

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."

By Vincent Kokich, DDS, MSD

INCORRECT SPEAKING ASSOCIATED WITH MALOCCLUSION—Does malocclusion affect speech? If a patient has a significant skeletal malrelationship, will that affect the patient's speech or articulation? Most orthodontists have perceived certain speech anomalies in some patients. But which speech sounds are affected by malocclusions? This information was published in a recent article in the *Journal of Oral and Maxillofacial Surgery* (51:850-856;1993). Researchers at the Hospital for Sick Children in Toronto, Ontario, evaluated 33 subjects who were being prepared for orthognathic surgery. Two-thirds of the sample had Class II malocclusions, and about one-half of those had openbites. A third of the sample had Class III malocclusions and one-half of those also had an openbite. Each patient was evaluated by two certified speech and language pathologists. Based upon their evaluation, they found that 29 out of the 33 subjects showed errors in speech. The most common were the **S** and the **Z** sounds. The production of these two sounds requires precise tongue positioning and a narrow stream of air across the incisal edges. The second most common errors were in sounds where the tongue has to be placed against the palate. These are the **SH**, **CH**, and **J** sounds. This paper did not evaluate the patients after surgery. Hopefully, this information will come out in future studies by these researchers.

ULTRASOUND USED TO DETERMINE CONDYLAR POSITION—During mandibular lengthening surgery, the clinician tries to seat the mandible completely into the glenoid fossa before fixing the proximal and distal fragments of the mandible. If the mandible is not seated properly, significant relapse may occur after healing as the condyle reseats itself. In the past, oral surgeons have relied on palpation and radiographs to verify condylar position. However, radiographs are often taken one day to one week after the surgery. If the condyle is not centered in the fossa, it may mean a separate surgical procedure for the patient. However, recent information published in the *Journal of Oral and Maxillofacial Surgery* (51:1018-1086;1993), show that ultrasound might be a reliable technique for assessing condylar position in the operating room. Surgeons at the University of Pennsylvania evaluated a group of 20 healthy patients. An ultrasound recording was made of each patient in both a closed position and also after 30 mm of mouth opening. These recordings were given to a trained radiologist to evaluate. The radiologist was asked whether or not the condyle was seated or unseated from its position in the glenoid fossa. The radiologist correctly identified the closed position in 19 out of 20 patients. This was a confidence level of 95%. It appears that the ultrasound technique may have some potential. However, further testing on actual surgical patients will need to be performed before we can rely on this new technique.

NO NEED TO PLACE IMPLANTS UNDER STERILE CONDITIONS—When the first titanium implants were introduced into the United States in the early 1980s, the Nobelpharma Company advocated that implants should be placed under absolute sterile conditions such as those used in a hospital operating room. Not only are all the instruments sterile, but the patient is draped and the operator and assistants wear sterile gowns. Obviously, this adds considerable expense to the implant procedure. But is this really necessary? Do implants have to be placed under absolutely sterile conditions? This question was answered conclusively in an article published in the *Journal of Periodontology* (64:954-956;1993). A group of clinicians in the Department of Implant Dentistry at New York University College of Dentistry compared two groups of patients. In one group, 273 implants were placed under sterile conditions. In the other, 113 implants were placed under clean conditions. The clean surgery took place in a dental school clinical setting. The surgeons and nurses wore clean, not sterile, lab coats and the patients were not covered by sterile drapes. The two groups of patients were compared at the Stage II uncovering. The success rate of the implants placed under sterile conditions was 98.9% and those placed under the clean conditions was 98.2%. There appears to be no complications in placing implants under clean but not necessarily sterile conditions.

ARE NEUROMUSCULAR SPLINTS EFFECTIVE?—Have you ever heard of a myomonitor? This is a device that theoretically determines the neuromuscular activity of the muscles of mastication. Proponents of this device suggest that if a clinician is constructing a splint for a patient with muscle pain, it is important to use the myomonitor to establish the proper jaw relationship in order to eliminate the pain. However, other clinicians simply use a flat-plane acrylic splint with even contact on all teeth to treat muscle pain. Does it make any difference? Are neuromuscular splints any better than flat plane splints? This question was answered in an article published in the *Journal of Prosthetic Dentistry* (70:39-43;1993). A sample of 12 female subjects with a prior history of muscle soreness secondary to clenching or bruxing was evaluated. A flat-plane acrylic splint and a neuromuscular splint were made for each patient. The splints were evaluated during function and surface electrodes were placed over the temporalis and

masseter muscles to determine the electromyographic activity of each of these muscles of mastication. Both splints produced the same electromyographic activity. There was no difference in the splints. The neuromuscular splint, created with the use of the myomonitor, did not provide any greater effect than a simple flat plane acrylic splint at reducing muscle activity and eliminating muscle soreness.

TMD NOT DUE TO COMMON OCCLUSAL PROBLEMS—In the past, most dentists believed that occlusal discrepancies themselves could produce temporomandibular disorders. Over the years, however, several studies by well-respected researchers have questioned the significance of malocclusion in producing temporomandibular disease. What should we believe today? Is there any association between occlusion and temporomandibular disorders? Is there any association between occlusion and temporomandibular disorders? An excellent study published in the *Journal of Dental Research* (72:968-979;1993), answers these questions. Researchers at UCLA gathered a group of 150 control patients who had no signs or symptoms of TMD. They compared these to approximately 400 consecutively evaluated patients from the Pain Management Center at UCLA School of Dentistry. A multiple regression analysis was used to determine any association between temporomandibular disorders in a group of 11 occlusal characteristics in these two samples. The occlusal factors included overjet, overbite, crossbite, openbite, underbite, etc. None of the individual occlusal factors showed any preponderance for a particular type of temporomandibular disorder. The authors concluded that the occlusion itself cannot be considered the unique or dominant factor in defining any particular population of TMD patients. Five occlusal conditions reached the level of partially contributing to the presence of certain types of TMD. These were anterior openbite, unilateral lingual crossbite, overjets over 7 mm, five or more missing posterior teeth, and an anteroposterior slide of greater than 5 mm. In conclusion, if a patient presents for examination with TMD and a malocclusion, there may be no association between the two. The malocclusion most likely did not cause the temporomandibular disorder. However, if several occlusal variables exist together in the same patient, they may have contributed in a multifactorial way to the temporomandibular disorder.