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.*

Vincent Kokich, DDS, MSD

SKELETAL STABILITY EQUIVOCAL WITH DIFFERENT FIXATION TECHNIQUES–Two different rigid internal fixation techniques are common following sagittal osteotomy to lengthen the mandible. One technique involves the use of either lag screws or positional screws to immobilize the fragments. The other popular technique uses titanium miniplates across the osteotomy sites. Is there any difference in stability between these two techniques? This issue was evaluated in a study published in the *Journal of Oral and Maxillofacial Surgery* (1997;55:568-574). The sample for this investigation consisted of 60 patients. Half of the sample had bilateral sagittal split osteotomy with bicortical noncompressive screw fixation. Unicortical screws and miniplates were used to immobilize the proximal and distal fragments in the other half of the patients. Stability was assessed with cephalometric radiographs made at 2 days and 6 months after surgery. Although minor differences were seen between the groups, there were no significant differences in anteroposterior or vertical stability between the two types of fixation. In conclusion, only minor changes in stability were seen when screw and miniplate fixation were compared in this prospective investigation.

CONDYLAR ROTATION WITH RIGID FIXATION??–Rigid internal fixation has become a popular method of fixing the proximal and distal fragments following orthognathic surgery. The benefits of rigid fixation include improved stability and the elimination of prolonged intermaxillary fixation. However, there may be some potential drawbacks. As the mandible is lengthened or shortened with a sagittal osteotomy, the condylar fragment could rotate as the screws and/or plates are tightened. This could cause temporomandibular remodeling and a change in the occlusion over time. Is this hypothesis true? This questioned was addressed in a study that was published in the *Journal of Oral and Maxillofacial Surgery* (1997;55:672-676). The sample consisted of 46 subjects with mandibular prognathism. All patients were treated with sagittal osteotomy to reduce mandibular length. Four techniques were used to fix the fragments: wires, lag screws, positional screws, and miniplates. Submentovertex radiographs were used to determine rotation of the condylar head. The radiographs were taken preoperatively, immediately after surgery, and up to 1 year postoperatively. The results showed that the amount of condylar rotation was very small, ranging from an average of 3 degrees with wire fixation to about 5 degrees with the miniplates. In addition, no significant change in condylar position occurred up to 1 year after surgery. In conclusion, at least with mandibular set-back surgery, rigid internal fixation does not cause significant rotation of the condylar fragment.

OUTPATIENT ORTHOGNATHIC SURGERY VERY SUCCESSFUL–Over the past 10 years, the cost of orthognathic surgery has risen dra-

matically. This increase is not due to higher fees charged by surgeons, but reflects the increased cost of hospitalization. At the same time, insurance companies have become more restrictive in which types of surgeries are covered under medical insurance plans. As a result, fewer patients accept a surgical treatment plan, since they must pay for most of the surgical costs. In an effort to reduce the hospital expense, many surgeons are promoting outpatient orthognathic surgery. Is it safe for a patient to leave the hospital the same day as the surgery? What types of procedures should be performed on an outpatient basis. These questions were answered in a study published in the *Journal of Oral and Maxillofacial Surgery* (1997;55:558-563). The sample consisted of 205 consecutive orthognathic cases that were treated at a large teaching hospital. The purpose of the article was to retrospectively evaluate the success and problems encountered in this group of patients. Out of this sample, half of the patients were discharged and the other half remained in the hospital for up to 23 hours. The most significant finding that determined whether or not the patient was discharged immediately after surgery was the anesthesia time. For those patients who were released the same day, the average anesthesia time was 3.75 hours. For those patients who were kept overnight in the hospital, the anesthesia time averaged 4.5 hours. The latter group included half of the maxillary surgeries and all of the bimaxillary surgeries. Patients who had only sagittal osteotomies were discharged on the same day.

LONGTERM STORAGE OF ALGINATE NOT A PROBLEM–Often orthodontists will purchase certain supplies in large quantities to obtain a discount. This is a reasonable approach if the clinician plans to continue using the material over a long period of time. But is there a limit to the shelf-life of some supplies that would discourage or limit the amount of material that should be purchased. For example, is there a shelf-life for alginate impression material? Orthodontists use alginate continually, and it would make sense to purchase alginate in large quantities, provided it maintains its replication properties over time. This issue was discussed in a paper that was published in the *Journal of Prosthetic Dentistry*. In this study, alginate impression materials ranging in age from new to 6.5 years old were tested. The following properties of alginate were evaluated: recovery of deformation, compressive strength and strain, tear strength, and working time. Although there were some minor differences, this study showed that if an alginate canister was sealed and moisture-free, no significant changes occurred in any of the properties up to 6 years. If canisters were opened and kept in a humid environment, they lost some of their reproducing properties. The authors recommend that the canisters be kept sealed until needed, and that an open canister should be emptied before opening another.

OSTEOPOROSIS HAS MINIMAL EFFECT ON IMPLANTS–Implants are revolutionizing prosthetic dentistry. Single and multiple implants are routinely used to help restore partially edentulous adult patients. Many of these patients are treated in an interdisciplinary manner and require orthodontics, periodontics, implants, and restorative dentistry. But what if the patient is a mature female past menopause and with moderate osteoporosis? Will titanium implants osseointegrate in a patient with osteoporosis. That question was addressed in a study published in the *Journal of Oral and Maxillofacial Surgery* (1997;55:351-361). The sample for this study consisted of 36 mature female white rabbits. The purpose of the study was to create osteoporosis in a rabbit model and then place implants to determine if lower than normal mineral bone density affected healing around the implants. The healing of bone was evaluated up to 12 weeks after implant placement. The authors found that osteoporotic animals had a much slower adaptation of bone around the implants than the control animals. However, at 12 weeks, the amount of bone around the implants in both groups was not significantly different. The implant healing process was slower because greater bone resorption than deposition occurs in an animal with osteoporosis. With time, however, the osseointegration process was completely successful in spite of the osteoporosis.