Surgery first for orthognathic patients?


Traditionally, comprehensive orthodontic treatment for alignment of the dental occlusion, incisor decompensation, tooth rotation, and arch coordination is done before orthognathic surgery. Recently, there has been a trend toward the surgery-first approach, in which the preoperative orthodontic setup is done 1 to 2 months or immediately before the surgery. Three retrospective cohort analyses and 11 case reports for the surgery-first approach were reviewed. The overall conclusions for the long-term outcomes of the surgery-first approach were the following: (1) the patients’ facial esthetics and dental functions were improved early in treatment rather than after a period of possibly years; (2) the patients’ swallowing and speech functions improved after surgery; (3) there were faster rates of orthodontic tooth movement immediately after surgery, thus reducing overall treatment times; (4) the patients’ cooperation improved during the rest of the orthodontic treatment; (5) orthodontic tooth movement was easier after restoration of the normal functional and anatomic relationships of the bony skeleton and surrounding soft tissues; and (6) stability of the skeletal results in the transverse, vertical, and sagittal dimensions was equal to, or in some cases superior to, that achieved with the more traditional orthodontics-first approach. Some disadvantages of the surgery-first approach were a higher bond failure rate, difficulty in bending the surgical wire to fit into the un-leveled dentition, the requirement for more surgical movement to compensate for postoperative orthodontic movement, the impacted mandibular third molars, and the postsurgical occlusal instability. In surgery-first patients, it is important to obtain a precise diagnosis coupled with detailed treatment planning, including an accurate prediction of the postoperative orthodontic dental alignment; provide appropriate incisor decompensation and arch coordination; and allow for occlusal settling to take place. Further studies, especially prospective cohort studies or randomized controlled trials, are needed to provide additional clinical evidence.

Reviewed by Khushbu Patel

Miniscrew anchorage


Miniscrews have been overwhelmingly accepted in orthodontic practice over the past 15 years. New inventions and better ways to use and improve existing products are associated not only with benefits, but also with certain risks and complications. The purpose of this article was to let practitioners know about the risks and complications associated with miniscrews. Fracture, failure, tissue damage, and pain are associated with miniscrews and should be considered by the clinician and carefully explained to the patient before treatment. Fractures can occur with both insertion and removal of the miniscrews and are closely associated with excessive torque. Where cortical bone is thicker in the mandible vs the maxilla, more torque is needed to insert the screws; therefore, they have a higher fracture rate. To help prevent fractures, the screwdriver head must be (1) positioned on the same axis of the screw, (2) turned slowly, and (3) turned by using a driver with a torque limiter. Screw failure has a long list of host factors, and failure typically occurs within the first week after placing the screw. Cortical bone and the proximity to adjacent roots have been shown to be 2 major factors. Oblique placement increases the percentage of cortical bone contact and decreases the chance of contacting any roots. Hard tissue damage is mostly associated with root damage. Recommendations are placement in wide interradicular areas, with a smaller screw size and an oblique path of insertion. Soft tissue damage occurs with slippage during insertion, miniscrew auxiliary irritation, and placement into nonkeratinized tissue. Pain and discomfort are limited to less than 10% of patients 1 day after placing miniscrews with a flapless procedure. Increases in success rates are closely associated with decreases in risk factors.

Reviewed by Kevin Walker
Gingival response with self-ligating and conventional brackets

Manufacturers of self-ligating brackets claim that the use of their systems can reduce the accumulation of bacterial plaque and improve oral hygiene. The purpose of this study was to compare the effect of self-ligating brackets vs conventional brackets on gingival indexes of patients receiving orthodontic therapy. Twenty-two patients were divided into 2 groups: group 1 was treated with self-ligating brackets (Damon III system), and group 2 was treated with conventional brackets (Synthesis system). The patients ranged in age from 16 to 30 years old and had comparable relative crowding. Their treatment plans did not require extractions, interproximal reduction, or rapid maxillary expansion. Both groups were given the same oral hygiene instructions and reinforcement. The patients’ plaque indexes, gingival indexes, and probing depths were recorded at matched intervals after the initial bonding. Subgingival microbial samples were taken from teeth 14 and 24 (Fédération Dentaire Internationale numbering system). The results indicated no statistically significant difference between patients treated with self-ligating brackets vs conventional brackets in terms of their plaque indexes, gingival indexes, or probing depths. The indexes increased for both self-ligating and conventional brackets after initial bonding. The subgingival microbial environment in both groups showed a shift toward periodontal pathogenic anaerobes after initial bonding. The findings suggest that the inflammatory response to orthodontic treatment is multifactorial. The data from the authors’ admittedly small sample do not suggest a comparative advantage of self-ligating brackets vs conventional brackets in terms of gingival response. The authors emphasized the importance of good oral hygiene for patients regardless of the bracket system used.

Reviewed by Jesse Wright

First molar extractions

This article presents clinical scenarios when extraction of a compromised permanent first molar (PFM) is viable and reviews factors that warrant careful consideration. Such scenarios include PFMs with endodontic treatment, large carious lesions, large restorations, and apical pathoses; skeletally divergent malocclusions; and anterior open bites. Factors to consider among many others are timing of the extractions, balancing and compensating extractions, occlusal relationships, and time and cost of treatment. Maxillary PFM extractions should occur when the second molar is unerupted. This allows the second molar to erupt mesially to contact the second premolar. Mandibular PFM extractions should occur between 8 and 9 years of age to allow maximum mesial movement of the second molar. Extractions before this age increase the potential for distal drifting, tilting, and rotation of the unerupted second premolar. A compensating extraction is the extraction of the opposing PFM and prevents overeruption of the opposing molar. This commonly occurs when the mandibular PFM is extracted in the mixed dentition. A balancing extraction is the extraction of the contralateral PFM. It is useful in patients with severe bilateral crowding and for prevention of midline shifts. In Class I patients, balancing and compensating extractions should be considered with mandibular PFM extraction to prevent midline shifts and overeruptions. When the maxillary PFM is extracted, a compensating extraction is not always necessary. In Class II Division 1 patients when the maxillary PFM is in occlusion with the mandibular second premolar, a compensating extraction may not be necessary when a mandibular PFM is extracted. Extractions of mandibular PFMs in brachyfacial Class II Division 2 patients with deep overbites should be avoided. In patients with significant crowding, extraction of compromised PFMs is justified over healthy premolars.

Reviewed by Jose Navarro