

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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DO WHIPLASH INJURIES CAUSE TM JOINT DYSFUNCTION? Some automobile accidents result in whiplash injuries. Typical complaints following this type of injury include a sore neck, myofascial pain, and often, clicking of the TM joint. Do these problems subside, or do they get worse? A study published in the Journal of Oral and Maxillofacial Surgery (50:825-828, 1992) examined this question. A sample of 155 patients, each diagnosed with whiplash injury following an automobile accident, was evaluated longitudinally. All patients were seen by the same investigator. At the time of the trauma, the patients were asked a series of questions regarding TM joint function. In addition, radiographs were taken. The patients were then questioned in a telephone interview one month and one year after the accident. At the time of the accident, about 10% of the patients reported masticatory muscle and TM joint pain. One patient reported a unilateral click that hadn't been present before the accident. After one year, no additional patients reported clicking or pain, and those who had reported myofascial pain originally said it was no longer present. In conclusion, there was no clinical evidence of a significant relationship between whiplash and the development of TM joint dysfunction. If symptoms were present, they generally responded favorably to conservative management.

PIT AND FISSURE SEALANTS MAY CAUSE OCCLUSAL PREMATUREITIES. Today, pit and fissure sealants are widely used in adolescent

patients. Long-term studies of caries incidence in patients with pit and fissure sealants have shown a drastic reduction in occlusal caries. But what effect do these materials have on the occlusion? A study published in the Journal of Prosthetic Dentistry (68:350-353, 1992) evaluated the amount of change in occlusal height produced by the application of traditional sealants. The researchers compared the thickness of filled and unfilled sealants. Routine sealants were placed in vitro in 240 teeth. Half were filled and had larger glass particles that prevented wear. The other half were unfilled. The mean thickness of the filled sealants was half a millimeter. The average thickness of the unfilled sealants was a third of a millimeter. If the filled sealants are in premature contact, they will not wear down easily. If sealants are to be placed in a patient with a well-fitting occlusion, the authors suggest that an unfilled sealant be used. If a filled sealant is placed, the authors recommend an occlusal adjustment be performed on any premature contacts.

NEW METHOD TO ASSESS NERVE DAMAGE AFTER JAW SURGERY. Patients who undergo mandibular surgery often experience numbness in the lower lip. In most patients, this paresthesia is only temporary. But sometimes it is permanent. Is there a way to tell at the time of surgery whether the paresthesia is temporary or permanent? A recent study published in the Journal of Oral and Maxillofacial Surgery (50:581-585, 1992) describes a new method of analyzing nerve function after jaw surgery. The authors placed recording electrodes in

the inferior alveolar nerve in 10 young individuals. A stimulating electrode was placed on the skin in the area of the mental foramen. Each of the nerves was stimulated and recordings were made. Then Xylocaine was injected to block the function of the nerve. Further stimulation did not produce any recordings of nerve function. However, when the stimulation was increased, the authors could again record activity from the electrodes. In patients who experience pressure paresthesia following surgery, the nerve should still transmit a recordable stimulus. This method has not yet been tested on postoperative patients. Hopefully in the future, this technique will be a viable way of assessing whether or not patients have received permanent or temporary paresthesia following orthognathic surgery.

PARTIALLY EXPOSED IMPLANTS CAN BE SAVED. Implants are routinely used to replace missing teeth. In some patients, however, the residual alveolar ridge is so thin there is insufficient width to place an implant without having exposed threads. Does a thin alveolar ridge preclude the use of a titanium implant? A study published in the *Journal of Oral and Maxillofacial Surgery* (50:1060-1065, 1992) documents the use of a polytetrafluoroethylene membrane to induce new bone formation over partially exposed threads. Six implants were placed in the tibiae of five dogs. Some of the implants had pure titanium surfaces and others were coated with hydroxyapatite. The top three millimeters of alternating implants were left exposed or out of the bone. Membrane was placed over the top of the implant to prevent connective tissue from forming around the exposed area. Out of 36 implants, 33 showed significant bone forma-

tion of the exposed implant surfaces. In conclusion, this study has shown that a membrane may be used to cover exposed threads on implants and allow bone deposition to cover the implant surface. These new developments will enhance the success of implants in restorative dentistry.

FASTER TOOTH MOVEMENT IN ADULTS? Does orthodontic tooth movement in adults proceed at the same rate, at a faster rate, or at a slower rate compared to children? Clinically, it sometimes seems tooth movement proceeds at a reduced rate in some adult patients. It would be beneficial if we could stimulate bone resorption in adults. A recent study published in the *Journal of Dental Research* (71:1487-1492, 1992), describes the use of a calcium regulating hormone to stimulate bone resorption and orthodontic tooth movement in rats. The authors constructed an orthodontic appliance that delivered a buccal force to the maxillary first molar. In some of the animals, a calcium regulating hormone was injected directly into the bifurcation in the molar area. This hormone has been shown in other studies to be a potent activator of osteoclastic activity. The results showed that the amount of tooth movement in the rats injected with the calcium stimulating hormone was two-and-a-half times that of the control animals. Furthermore, when the hormone was injected into an adult animal, it resulted in an increased rate of tooth movement equal to that of the younger animal. In the future, it may be possible to accelerate bone remodeling in one part of the mouth to produce a different rate of tooth movement. Future studies using this hormone in humans will determine if similar results can be produced.