

Editorial

Risks and complications

A 'risk' may be defined as the probability that an event will occur and a 'complication' as an event that aggravates the original condition. In this issue we have several articles that describe some of the risks and complications of orthodontic treatment. The first article, however, is a careful investigation by Drs Roy and Mithran Goonewardene, John Razza and Kevin Murray at The University of Western Australia. They found that the small differences between the computer-aided measurements and the measurements made with a digital caliper were not likely to be clinically significant. Digital copies of plaster study models have many advantages over the traditional models, but we still have to take and pour impressions, trim and store the casts. I wonder when we will be able to directly scan the arches and do away with traditional study models?

Many of us consider dentofacial midline discrepancies have a negative effect on dentofacial attractiveness, although one well-known film star may disagree. What continues to surprise me is that patients are often unaware of a midline discrepancy, but once it has been pointed out they want it corrected. Drs Shyagali, Chandralekha, Bhayya, Kumar and Balasubramanyam give us guidelines to use when deciding whether or not to correct a midline, and point out some differences in the attitudes to midline discrepancies.

Allahyar Geramy and Hannaneh Ghadirian use the finite element method (FEM) to analyse the behaviour of three springs used to upright a lingually tipped lower molar. The spring they designed, which has two helices wound around the line of the archwire, was very efficient and the only design to upright the molar without complications. The FEM has a lot to recommend it for investigating the physical behaviour of the springs we use.

Robert Hamilton, Mithran Goonewardene and Kevin Murray report that active self-ligating brackets take about the same time and number of visits to treat comparable malocclusions as conventional single wing

brackets. Many clinicians will be interested in the factors they found lead to longer treatment times with both types of brackets. Self-ligating brackets, in one form or another, are probably here to stay, but some young patients still like to make a statement with coloured modules. This interesting and detailed study warrants careful reading.

The risk of visible enamel cracks after debonding is high and should concern us. I suspect the appearance of a crack after debonding has induced some orthodontists to change the debonding methods they use. Farzin Heravi, Roozbeh Rashed and Leila Raziee used three different instruments to debond standard edge-wise twin brackets, and report that each method had the same outcome. I think most of us agree with the authors that it would be sensible to search for a method of debonding that results in less enamel damage.

Drs Hideki Ioi, Makoto Kawakatsu, Shunsuke Nakata, Akihiko Nakasima and Amy Counts investigate the relationship between a mechanomyogram, electromyogram and bite force during isometric contraction of the human masseter muscle. The mechanomyogram, which is an interesting development, uses a small sensor and magnet to record the gross lateral movements of the muscle fibres during contraction and relaxation. Dr Ioi and coworkers suggest that simultaneous mechanomyogram and electromyogram recordings may be a more useful method for evaluating the status of the masseter muscle, and other masticatory muscles, than an electromyogram alone.

Persistent systemic stress increases the bone resorption associated with orthodontic tooth movement in experimental animals, according to Drs Gameiro, Nouer, Pereira-Neto, Urtado, Novaes, de Castro and Viegas. This experienced team of researchers confirm that corticosterone levels, the rate of tooth movement and number of osteoclasts were higher in stressed animals. This is another piece of information to add to our knowledge of the molecular processes during orthodontic tooth movement.

The notion that the small upper lateral incisor adjacent to a palatally impacted canine may contribute to Bolton discrepancies is not supported by Kazem Al-Nimri, Imad Adwan, Tareq Gharaibeh and Abdalla Hazza'a. It appears that widths of the mandibular anterior teeth compensated for the small lateral incisors in subjects with palatally impacted canines.

Sulainee Kokitsawat, Montien Manosudprasit, Keith Godfrey and Charunee Chatchaiwiwattana report that although miniscrews used to retract the upper anterior teeth tip slightly under orthodontic loads they are still excellent sources of anchorage. They also report that the upper first molars moved slightly although no force was applied to them. Wound contraction may be the cause of this complication. Many years ago, Abercrombie, Flint and James¹ reported that the cells populating a healing wound were more likely to be the source of wound contraction than collagen fibres. Since then it has become generally accepted that migrating fibroblasts and, eventually, myofibroblasts are responsible for the connective tissue remodelling associated with wound healing.

Sofie Hoste, Marjolein Vercruyssen, Marc Quirynen and Guy Willems give us a timely review of the risks and indications of temporary anchorage devices. They conclude with some valuable advice and recommendations, and illustrate the possibilities of temporary anchorage devices with some reported cases.

Drs Peamkaroonrath, Manosudprasit and Godfrey report the assisted eruption of impacted teeth into an alveolar bone graft in a patient with unilateral cleft lip and palate. This detailed and well-documented report has lessons for us all.

Finally, Dr Hiroshi Mimura describes the treatment of a woman with excessive facial height, a gummy smile and crowding. Dr Mimura guides us through his excellent treatment of this case and the complications he encountered. If you are uncertain about the value of miniscrews this case should encourage you to add them to your practice.

Michael Harkness

Reference

1. Abercrombie M, Flint MH, James DW. Wound contraction in relation to collagen formation in scorbutic guinea-pigs. *J Embryol exp Morphol* 1956;4:167-75.