ORTHODONTIC MANAGEMENT IN MEDICALLY COMPROMISED PATIENTS

Shantnu Khattari, Madhvi Bhardwaj

ABSTRACT

Orthodontic treatment followed by the achievement of a proper esthetically accepted dentition improves the patients overall well being. With increasing awareness patients with medically compromised situations too seeks orthodontic correction of misaligned teeth. This paper reviews the management of medically compromised patient during orthodontic treatment.

Key words: Medically Compromised Patients; Systemic Disorders; Orthodontics.

The orthodontic treatment of patients with medical disorders is becoming an increasing aspect of modern day practice. Orthodontists need to be aware of the possible clinical implications of many of these diseases. In addition orthodontists see their patients every 6 to 8 weeks and rapidly developing medical problems can manifest themselves at any age. Orthodontists must remain vigilant as they may be the only health care professional seen by otherwise fit, young patients on a regular basis. Research studies suggest that that the correction of malocclusion improves self esteem of patients. Orthodontic treatment improves the overall psychological outcome in systemically compromised patients along with other medical treatment. This paper reviews the management of medically compromised patient during orthodontic treatment.

Endocarditis: Infective endocarditis (IE) is a rare condition. Despite advances in antimicrobial therapy, substantial morbidity and mortality can result from infective endocarditis. The National Institute for Health and Clinical Excellence (NICE) issued the most recent guidance for dental practitioners in the United Kingdom in March 2008 (table 1). NICE has recommended that antibiotic prophylaxis should not be used in patients at risk of infective endocarditis undergoing dental procedures. In addition NICE advises that chlorhexidine mouthwash should not be offered as prophylaxis against IE in at risk patients. American heart association recommends that antibiotic prophylaxis should be given in all cardiac patients with the highest risk of Infective Endocarditis before, in all dental procedures that involve manipulation of gingival tissues or the periapical region of teeth or perforation of the oral mucosa. Prophylaxis is not recommended at placement of removable appliance, placement of orthodontic brackets, and bleeding from trauma to lip or oral mucosa. Among all orthodontic procedures, band fitting and removal of band are considered to be greatest laceration to gingival margins. Orthodontic considerations were as follows. An endocarditis risk assessment must be done with the consultation of patient’s cardiologist. The orthodontic procedure should be started only after establishing a good oral health. Prior to orthodontic procedure 0.2% Chlorhexidine mouthwash to be used and bonded brackets should be preferred rather than bands. Antibiotic prophylaxis should be used if required and orthodontist must be vigilant for any deterioration of oral health.

Bleeding Disorder: Disorders of the blood, whether acquired or inherited can affect the management of orthodontic patients. Mild bleeding disorders are not problematic to the orthodontic treatment but patients with severe disorders may require more care. Hemophilia A is the most commonly occurring bleeding disorder commonly encountered in dental clinic. Orthodontic considerations includes keeping the duration of orthodontic treatment to minimum, avoidance of gingival or mucosal irritation, mucosal cuts during the placement and removal of arch wire. Adherence to non extraction treatment plan if possible. Bonding should be preferred than banding. Elastic ligatures should be used than ligature wires and in painful condition asprin should be avoided. If extractions or surgery cannot be avoided, the management of patients with haemophilia relies on careful surgical technique. This includes an attempt at primary wound closure and the following regimen to increase Factor VIII production with 1-desamino-8-D-arginine vasopressin (DDAVP), replace missing Factor VIII with cryoprecipitate, Factor VIII, fresh frozen plasma or purified forms of Factor VIII, antifibrinolytic therapy with tranexamic acid or epsilon-amino caproic acid (EACA).

Leukemia: Orofacial complications of leukaemia in children include lymphadenopathy, spontaneous gingival bleeding caused by thrombocytopenia (reduction in platelets), labial and lingual ecchymoses and mucosal petechiae, ulceration, gingival swelling, and infections. The orthodontist may be the first to notice signs of the illness. Patient receiving chemotherapy have an increased potential for infection which is the leading cause of morbidity in immune-compromised patients. Orthodontic considerations includes, delaying orthodontic treatment until the patient has completed chemotherapy and is in long term remission. Consultation should always be done with patient’s physician regarding prognosis of the disease. Orthodontic treatment should always be considered as an elective procedure. In case if orthodontic treatment has already been started, smooth appliances such as band and loops and fixed lower lingual arches, all fixed appliance parts should be removed. Removable appliances and retainers that fit well may be worn as long as tolerated by the patient who shows good oral hygiene, if band cannot be removed vinyl mouth guards or orthodontic wax should be used to decrease tissue trauma, to counter xerostomia use of sugar free chewing gum, candy, saliva substitutes, frequent sipping of water.
and/or moisturizers is recommended, light orthodontic force should be used, treatment mechanics should be simple, lower jaw should not be treated.

**Sickle Cell Anemia:** It is defined as a hereditary type of chronic hemolytic anemia caused by genetic mutation of hemoglobin molecule. The increase in number of malocclusion in patients with sickle-cell disease can be related to muscular imbalance, absence of labial sealing. Orthodontic consideration includes that orthodontic treatment is not contraindicated for sickle-cell anemia if necessary care should be taken to prevent other infection from contaminating clinical setting, staff and the orthodontist. Appointment should be during chronic phase of the disease because orthodontic procedures cannot be performed during periods of crisis or acuteness and intense orthodontic or orthopedic forces such as extraoral anchorage or maxillary anchorage should be managed with more care and orthodontic forces should be light.

**Juvenile Diabetic Mellitus:** The orthodontist should be aware of the significance of diabetes in relation to susceptibility to periodontitis. Orthodontic consideration includes delaying orthodontic treatment when diabetes is poorly controlled. Periodontal health should be monitored during treatment and proper oral hygiene instruction should be given and appointments should be at the morning following insulin injection and breakfast. Delayed skeletal maturation and decreased cephalometric linear and angular parameters are common in patients with juvenile diabetes; and it should be considered during planning of orthodontic treatment.

**Bronchial Asthma:** Patients with asthma have a greater rate of caries development than the nonasthmatic counterparts because of antiasthmatic drugs induced xerostomia and the common habit of mouth breathing in asthmatic patients and immunological factors leads to gingival inflammation. Orthodontic consideration includes before, during and after orthodontic treatment. Before the treatment clinician must assess the risk level by taking an oral history of illness; assessing the frequency and severity of acute episodes, orthodontic treatment should be performed only on asthmatic patients who are well controlled and asymptomatic and orthodontist should be aware of the potential for dental materials and products to exacerbate asthma. During treatment prolonged supine position, bacteria laden aerosols from plaque or carries lesions and ultrasonically nebulized water can provoke asthma triggers, improper positioning of suction tips, fluoride trays or cotton rolls could trigger hyperactive airway response in sensitive patients and in case of emergency medical services should be administered. Post treatment NSAIDS include ketorolac, ibuprofen and naproxen should be avoided as these may trigger allergy and drug of choice should be acetaminophen.

**Chronic Renal Failure:** The most common renal condition to present to the orthodontist is chronic renal failure (CRF). In children with chronic renal failure, growth can be retarded and tooth eruption delayed. Early effect is enamel hypoplasia due to defect of enamel development and mineralization. If gingival growth is present orthodontic treatment should be delayed until excessive gingival tissue has been removed and patient has adequate level of plaque control. Treatment could be deferred if the renal failure is advanced and dialysis is imminent. If possible treatment could be carried out prior to transplantation to avoid the risks associated with immunosuppressant drugs. Appointments should be scheduled on non-dialysis days. The day after dialysis is the optimum time for treatment for surgical procedures as platelet function will be optimal and the effect of heparin will have worn off.

**Cleido-cranial Dysplasia:** It is an autosomal disorder characterized by growth disturbance of bones of cranial vault, clavicle, maxilla, nasal and lachrymal bones, over retained de-
JUVENILE RHEUMATOID ARTHRITIS: Juvenile arthritis can affect any joint and damage to TMJ can lead to bony ankylosis. Sometimes it may also lead to severe Class II jaw discrepancy due to restricted growth of mandible. Orthodontic considerations were chin Cup should be avoided, class II elastics and functional appliances should not be given in patients with moderate mandibular deficiency as they produce stress on TMJ, functional appliance can be given in patients involving TMJ as they are joint protector, in severe mandibular deficiency, mandibular surgery should be avoided and maxillary surgery and genioplasty should be considered.

JUVENILE PERIODONTITIS: It is characterized by rapid loss of alveolar bone and periodontal ligament attachment. Placement of fixed orthodontic bands and appliances usually cause adverse changes in periodontium with increased gingivitis.24 If proper oral hygiene is not maintained during orthodontic treatment, tooth movement can aggravate periodontal disease activity. Intrusion of teeth may shift supragingival calculus and plaque to subgingival leading to formation of infrabony pocket and attachment loss. Orthodontic-periodontic interrelationship should be considered before orthodontic treatment in juvenile periodontitis. Before orthodontic treatment scaling, root planning, gingival curettage should be carried out, systemic antibiotics should be prescribed and patient should be instructed to maintain oral hygiene. During orthodontic treatment proper oral hygiene should be maintained, minor tooth movement should be carried out and if possible extraction should be avoided.

Conclusion
Orthodontic treatment is possible in patients with systemic problems, but precautions should be carried out. Careful selection of treatment objectives, timing of the treatment and type of appliance is must in each patient. As orthodontic treatment is carried out to improve the patients self image

Authors Affiliations
1. Shantanu Khattri MDS, Reader, Department of Orthodontics, Career P.G. Institute Of Dental Sciences, Lucknow, 2. Madhvi Bhardwaj MDS, Senior Lecturer, Department of Orthodontics, Career P.G. Institute Of Dental Sciences, Lucknow, UP, India.

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Address for Correspondence
Dr. Madhvi Bhardwaj MDS, Senior Lecturer, Department of Orthodontics Career P.G. Institute of Dental Sciences, Lucknow, UP, India. Email: drmadhvikhattri@gmail.com

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