What's new in dentistry

As orthodontists, we are often unaware of the technical and methodological advances in other dental specialties. However, many of these new experimental developments may ultimately become accepted dental therapy and influence the diagnosis and treatment of our orthodontic patients. Therefore, as part of the dental community, we must keep abreast of current information in all areas of dentistry. The purpose of this section of The Angle Orthodontist *is to provide a brief summary of what's new in dentistry.*

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ONE-STAGE BONE GRAFTING AND IMPLANT PLACEMENT HAS GUARDED SUCCESS IN CLEFT PATIENTS—In adult patients with alveolar cleft defects, an emerging trend for rehabilitation is to place an alveolar bone graft followed by an implant. These procedures can be done separately or simultaneously. A recent study published in the Journal of Oral and Maxillofacial Surgery (1998;56:460-466) describes the technique and success of simultaneous alveolar bone grafting and implant placement. The sample consisted of 16 consecutively treated patients who had undergone bone grafts and immediate implant placement. The bone in all cases was harvested from the chin. Six months after placement, the implants were uncovered and restored prosthetically. They were reevaluated an average of 4 years after installation of the implant. The results showed that only two implants were lost due to significant bone loss in the area. However, significant bone loss occurred in many of the subjects because the bone level was well below the head of the implant, resulting in compromised esthetics around the prosthetic crowns. In conclusion, the authors recommend that bone grafting and implants should not be done simultaneously in cleft lip and palate patients. The authors believe that the grafted bone should be placed first, with implant placement following as a secondary procedure.

OSTEOINDUCTION OF BONE ALLOGRAFTS DEPENDENT ON DONOR'S AGE—The use of freeze-dried cadaver bone has become popular in periodontal therapy. Researchers have shown that bone particles have osteogenic potential to induce new bone formation in the recipient. However, some studies show that the amount of bone formation is variable. A study published in the Journal of Periodontology (1998;69:470-478) examines whether the age of the donor affects the osteoinductive capabilities of the bone graft. In this study, 27 batches of freeze-dried bone from different donors were evaluated. The age and sex of each donor was known. Each graft was placed in muscle tissue in laboratory animals. After 8 weeks, the experimental area was analyzed histologically to see if new bone had developed. Samples of bone from younger donors had significantly greater osteoinductivity and produced more bone than grafts from older donors. The authors recommend that cadaver bone should be used only from donors who were under 50 years of age at the time of death.

TWO-STAGE AUTOTRANSPLANTATION TECHNIQUE PRODUCES MODERATELY GOOD RESULTS—Although autotransplantation of teeth is not popular in the United States, several European studies show that the procedure can be highly successful if the correct technique is applied. The most popular technique involves transplanting a tooth before the root is fully formed. This gives the tooth the potential to erupt. However, a study published in Acta Odontologica Scandinavica (1998;56:110-115) describes the success rate of transplantation of teeth with fully

formed roots. The sample consisted of 75 teeth that had been transplanted over a 10-year period. All had fully developed roots. A two-stage approach was used. Initially, the transplant site was exposed, a hole was placed in the bone, and tissue was sutured over the site. Two weeks later, the tooth to be transplanted was removed, placed in the healing site, and sutured. The teeth were splinted for about 2 weeks. After 1 month, the pulps were removed and calcium hydroxide was placed. Endodontic therapy was performed after 6 months. The teeth were reevaluated after 5 years. Eight of the 75 teeth had to be extracted because of significant attachment loss, making the failure rate about 10%. About 20% of the teeth had root resorption and four of the 75 teeth became ankylosed. Although the majority of the transplantations remained, there were problems with the technique. It will be interesting to follow this type of sample for 10 or 20 years to determine how long the transplanted teeth survive.

INCIDENCE OF LINGUAL NERVE DAMAGE AFTER SAGITTAL OSTEOTOMY IS LOW—A typical side effect of bilateral sagittal split osteotomy for mandibular advancement is temporary alteration in conductivity of the inferior alveolar nerve. Since this nerve is the site of the surgery, it is traumatized and may produce temporary numbness. However, the numbness is usually reversible. Limited information is available regarding alterations in the function of the lingual nerve after sagittal osteotomy. A study published in the Journal of Oral and Maxillofacial Surgery (1998;56:700-704) evaluates the incidence of lingual nerve damage in a sample of 130 individuals. A survey was sent to over 300 patients who had undergone a sagittal osteotomy. The same sample reported 95% incidence of damage to the inferior alveolar nerve including numbness of the lip. But the vast majority of patients reported that the deficit in lingual nerve sensation disappeared after 1 year. So, although the incidence of lingual nerve damage was 20% in this study, the long-term consequences appear to be insignificant.

PERIODONTAL PROBLEMS ARE COMMON AFTER MAXILLARY SEGMENTAL OSTEOTOMIES—Segmental osteotomies are common in orthognathic surgeries involving the maxilla. The maxilla is commonly divided between the canine and premolar or between the two central incisors to achieve widening of the maxilla or changes in arch shape. A study published in the Journal of Oral and Maxillofacial Surgery (1998;56:414-417) evaluated the periodontal effects of segmental osteotomy in a sample of 30 patients. Although all patients had had segmental osteotomies, not all had received orthodontic therapy. Their periodontal status was evaluated 4 to 10 years after orthognathic surgery. Bone loss, tissue loss, and root resorption were assessed in the osteotomy sites. About 80% of the 75 segmental osteotomy sites in the sample had pathologic periodontal findings. Deep periodontal lesions were found in nearly half the sites, and lateral root resorption occurred about 15% of the time. The incidence of periodontal damage in the segmental osteotomy sites was high. However, the authors did not state the pre-existing periodontal conditions in each of the areas, and only one-third of the subjects had orthodontic treatment; the others may have had crowding that could have complicated the segmental surgery. Finally, indiscriminate handling of the flaps could have caused bone loss in the sample. Typically, in patients who have orthodontic treatment in conjunction with segmental surgeries, the incidence of periodontal defects is probably much lower than that reported in the study.

Correction

The author information section (p. 205) accompanying "Childhood and adolescent changes of skeletal relationship" (Angle Orthod 1998; 68[3]: 199-208) listed an incorrect affiliation for one author. It should have read: Joel Martins is head of the department of orthodontics, Araraquara, UNESP-BRAZIL, and a visiting professor (1994-95), Baylor College of Dentistry, Department of Orthodontics, Dallas, Texas.