What's New in Dentistry

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Narrow mini-implants show high success rate. Today in dentistry and orthodontics, implants are rapidly becoming the treatment of choice for replacing missing maxillary lateral incisors. However, the interproximal space that the orthodontist leaves for the implant may be only about 6 mm. This makes the use of the conventional 4-mm-wide implants more difficult. However, mini-implants measuring only 3 mm in diameter were developed a few years ago, and reports are now appearing in the literature regarding their long-term success rates. A study published in the Journal of Prosthetic Dentistry (2000;84:50-54) summarizes the effectiveness of 52 single-tooth mini-implants placed in 44 individuals. The age range of the sample was 18 to 74 years. Crowns were placed on all implants, and the periodontal health and radiographic appearance were evaluated 5 years after restoration. The results show that 3 implants failed and were replaced. Therefore, the overall success rate was 94.2% after 5 years. Clinical evaluation of the periimplant mucosa by using periodontal indices was satisfactory. Plaque scores and gingival inflammation were low. The mean probing depth was 2.3 mm, which is less than that reported in other studies. The mean marginal bone resorption after 5 years was 0.8 mm, with a range of 0.5 to 1.1 mm. In conclusion, the authors found that the miniimplants were successful in all respects for replacing missing teeth in areas where the implant space is minimal. Therefore, these mini-implants would be ideal for the maxillary lateral incisor and mandibular incisor regions.

TMJ discectomy may be successful long-term. Occasionally, an orthodontic patient may a have a chronic temporomandibular joint (TMJ) disorder involving the meniscus. If the disc is severely damaged because of perforation or deterioration, the patient's symptoms may be difficult to manage. Artificial replacement of the disc with a variety of materials has met with guarded success. What about simply removing the disc entirely and allowing the patient to function on the temporomandibular ligaments? Could this reduce the symptoms long-term without causing further deterioration? Few studies have evaluated changes in the joint space in patients after discectomy. This type of procedure has not been popular recently. However, an article published in the Journal of Oral and Maxillofacial Surgery (2000;58:739-745) reports the results of a sample of patients who underwent discectomy between 1973 and 1991 in Japan. The sample consisted of 33 patients (35 joints)

who had chronic TMJ disorders and severely damaged discs. The patients underwent total discectomy without disc replacement. Then they were observed for periods ranging from 5 years up to 24 years after surgery. Follow-up evaluation involved magnetic resonance imaging and clinical assessment of symptoms. None of the patients had any masticatory disorders after surgery, and all were satisfied with the outcome of the surgery. Although 30 patients had no joint pain, 3 patients (3 joints) had occasional, mild joint pain. Joint noise was confirmed with the use of a stethoscope in 8 patients. No patient had masticatory muscle tenderness. Mouth opening was not limited in 31 patients and was limited in 2 patients. In conclusion, the authors believe that the success appears to be caused by the formation of new tissue between the condyle and fossa, which acts as a pseudodisc.

Eighty percent of implants experience migration of the gingival margin. Single-tooth implants are often used to replace congenitally missing mandibular second premolars and maxillary lateral incisors in orthodontic patients. Each of these areas is challenging for the surgeon and restorative dentist, but the maxillary lateral incisor is by far the most critical, because it is in the "esthetic zone." Any inadequacy in the restoration or unpredictable change in the supporting gingiva could be visible when the patient smiles and therefore could compromise the final esthetic result. Do unpredictable changes occur in the level of the gingival margin after restoration of implants? A study published in the International Journal of Oral and Maxillofacial Implants (2000;15:527-532) evaluated the stability of the gingival margin around restored implants. The sample consisted of 65 implants. They had been placed in 11 patients. In order to assess the movement of the gingival margin, an initial determination was made at the time the abutment was placed on the implant. Then, the gingival margin was assessed at intervals ranging up to 1 year. The authors found that the gingival margin migrated apically in 80% of the implants. The greatest change occurred on the labial aspect. However, the migration occurred within the first 3 months. After this time, the gingival margin position became stable. In conclusion, the authors have shown that the labial gingival margin around single-tooth implants does migrate slightly apically, but the change occurs early and does not progress.

Mandibular set-back surgery reduces airway. Ortho-

dontists occasionally treat patients with obstructive sleep apnea (OSA). If a patient with severe OSA also has mandibular prognathism and requires mandibular set-back surgery to resolve the skeletal discrepancy, what will happen to the dimensions of the pharyngeal airway? A study published in the Journal of Oral and Maxillofacial Surgery (2000;58:282-285) reported the answer to this important clinical question. The sample consisted of 14 adult patients who had had mandibular set-back surgery. Cephalometric radiographs were obtained before surgery, within 2 weeks after surgery, and then between 1 and 3 years after surgery. Measurements were made of not only the amount of setback, but also of the pharyngeal space to determine how much it was reduced. At the long-term follow-up, the average amount of mandibular set-back was 9 mm. This corresponded to about a 15% decrease in the length of the mandible. The mean reduction in the pharyngeal airway space was 5 mm. This corresponded to about a 30% decrease from the preoperative value. However, the tracings were only 2-dimensional. In addition, the authors did not measure changes in airflow before and after surgery. Whether this anteroposterior change would complicate a patient's breathing would have to be answered in a different study. In conclusion, the pharyngeal airway does decrease 2-dimensionally, but this reduction may not have any affect on the patient's ability to breathe.

Hyperocclusion causes bone loss around implants.

Single-tooth implants to replace congenitally missing mandibular second premolars could be subjected to excessive occlusal loads in certain individuals who clench or brux their teeth. Is occlusal overload detrimental to single-tooth implants? In a study published in the International Journal of Oral and Maxillofacial Implants (2000;15:425-431), the influence of controlled occlusal overload on peri-implant tissue was evaluated in experimental animals. The sample consisted of 4 monkeys who were 5 to 6 years of age. Two implants were placed in the mandibular second premolar and first molar area on the right side. After 3 months, crowns were placed on the implants, and excessive occlusal height of 100, 180, and 250 microns was added to the crowns to place them in hyperocclusion with the opposite dental arch. The animals were subjected to occlusal overload for 4 weeks. Clinical examination of the peri-implant tissue and surrounding bone was made before and at the termination of the traumatic occlusion. The results showed that the 180- and 250- micron excess height animals showed a tendency to develop greater probing pocket depths compared with preocclusal loading. The greatest changes were seen on the radiographs. The control and the 100-micron height showed no radiographic changes in the bone level around the implants. However, the 180- and 250micron heights showed extensive mesiodistal bone resorption to almost half of the implant body. In conclusion, at least in this animal model, excessive occlusal overload is extremely detrimental to the maintenance of osseo-integration around single-tooth implants.