

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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TMD SYMPTOMS HIGH IN VIOLIN PLAYERS—

Temporomandibular disorders may be exacerbated by chronic and significant parafunctional occlusal habits. Although parafunctional bruxing is the most common habit, unusual parafunctional relationships of the condyle, disc, and fossa may be achieved in violin players. During playing, the violin is positioned between the chin and left shoulder. This may produce an unusual relationship of the TMJ on the left side. A study published in *Acta Odontologica Scandinavica* (1995;53:81-84) evaluated the level of temporomandibular symptoms in a group of professional violin players. The sample consisted of 26 professional violinists with an average age of 37 years. Half of the sample were men and half were women. The playing time per week was about 36 hours. They were compared with a control group with no temporomandibular disorders. These researchers found that subjective symptoms, such as muscle pain and deviation on opening, were significantly more common in professional violin players than in the control group. However, radiographic differences between the groups were not noted. Therefore, this study shows that although some minor localized symptoms may be present in professional violinists, these alterations do not produce osteoarthritic changes in the temporomandibular joint.

PERIODONTAL MEMBRANE FORMS ON IMPLANT SURFACE—Implants are now being used routinely to replace missing teeth in ortho-

dontic patients. However, implants are ankylosed objects and will not erupt. Therefore, they cannot be placed before facial growth has been completed. It would be advantageous if implants had a periodontal membrane. This may be possible in the future. In a study published in the *Journal of Periodontology* (1995;66:125-130) researchers successfully grew a periodontal membrane on the surface of hydroxyapatite. This experiment was performed in rats. Hydroxyapatite blocks were placed into holes prepared in the root surface of rat teeth. The implant was covered with polytetrafluoroethylene membrane. The animals were evaluated histologically after 12 weeks. During the healing, cementum first formed over the hydroxyapatite. Then, periodontal membrane attached to the cementum. This study has shown that a periodontal ligament can attach to an implant if cementum is present. In the future, a non-ankylosed single tooth implant may be possible.

TOOTH BLEACHES TOXIC TO STOMACH LINING—

Tooth bleaching is the popular method of whitening teeth that have a yellowish hue. Considerable research has been performed and shows that bleaching agents are not harmful to the enamel surface if used judiciously. The bleaching agent should not be ingested. However, if used at night, some of the bleach may be swallowed. A recent study published in the *Journal of Dental Research* (1995;74:710-714) shows that commercial bleaching agents are toxic to laboratory animals. In this study, varying doses

of Opalescence, a commercially available bleaching agent, were injected into the stomachs of rats. The lining of the stomach was evaluated histologically up to 48 hours after injection of the bleach. At higher doses, the gastric lining showed significant ulceration. After 24 hours, the ulcerations were healing. Based upon the results of this study, if the bleaching agent is ingested, it may cause stomach ulceration. However, this damage is probably temporary and will heal if the cause, the bleaching agent, has been eliminated.

THIRD MOLARS INCREASE THE RISK OF MANDIBULAR FRACTURE

At the end of treatment, orthodontists must often make a decision regarding extraction of third molars. In many situations, the third molars may be near eruption, but because of their length and position near the ramus of some mandibles, there is little basal bone beneath the apex of the roots in the inferior border. A study published in the *Journal of Oral and Maxillofacial Surgery* (1995;53:646-649) evaluated the risk of mandibular fracture when third molars were present. The sample consisted of 100 patients who had had mandibular fractures. The panoramic radiographs of these patients were analyzed to determine if third molars were present. Seventy-three patients in the sample had third molars. Of these patients, 41% had fractures of the angle of the mandible. Of those patients that did not have third molars, only 10% of the fractures occurred at the angle of the mandible. Based upon the results of this study, patients with mandibular third molars were 3.8 times more likely to have an angle fracture than patients with-

out mandibular third molars. This study suggests that patients who may undergo facial trauma, as occurs in some types of athletics, may be at higher risk for fracture if third molars are not extracted.

RIB CARTILAGE PROVES SUCCESSFUL AS DISC REPLACEMENT

Severe trauma and damage to the temporomandibular disc may require removal of the disc or meniscectomy. Most long-term studies have shown that removal of the disc leads to osteoarthritic changes in the head of the condyle. For years, researchers have tried to develop a synthetic replacement for the disc. Most have proved unsuccessful. A more suitable replacement might be the transplantation of autogenous tissue. A study published in the *Journal of Oral and Maxillofacial Surgery* (1994; 52:1149-1158) shows promise for the use of costochondral cartilage as a disc substitute. Between 1981 and 1991, a group of patients who had extensively remodeled condyles and perforations of the disc were given costochondral cartilage as a replacement for the temporomandibular disc. Thirty of these patients were recalled at 3 years and at 8 years after the procedure. After 3 years, over 95% of the patients had reduced pain, could eat better, and had better mandibular movement. After 8 years, about 90% of the patients still had better function and could move their mandibles easily and without pain. Two patients had begun having symptoms. This study shows that human costochondral cartilage may be a suitable replacement for the temporomandibular disc in certain individuals.