear Madam

From time to time, a well structured orthodontic study comes up with findings that clinicians find strange.

For example, a 1997 prospective clinical trial<sup>1</sup> from the respected Nijmegen department, entitled 'Straight wire appliance versus conventional full Edgewise', looked for advantages in using pre-adjusted brackets. It tested seven hypotheses, but could confirm none of them. Essentially, the study could find no clinical advantages in using pre-adjusted brackets compared with conventional full edgewise.

Predictably, the reaction among clinicians was not to abandon pre-adjusted brackets. We continue to use them and sometimes wonder 'What was wrong with Eric Reukers' study?'

Talking to colleagues, there has been a similar response to the December 2004 paper entitled 'The effectiveness of laceback ligatures: a randomized controlled clinical trial'.<sup>2</sup> Lacebacks are an integral part of modern orthodontic treatment mechanics—invaluable in the management of seriously crowded cases after premolar extractions.<sup>3</sup> They will continue to be used and we find ourselves asking 'What, if anything, was wrong with the study?'

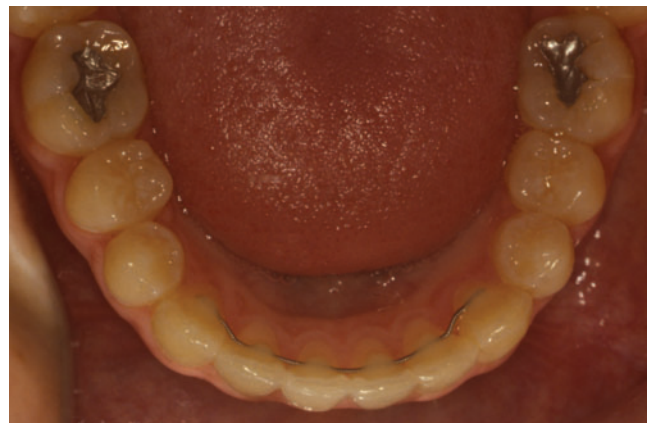
Doubtless the protocol and the measurement methods (although complicated) were fine. However, without the benefit of reviewing the material used in the study, it appears from Table 1 on p. 308 of the paper<sup>2</sup> that the mean crowding in the experimental group and the control group was 3 mm. It is accepted that extraction of both lower first premolars releases 14 mm of space and clinicians are asking 'How come all first premolars were extracted for these 62 children, with an average of only 3 mm of lower anterior crowding?'

There is a view that management of mild lower anterior crowding should not require premolar extractions unless there is a need to retract the lower incisors, as might be required in a Class III case or a case of bimaxillary protrusion. With careful case selection, mild crowding can easily be resolved<sup>4</sup> by one or more of the following methods:

- enamel re-shaping (Figures 1–3), which is especially effective if the incisors have crowns that are triangular in shape;<sup>5</sup>
- slight proclination of lower incisors, as may be indicated in some Class II division 2 cases, for example;
- minimal expansion of the lower intercanine width—although generally not appropriate, expansion has been shown to be stable in certain clinical situations.<sup>6</sup>



**Figure 1** The lower labial segment of a mildly crowded lower arch before treatment



**Figure 2** The same case after non-extraction treatment and enamel re-shaping



**Figure 3** Enamel reduction using diamond strips

Lacebacks were originally recommended in 1989<sup>7</sup> and they feature extensively in the textbook *Systemized Orthodontic Treatment Mechanics*.<sup>3</sup> This overall philosophy of orthodontic treatment has seen widespread acceptance worldwide, with the book having sold more than 10,000 copies in English alone and being available in 10 other languages. Like it or not, a huge number of clinical orthodontists across the globe use lacebacks and find them effective.

This is a one-off letter, written in the hope that the teaching of the use of lacebacks will not be abandoned here in the UK on the basis of this study.<sup>2</sup> To young orthodontists who wish to practise to international standards, the following approach can be recommended:

- Try to avoid premolar extractions in cases with only 3 mm of lower anterior crowding. There are other ways to manage mild crowding, unless treating a Class III case or a case of bimaxillary protrusion, where there is a need to retract the lower incisors into the profile.
- In seriously crowded cases, continue to use lacebacks after extraction of first premolars.

JOHN BENNETT

NB. The management of this case is fully documented, stage-by-stage, in *Orthodontic Management of the Dentition with the Preadjusted Appliance*, pp. 86–91.<sup>3</sup> All three illustrations are from original Ectochrome and not digitally modified.

## References

1. Reukers E. *Straight wire appliance versus conventional full Edgewise—a prospective clinical trial*. Nijmegen: University of Nijmegen, 1997.
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3. McLaughlin RP, Bennett JC, Trevisi HJ. *Systemized Orthodontic Treatment Mechanics*. Edinburgh: Mosby, 2001: 120–7, 272–7.
4. McLaughlin RP, Bennett JC, Trevisi HJ. *Systemized Orthodontic Treatment Mechanics*. Edinburgh: Mosby, 2001: 86–91, 198–205.
5. Bennett JC, McLaughlin RP. *Orthodontic Management of the Dentition with the Preadjusted Appliance*. Edinburgh: Mosby, 2001: 12, 14, 54, 56, 86–91.
6. McLaughlin RP, Bennett JC, Trevisi HJ. *Systemized Orthodontic Treatment Mechanics*. Edinburgh: Mosby, 2001: 72.
7. McLaughlin RP, Bennett JC. The transition from standard edgewise to preadjusted appliance systems. *J Clin Orthod* 1989; **23**: 142–53.

Dear Madam

We would like to thank Dr Bennett for his letter dated 8 June 2005.

We will consider each aspect of Dr Bennett's letter in sequence.

With regard to the statement 'Lacebacks are an integral part of modern orthodontic treatment mechanics ...'

The discussion of this comment is dealt with later.

With regard to the crowding, we are surprised that Dr Bennett did not highlight that some cases, indicated from table 1 on p. 308, and taking into consideration the 95% confidence interval, had 0.1 mm spacing (the negative sign), whilst some cases had over 6 mm of crowding. Perhaps the extractions were used for anchorage or even further the labial segment crowding was *not* a measure of lower arch crowding. The measurement of crowding in this context was similar in methodology and magnitude to that of Robinson<sup>1</sup> and in this report he also stated that the labial segment crowding is not lower arch crowding.

When considering the suggested techniques (enamel reshaping, slight proclination and minimal expansion) Dr Bennett provides only case reports,<sup>2</sup> one of the least robust forms of evidence. Whilst case law, the legal form of a case report, is appropriate for legally recognized considerations, it is not appropriate for a clinician to understand how a population of patients is going to respond to such treatment. Nor are case reports acceptable to provide the students with the rigour of a scientific examination or the basis for a clinical guideline of any kind.

We are surprised also that Dr Bennett describes simplistically the provision of 14 mm of space by the extraction of two premolars. It is quite acceptable that 14 mm of tooth substance are removed by such an

action, but clearly teachers and examiners have been incorrectly teaching specialists if this was true? Clinicians are aware that 14 mm of spacing is provided; movement of molars often reduces this and one of the important features of the paper in question is that lacebacks enhanced mesial movement of the first molars.

The purpose of the paper was to show that the ligatures should not be applied to all cases without the clinician undertaking some thought processing to evaluate the case. This situation is very similar to the issue regarding the stability of the lower labial segment when undertaking orthodontic care. The initial articles indicated that the position of the lower incisors was sacrosanct and should not be changed; current clinical practice indicates the position of the lower labial segment varies dependent upon the facial morphology and starting malocclusion.

Equally, the article by McLaughlin and Bennett,<sup>3</sup> whilst describing the technique of figure of 8 ligatures gives no other opinion than clinical impression. Whilst there is no doubt that Dr Bennett is a highly skilled clinician, the data he provides is an inappropriate level of evidence for any nationally agreed clinical practice protocol.

After placing ligatures to retract/maintain the position of the canine to prevent unwanted tooth movement the authors identified that in some cases, other than unnecessary time spent at the chair side, they were acting as a plaque retention factor. In addition, having placed them so that they were 'tight', subsequent visits demonstrated that the ligature was loose—questioning the value of the ligature.

In many teaching Institutes there are those that undertake clinical practices almost in an automaton-like way; either using ligatures or not using ligatures. Modern education should be to equip both the undergraduate and postgraduate student with the skills to develop during their practicing life. It would be appropriate for postgraduates to exercise their own discrimination regarding a technique that is valid and one that has been handed down, but without scientific validation. For example, the question over our prescription of antibiotics to prevent infective endocarditis has to be assessed in the light of new and developing evidence. Currently, the risks from prescribing the antibiotics are greater than those of developing infective endocarditis.<sup>4</sup> The debate continues. In this way, the authors are concerned that the implication in Dr Bennett's letter is that any technique advocated by a text book<sup>5</sup> should be undertaken without any other

considerations of the unique malocclusion that the patient presents with. Textbooks, no matter how many are sold, are not robust sources of data to support clinical protocols *unless* they are corroborated by other sources. In such a way we cannot consider the *popular press* as a source for evidence of best practice unless it is evaluated and supported by other sources.

Modern healthcare protocols in either medicine or dentistry should be based on an informed evidence-based opinion, not just opinion.

The GDC's publication, *The First Five Years*,<sup>6</sup> is very clear in its guidance with respect to education. The key principles in this document refer to 'learning opportunities and experiences ... designed to encourage a questioning, scientific, and self critical approach to dental practice and to foster the intellectual skills required for future personal and professional development'.

Equally, in terms of evidence, objective and unbiased patient selection, randomization and a methodology that is sufficiently sensitive and robust to measure any differences is essential to validate any clinical technique. Dr Bennett might be encouraged to participate in a study to determine the scientific facts beyond opinion.

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## References

1. Robinson SN. *An Evaluation of the Changes in Lower Incisor Position during the Initial Stages of Clinical Treatment Using a Pre-adjusted Edgewise Appliance*. MSc Thesis, University of London, 1989.
2. Bennett JC, McLaughlin RP. *Orthodontic Management of the Dentition with the Preadjusted Appliance*. Edinburgh: Mosby, 2001: 12, 14, 54, 56; Case report 3.1: 86–91.
3. McLaughlin RP, Bennett JC. The transition from standard edgewise to preadjusted appliance systems. *J Clin Orthod* 1989; **23**: 142–53.
4. Oliver R, Roberts GJ, Hooper L. Penicillins for the prophylaxis of bacterial endocarditis in dentistry. *Cochrane Database System Rev* 2004; **2**: CD003813.
5. McLaughlin RP, Bennett JC, Trevisi HJ. *Systemized Orthodontic Treatment Mechanics*. Edinburgh: Mosby, 2001.
6. The General Dental Council. *The First Five Years*, 2nd edn. London: GDC, 2002. Available At: <http://www.gdc-uk.org/news+publications+and+events/publications/guidance+documents/the+first+five+years.htm>