

“Making Bites Better”

by Catherine Oden Fulton, D.D.S.

There is a common misperception about orthodontics that has led both the general public and many in the dental community to overlook a vital fact about the value of orthodontic treatment. Simply stated, that misperception is: Orthodontics is all about creating a beautiful smile.

While the esthetic outcome of an orthodontic case is an obviously important consideration for the patient, the effect of orthodontics on dental health is equally crucial. In addition to producing a beautiful smile, the goal of orthodontic treatment is to produce good occlusion. Good occlusion promotes a healthy periodontium, which is the absence of excessive wear, mobility, bone loss and temporomandibular joint dysfunction.

Typically, an orthodontic case begins with a basic evaluation of the patient’s periodontium, which is done during the first examination prior to placing orthodontic appliances. This evaluation includes a periodontal assessment for bone loss and tooth mobility. Bone loss does not prevent a patient from undergoing orthodontics as long as periodontitis is not active and the patient is following his or her doctor’s treatment plan. The ability to move a tooth with excessive wear, fremitis, bone loss or a premature contact out of traumatic occlusion is one of the many benefits of orthodontic treatment.

An orthodontist compares a patient’s centric relation (CR), centric occlusion (CO) and maximum intercuspation (MI). Ideally, CR, CO and MI are in harmony. It is important to note that centric relation is no longer considered to be the most posterior and superior position of the condyle in the glenoid fossa. Currently, centric relation is defined as the condyle in the most superior position. Centric occlusion is the initial point of contact in centric relation.

An obvious example of where a discrepancy between CO and MI exists is in pseudo-Class III patients, who are typically able to bite with their incisors in an edge-to-edge position. However, these patients must protrude the mandible in order for the posterior teeth to occlude. It is important to begin orthodontic treatment on pseudo- Class III cases at an early age in order to prevent the mandible from growing asymmetrically. A more subtle example of a CO-MI discrepancy is found when anterior teeth create orthopedic instability.

In an orthodontic office this might be seen in an adult patient with temporomandibular joint dysfunction whose maxillary central incisors are lingually inclined. Generally, patients with deep bites have good anterior and canine guidance. However, if lingually inclined incisors lose their centric stops, they may supra-erupt and cause an interference when occluding. The interference will force the mandible posteriorly, increasing pressure on the ligament of the articular disc and causing TMJ discomfort. To relieve pressure in the TMJ area, these maxillary incisors are moved



forward and their centric stops reestablished. Reestablishing centric stops will also thwart potential periodontal problems by preventing these teeth from supra-erupting onto the labial gingiva of the opposing mandibular incisors.

Protrusive and excursive movements are also evaluated in the practice of orthodontics. The orthodontist's goal is to establish anterior guidance during protrusion and canine guidance during left and right excursive movements. This is not always attainable with orthodontics alone. A team approach, which includes a restorative dentist and/or an oral surgeon, may be required.

A restorative dentist may be needed to properly reshape a canine when the aberrant habit of grinding has caused excessive wear. The absence of good canine guidance may manifest itself as interference on a lateral incisor, resulting in mobility and bone loss of the lateral. Splints may be needed intermittently over a long period of time to protect dentition from excessive wear. Typically, an oral surgeon is a part of the treatment team to assist a patient with a skeletal component to their case. Jaw discrepancies often require maxillofacial surgery to correct the facial deformity.

Over the years, orthodontists have increased their armamentarium to accomplish treatment goals. By utilizing more fixed functional appliances and implants, there is potential to have greater success with orthodontics alone without the need for surgical assistance. Functional appliances maximize growth. The value and variety of implants used in orthodontics are increasing. For example, temporary implants or temporary anchorage devices (TADs) are used with orthodontic therapy to intrude maxillary molars when correcting anterior apertognathia. Permanent implants are routinely used to replace congenitally missing teeth. The roots of adjacent teeth must be angled and enough space created for the implants. These developing treatment modalities are being used to aid in facial growth, tooth movement and replacement where such results were not possible in the past.

Today, the American Association of Orthodontists recommends that children be seen by an orthodontist prior to age seven to assess growth and spacing in order to determine if early intervention is needed. Cases are starting and finishing at early ages. A case may finish prior to the second molars being fully erupted. Patients are routinely asked to wear their retainers indefinitely to maintain the alignment of their teeth. The original set of orthodontic retainers given to patients at the end of their treatment may not have incorporated second molars. Therefore, these teeth may supraerupt causing an interference. If patients who wear their orthodontic retainers have an equilibration to relieve interference of a second molar without adjusting or redesigning the retainer to include the second molar, that tooth may simply supraerupt again. This may occur long after the patient has finished seeing his or her orthodontist.

Over time mesial migration or a narrowing of the lower jaw occurs. Mesial migration is the tendency for teeth to continually move toward the midline. This can give rise to crowding in the lower anterior region. Flat broad contacts help prevent crowding. Occasional light interproximal stripping by a patient's general dentist during a regular check up over the course of a lifetime may be warranted.

Break down of the periodontium, as evidenced by excessive wear, mobility, and bone loss, is often a direct result of poor occlusion. There is a correlation between occlusion and temporomandibular joint dysfunction. The need for a splint or equilibration may arise during orthodontic treatment. Please note that orthodontists generally have one treatment fee over a finite treatment time. It is sometimes difficult for an orthodontist to add treatment time and procedure costs to an existing contract. Depending on the circumstances, these procedures may be referred back to the patient's general dentist, the quarterback of the dental team.

Good occlusion and a healthy periodontium are vital factors in all treatment modalities of dentistry. Through teamwork and good communication among all members of the patient's dental professional team, beautiful smiles will also be healthy smiles.

Catherine Oden Fulton, DDS

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