What's New in Dentistry

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Arthrocentesis improves osteoarthritic temporomandibular joints. Osteoarthritis of the temporomandibular joint (TMJ) is a local inflammatory disease and is believed to be the outcome of a reaction to joint loading that exceeds its adaptive capacity. It may result in periods of intense pain and discomfort and may alternate with asymptomatic intervals. In the acute phase, patients complain of stiffness in the TMJ upon arising in the morning; severe joint pain with the jaw both while at rest and during movement in all directions; limited mouth opening; and difficulty in yawning, biting, and chewing. Crepitus in the arthritic joint may be present upon jaw movement. In the advanced stages, imaging of an osteoarthritic joint often shows erosion of the cortical outline, osteophytes, and may show a perforated disc. The treatment procedures applied to patients with TMJ osteoarthritis include joint unloading with interocclusal appliances, reduction of inflammation, pain relief, physiotherapy, and correction of behavioral factors. However, problems arise when nonsurgical treatment fails to alleviate the symptoms and surgical intervention is contemplated. In recent years, arthrocentesis (arthroscopic lavage and lysis) has been introduced as a treatment for arthritic temporomandibular joints. A study published in the *Journal of Oral and Maxillofacial Surgery* (2001;59:1154–1159) reports on the outcome of arthrocentesis in a group of patients with osteoarthritis. The sample for this study consisted of 38 osteoarthritic joints in 36 subjects. Initially, these patients were treated with the typical nonsurgical approaches mentioned previously. However, this group of patients did not respond, and arthrocentesis was performed on each of the affected joints. The patients' symptoms were evaluated over a period of up to five years. The pre- and postoperative level of pain, extent of dysfunction, and location of the pain were determined by patient self-assessment. Immediate improvement after arthrocentesis was noted in 26 of the 38 (68.4%) osteoarthritic temporomandibular joints. In 12 of the 38 (31.6%) joints, arthrocentesis had no effect on either pain or dysfunction. In these joints, the procedure acted as a diagnostic tool, and these patients were referred for further surgical intervention. In conclusion, arthrocentesis is a good first line of treatment for osteoarthritic joints, and patients have a 67% chance of obtaining relief of their symptoms.

Deep proximal furcation involvement is deleterious to adjacent teeth. Orthodontists often treat adult patients who have underlying periodontal defects. In some of these patients, the osseous defects will be improved with orthodontic leveling and eruption. But some periodontal defects do not improve with tooth movement and should be treated before orthodontics to avoid further bone loss during orthodontic treatment. An example of this type of defect is a deep furcation defect in a maxillary first molar. Disregarding these defects before orthodontics could result in a worsening of the periodontal health of not only that tooth, but also of adjacent teeth. A study published in the *Journal of Periodontology* (2001;72:871–876) made a retrospective evaluation of a consecutively treated population of patients with deep furcation involvement in a maxillary first molar. These patients were all treated nonsurgically with routine curettage. Their periodontal health was evaluated before and one year after nonsurgical periodontal therapy of the deep furcation. The authors were especially interested in the periodontal health of the adjacent second premolars. The results showed that proximal sites adjacent to sites with deep furcation involvements had significantly deeper baseline probing depths and had lost significantly more radiographic attachment at baseline compared with the control sites without deep furcation involvement. After nonsurgical treatment, probing depths adjacent to sites with deep furcation involvements were reduced less than in corresponding sites without any deep furcations. In conclusion, the authors believe that deep proximal furcation involvements are deleterious to the periodontium of the neighboring teeth. The presence of a deep proximal furcation involvement should consequently be considered a risk factor for the adjacent site in the same proximal space in any adult orthodontic patient.

Bone morphogenetic protein reduces ridge resorption after tooth extraction. Implants are becoming the preferred choice for replacing congenitally missing mandibular second premolars in patients with no arch length deficiency and a good facial profile. However, implants cannot be placed until patients complete their facial growth. If mandibular primary second molars remain after orthodontics, and if these teeth are ankylosed, they must be removed to prevent a vertical bone defect in the implant site. However, if the primary molar is extracted, the edentulous ridge will narrow over time, and the patient could require a bone graft before the implant can be placed. It would be advantageous to maintain the ridge width after extracting primary molars. A study published in the *International Journal of Oral and Maxillofacial Implants* (2001;16:400–411) describes the

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use of human bone morphogenetic protein to prevent ridge resorption after tooth extraction. The sample for this study consisted of six week-old male Wistar rats. The maxillary right and left first molars were extracted from each animal. In the extraction socket on one side, a resorbable piece of foam was placed in the socket as a control. On the other side, this resorbable foam was dipped in bone morphogenetic protein, which is a powerful stimulant for bone deposition. Then the animals were evaluated histologically, grossly, and with scanning electron microscopy. The healing of the socket containing the bone morphogenetic protein was much more rapid and much more complete at an earlier time than the control sockets. After 84 days, both control and experimental sites were similar in appearance. In conclusion, the use of bone morphogenetic protein in extraction sockets stimulates healing by deposition of bone at the margins and also from within the socket. The control sites eventually catch up, but during that time, the overall size of the alveolus could be adversely affected and become narrower.

Implants are successful in patients with periodontal disease. As the number of adult orthodontic patients increases steadily each year, orthodontists are treating more patients with debilitated dentitions characterized by tooth loss and periodontal disease. The treatment of these patients may require periodontal therapy and orthodontics to reposition the remaining teeth, followed by restorative dentistry and implants to replace the missing teeth. But if patients originally lost their teeth because of periodontal disease, will this problem also jeopardize the long-term prognosis of the implants? That question was addressed in a study published in the *Journal of Periodontology* (2001;72:977–989). This investigation compared the effect of generalized aggressive periodontitis and generalized chronic periodontitis on the bone around implants that were placed into the mouths of these individuals. The aggressive periodontitis group received 36 implants, and the chronic periodontitis patients received 12 implants. The implants were dispersed adjacent to teeth that had undergone previous periodontal bone loss. The bone levels were evaluated at intervals of one, three, and five years after the placement of the implants. The radiographs were digitized and measured. In both patient groups, in the first three years after insertion of the implants, the tissues were healthy. After the third year in the aggressive group, the probing depth and amount of attachment loss increased. The bone loss recorded at the teeth and implants in the course of the study can be considered moderate in both patient groups. The implant success rate in the aggressive periodontal group was about 10% below that of the chronic periodontal group. Implants can be placed in patients with periodontal disease if their periodontal health is maintained.

Extraction of mandibular third molars during sagittal osteotomy doesn't increase risk of mandibular fracture. Bilateral sagittal osteotomy is a common procedure to correct mandibular retrognathia. Some patients who require this surgical procedure may have mandibular third molars impacted within the alveolus. The typical approach is to extract the mandibular third molars at least six months before the sagittal osteotomy in order to reduce the possibility of mandibular fracture postoperatively, but this requires an additional surgical procedure. Could third molars be removed during the orthognathic surgery? This question was addressed in a study published in the *Journal of Oral and Maxillofacial Surgery* (2001;59:854–858). The sample for this retrospective study consisted of 500 sagittal split ramus osteotomies. They were divided into two groups. Half of the sample had third molars extracted at the time of the surgery, and the other half of the sample were either congenitally missing the third molars or had them extracted a year before surgery. The incidence of fracture was compared between the two groups. The overall incidence of fracture in the entire sample was 2% and was slightly higher in the group that had third molars extracted at the time of the sagittal osteotomy (3%). If third molars were extracted one year before the surgery, then the incidence of mandibular fracture was 1%. Therefore, in some orthognathic surgery patients, it may be easier for the patient to simply have the third molars extracted at the same time as the orthognathic surgery to minimize the trauma and expense.

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