Perspectives from the Hygiene Chair

The Importance of a Complete Medical History in Orthodontic Treatment Planning 🛛 🖓

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Dental hygienists play a key role in making sure that the dental office obtains a complete and comprehensive medical history before initiating any treatment. An often overlooked consideration is the importance of how medical findings can affect an orthodontic treatment plan.



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The goal of a treatment plan is to achieve optimal oral health, esthetics, and function for the patient. In treatment planning for a prospective orthodontic patient, there are two primary questions to be addressed: What is the patient's main concern? And, perhaps even more important, are there any medical contraindications or significant considerations to be mindful of in treatment planning?

The role of the dental hygienist as a co-clinician in treatment planning for the medically compromised orthodontic patient is extremely significant. The patient will ordinarily state his or her main concern upon first arriving, or even when calling to make the first appointment. Nonetheless, an interview with the patient or parent/guardian can provide the clinical team with crucial details about the patient's present status and the results which he or she wishes to obtain, even before the tools of radiography, photography, and intra- and extraoral examination are brought to bear. A thorough review of the medical history is, in many respects, the most significant procedure to determine whether there are contraindications or important modifications to the treatment of the particular case. Here again, the hygienist can begin to make determinations regarding treatment contraindications as soon as the patient is sitting in the dental hygiene chair.

Orthodontics is noninvasive, so there are not many contraindications for treatment, yet a thorough assessment can yield valuable and useful information that will guide the treatment plan and ensure the patient's safety. This paper will present a partial review of some of the diseases and conditions that might be present in a patient seeking orthodontic care, along with recommendations regarding contraindications and treatment modifications by the dentist and dental hygienist for each condition.

The dental hygienist must be knowledgeable regarding commonly occurring conditions and their possible treatment implications. The presence of any of these conditions in the patient's history should prompt an interview by the hygienist to glean additional details. The hygienist should then highlight the areas of concern, thereby alerting the dentist of the need for special considerations in planning the treatment of the case. A preliminary discussion of findings between the hygienist and the dentist, as well as consultation with the patient's physician, may be warranted, depending on the seriousness of the condition.

After consideration of the medical history, the dental hygienist should perform an intra- and extraoral examination, documenting findings such as the class of occlusion, parafunctional habits, and soft tissue status. In addition, the hygienist should note specific considerations that affect the patient's dental hygiene care and oral hygiene education.

The tear-out table in the center of this issue of the *Journal* (also available for download at aacortho.com) comprises a partial list of conditions, medical history findings, and special considerations in dental hygiene and orthodontic treatment planning.

Conclusion

Collaborative treatment planning for the medically compromised orthodontic patient begins with the dental hygienist's thorough review of the medical history. Guided by concern for the patient's safety during treatment, it defines a trajectory toward optimal health, esthetics, function, and ultimately a satisfied patient and a fulfilled dental team.

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*According to the American Dental Association:

Antibiotic prophylaxis recommendations exist for two groups of patients:

- those with heart conditions that may predispose them to infective endocarditis
- those who have a total joint replacement and may be at risk for developing hematogenous infections at the site of the prosthetic

The current recommendations cite that use of preventive antibiotics before certain dental procedures might be useful for patients with:

- artificial heart valves
- a history of infective endocarditis
- a cardiac transplant that develops a heart valve problem
- the following congenital (present from birth) heart conditions:
 - unrepaired or incompletely repaired cyanotic congenital heart disease, including those with palliative shunts and conduits
 - a completely repaired congenital heart defect with prosthetic material or device, whether placed by surgery or by catheter intervention, during the first six months after the procedure
 - any repaired congenital heart defect with residual defect at the site or adjacent to the site of a prosthetic patch or a prosthetic device

**According to Align Technology:

Invisalign® aligners and retainers and Vivera® retainers are made from polyurethane or polyurethane/copolyester. The FDA has approved polyurethanes for use in the human body. Invisalign aligners and retainers and Vivera retainers do not contain latex or Bisphenol A (BPA). Based on Align's biocompatibility testing, Align has found that some patients may experience symptoms or a reaction to the material, but Align believes the number of these instances is very low. In most cases, symptoms of a patient's reaction reported from doctors or patients are similar to those experienced with other forms of orthodontic treatment (e.g., soreness of teeth, abrasions or lesions on the gums or mouth, headache, irritated tongue, swelling of oral tissues).

Medical History	Orthodontic Concerns
*High Risk for Infective Endocarditis *Total Joint Replacement	 Prophylactic antibiotics might be indicated for procedures likely to cause bleeding,¹ such as extractions, Interproximal Reduction (IPR), or fitting and cementing bands or temporary anchorage devices (TADs), as part of the patient's orthodontic treatment.²
Cardiovascular Disease	 Be aware of possible contraindications to epinephrine in local anesthetics. Determine if patient is on anticoagulant drugs. Note that calcium blocker medications might cause gingival hyperemia. Note that some medications might cause xerostomia. Avoid long, demanding appointments.^{34,5}
Bleeding Disorders	 Patients should not take aspirin or other nonsteroidal anti-inflammatory drugs (NSAIDs) for discomfort.^{6.7,8} Encourage patients to maintain excellent, atraumatic oral hygiene. Avoid chronic irritation from orthodontic appliances.^{3,4,5} Remember that clear aligners can cause gingival irritation. Make sure the aligners are trimmed to avoid impingement on the gingival tissue.
Bisphosphonate Therapy	 Orthodontic tooth movement is decreased after bisphosphonate administration. A harmful and unwanted side effect of bisphosphonate therapy, especially if given IV, can be osteonecrosis. Inform patients of possible harmful complications.^{9,10,11}
Patients Taking Aspirin or Other Nonsteroidal Anti-inflammatory Medications (NSAIDs)	• The use of procedures designed to accelerate orthodontic movement through an induced inflammatory response (such as Propel) is contraindicated. ¹²
Sickle-Cell Anemia	 Orthodontic treatment is not contraindicated, but oral hygiene must be excellent and the patient should be free of any complications. Ortho planning must be adjusted to restore the regional microcirculation by increasing the rest intervals between adjustments (or having patients wear aligners longer than 2 weeks per aligner). The treatment plan should reduce the movements of the teeth and the forces applied to them (this can be requested through the Invisalign ClinCheck). Appliances (such as extra oral headgear) that apply intense orthodontic or orthopedic forces require more careful management. Extractions are contraindicated. If extractions are absolutely necessary, they are best carried out in a hospital by an oral maxillofacial surgeon under complete medical care. General anesthetics are also contraindicated and, therefore, orthognathic surgery is not recommended.^{3,4,5}
Epilepsy/Seizures	 Removable appliances should be utilized with caution, as they can get dislodged during a seizure. Clear aligners should be relieved around the gingival margins, and bonded retainers should be avoided, because of the risk of drug-induced gingival hyperplasia that might be exacerbated if the aligners impinge upon, or if the bonded retainers are too close to, the gingiva.
Diabetes	 Well-controlled diabetes mellitus is not a contraindication for orthodontic treatment. The patient should be made aware of the consequences of poor oral hygiene and the increased risk of periodontal disease. Diabetic-related microangiopathy can affect the peripheral vascular supply, resulting in unexplained toothache, tenderness to percussion, and even loss of vitality. Light physiological forces should be used in all patients to avoid overloading the teeth.^{3,4,5}
Asthma	 Patients with a history of asthma seem to be at a high risk for developing excessive root resorption during orthodontic treatment.⁴ Therefore, low forces must be used for these patients. Avoid supine positioning, if possible.
Allergies	 If using metal brackets, use nickel-free brackets, or, preferably, Clear Aligner Therapy.⁴ Be aware of possible latex allergy. Invisalign aligners do not contain latex.^{**}
Chemotherapy/Radiation Therapy	 Ortho treatment should be discontinued because treatment can exacerbate thrombocytopenia and agranulocytosis. Discontinue orthodontic treatment until one year after the patient has completed treatment and is disease-free. Note that roots may have been damaged during medical treatment, and orthodontic forces can damage root structures. Care should be taken so that orthodontic forces and mechanics minimize the risk of root resorption. Clear Aligner Therapy may be the treatment of choice for those patients. Discuss the pros and cons of orthodontic treatment with the patient and the patient's physicians.^{3,13}
Xerostomia	 Dry mouth can be a problem during orthodontic treatment for two reasons: Dry tissues are more prone to irritation and ulceration, and patients with dry mouth are more prone to decay. Therefore, it is probably best to utilize Clear Aligner Treatment rather than traditional orthodontics with its sharp brackets and wires. In addition, the use of fluoride supplementation along with moisturizing gels is advisable. Without the lubricating effects of saliva, it may be much more difficult for patients to tolerate wearing aligners. It may be advisable to test the patient's ability to tolerate clear aligners by having the patient wear an office-fabricated, simple, vacuum-formed clear plastic aligner prior to initiating Clear Aligner Therapy.
Smoking	 Smoking will cause clear aligners and retainers to stain and discolor. Smoking has a negative effect on periodontal health, and can thus delay proper tooth movement and increase the risk of orthodontic relapse.¹⁴



