

What's New in Dentistry

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Biodegradable rigid fixation is highly predictable in orthognathic surgery. In the mid-1980s, most oral and maxillofacial surgeons began using rigid fixation with titanium plates and screws rather than transosseous wire fixation after orthognathic surgery. The change to rigid fixation gave patients much greater postoperative stability and virtually eliminated the traditional 6 weeks of intermaxillary fixation. But the disadvantage of the plates and screws is that the patient must retain this metal in their skull indefinitely. To overcome this problem, researchers developed biodegradable screws and plates during the 1990s, and their use has expanded gradually. But are these biodegradable means of fixation dependable and stable in the long term? A study published in the *Journal of Oral and Maxillofacial Surgery* (60:59–65;2002) documents the effectiveness of these biodegradable screws and plates up to 2 years after surgery. The sample for this study consisted of 130 consecutively treated patients. The operations involved osteotomies in both the maxilla and mandible. The screws and plates were made from polylactide, which is readily degradable in the human body. Panoramic radiographs were used to assess the presence of the materials, and the stability of the jaws was assessed subjectively. The authors found that the biodegradable screws and plates allowed slightly more mobility of the maxillary fragments immediately after surgery compared with the titanium materials. In the mandible, there was no difference between the performance of the polylactide screws and that of the titanium screws. In conclusion, these authors report consistent success with biodegradable rigid fixation.

Immediate loading of dental implants results in low failure rates. Our concepts of implantology have been changing, as more implants are placed in patients worldwide. Traditionally, when implants were reintroduced into dentistry in the early 1980s, the procedure involved placing the implant into the alveolus, burying it for 4 to 6 months to permit adequate osseointegration, and then uncovering the implant and placing a restoration. But since 1997, researchers have been altering the protocol and are gradually loading implants earlier and earlier after placement. A study published in the *International Journal of Oral and Maxillofacial Implants* (17:44–51;2002) compares the results of immediate vs delayed occlusal loading of implants in monkeys. The sample consisted of six monkeys. Mandibular posterior teeth were extracted on both sides, and the sockets were allowed to heal. Then, implants were placed on one

side and buried for 3 months. They were then uncovered and restored with crowns that were placed into function. At the time of uncovering these fixtures, implants were placed on the opposite side in the same arch of these animals. These implants were crowned and placed into occlusal function immediately. Three months after loading, the implant surfaces were evaluated histomorphometrically. The authors found that all implants were osseointegrated. No gaps or fibrous connective tissue were seen between the titanium surface and the alveolar bone. The authors found higher density of bone within the threads of immediately loaded implants compared with that in traditional delayed loading. The authors conclude that immediate loading may increase ossification around implants.

Tongue jewelry damages teeth and gingiva. Body piercing is a cultural practice that dates back centuries. But in recent years, this practice has experienced a resurgence among teenagers and young adults. Some of these individuals have their tongue pierced and place a “barbell” through their tongue. A study published in the *Journal of Periodontology* (73:289–297;2002) evaluated the effects of the barbell on the lingual gingiva and dentition. The sample consisted of 52 adults whose tongues were pierced. The gingiva lingual to the maxillary and mandibular anterior teeth was evaluated up to 4 years after placement of the barbell. In addition, any chipping of the posterior teeth was noted. The authors found that no subjects with tongue pierced less than 2 years ago exhibited lingual recession or tooth chipping. Lingual recession was found on mandibular central incisors in 50% of subjects wearing barbells for 2 or more years. Tooth chipping was found on molars and premolars in nearly half of the subjects with tongue pierced more than 4 years ago. The authors conclude that tongue piercing may be a significant factor for the development of lingual recession in the mandibular anterior teeth and for chipping in the posterior dentition. Increased time of wear is associated with increased prevalence of these complications.

Unilateral mastication causes temporomandibular joint alterations. The effect of occlusion or malocclusion on the temporomandibular joint (TMJ) has been debated for years. In a study published in the *Journal of Dental Research* (81:209–213;2002), researchers tested the hypothesis that unilateral mastication could change the extracellular matrix in the condyle and disk. The authors extracted the mandibular right posterior teeth in a sample of

12 adult rabbits. This forced the animals to chew only on the left side during the experiment. The condyle and disk were then evaluated histologically after 3 and 6 weeks to determine whether any alterations had occurred in their structure. The authors found that unilateral mastication resulted in a thickening of the condylar cartilage and alterations in the morphology of the nuclei within the cartilage. The alterations observed reflect a change in the metabolic activity of the chondrocytes and a change in the structure of the condylar cartilage of rabbits when the animals were forced to function unilaterally. Further studies are necessary to investigate whether the long-term effects of unilateral tooth loss could include TMJ osteoarthritis.

Missing posterior teeth associated with anterior disk displacement. Clinicians have long thought that temporomandibular disorders are caused by loss of posterior support and an increase in joint loading that produces changes such

as disk displacement and degenerative joint disease. A study published in the *Journal of Prosthetic Dentistry* (87: 45–50;2002) compared a sample of 82 asymptomatic and 263 symptomatic TMD patients to determine whether missing posterior teeth were more prevalent in the symptomatic group. The number of missing mandibular premolars and molars was recorded. The third molars were not counted as missing teeth. The results showed a small but significant increase in the prevalence of missing posterior teeth in symptomatic subjects with intra-articular temporomandibular joint (TMJ) disorders. The authors found a positive association between missing mandibular posterior teeth and the presence of disk displacement in this study. The authors believe that although the literature does not suggest that replacement of these teeth will prevent the development of TMJ disorders, the absence of these teeth may accelerate the development of degenerative joint disease.