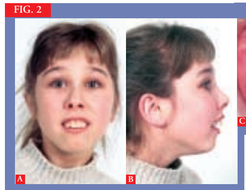
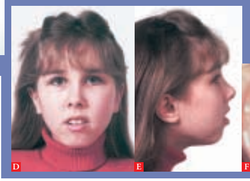
FIG. 2





A patient for whom an unconventional anterior maxillary osteotomy was undertaken after the extraction of her canines to resolve the severe over-jet and safeguard her precariously proclined maxillary incisors. (a-c) Pre-treatment (d-f) Post-surgery

seizures, strabismus and speech problems may accompany the neurological problems. A wide range of neuromuscular dysfunction is seen, which presents as spasticity, dyskinesia, ataxia or a mixture of these. These children also may suffer from abnormalities of the cervical spine. They lack intraoral, perioral and masticatory muscle coordination and have limited control of the neck muscles, which contributes to the risk of head roll in the supine position.

Children with cerebral palsy often have severe attrition due to bruxism, and a higher frequency of periodontal disease and gingival hyperplasia that is related to both local factors and anticonvulsant therapy. They frequently have a marked overjet, open bite, posterior cross bite, and are more susceptible to trauma to the anterior maxilla, thus implicating the need for orthodontic treatment. Depending on the severity of neuromuscular dysfunction, specific goal-oriented orthodontic treatment, often in conjunction with orthognathic surgery to correct the large overjet and open bite (Fig. 2),

FIG. 3

Crowding and enamel discoloration in a child with cystic fibrosis. (a) Pre-treatment and (b) after orthodontic treatment with fixed appliances.

can be undertaken for them. Care should be taken to stabilize the patient's head and to avoid a completely supine position in the dental chair during treatment. In general, for patients with a known history of seizures, orthodontic treatment can be carried out safely when the disease is under good medical control and there is no active seizure activity in the recent history of the disease. Gingival surgery for reducing the hyperplasia may be required to facilitate orthodontic treatment.

CYSTIC FIBROSIS

Cystic fibrosis, which has an occurrence of one in 2,000 births, is the most common lethal genetic disorder in Caucasians.[3] Children with cystic fibrosis have progressive obstructive lung disease and are at a high risk of infection. Antibiotic administration is the mainstay of therapy for pulmonary disease in patients with cystic fibrosis. New and potent antibiotics, more aggressive antibiotic treatment and multiple routes of administration have contributed to improved survival among cystic fibrosis patients. Oral implications associated with cystic fibrosis include enamel hypoplasia and tooth discoloration (Fig. 3), salivary gland dysfunction, and reduced levels of dental plaque, caries and oral disease. These are also related to the effects of antibiotics in these patients. Cystic fibrosis patients are always at a high risk of developing lethal lung infection, and the mouth may act as a reservoir for potentially pathogenic respiratory bacteria. They have deficient salivary secretion, and are at a greater risk of

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decalcification around fixed orthodontic appliance attachments. When undertaking orthodontic treatment, precautions should be taken to avoid the possibility of the patient aspirating infective material. For this reason, and also to avoid restricting their already diminished lung volume, these children should be treated in a more upright rather than fully reclined position. However, since longevity in affected children varies widely among individual patients, an evaluation by the patient's physician of the severity of the problem and life expectancy should be included while planning possible orthodontic treatment.[2]

JUVENILE RHEUMATOID ARTHRITIS

Juvenile rheumatoid arthritis is an inflammatory condition of the joints, probably of autoimmune origin, in which the inflamed and hyperplastic synovial membrane encroaches on the articulating joint surfaces and leads to the destruction of the articular cartilage and underlying bone if left untreated. It is the major arthritic problem in children and young adults, and is extremely variable in onset, severity and clinical course. The inflammatory, proliferative arthritis involving multiple joints may frequently affect the temporomandibular joint in children, either unilaterally or bilaterally.[4] It may be self-limiting with satisfactory recovery in many cases, or may, in severely affected patients, progress to irreversible damage to the joint spaces, leading to significant functional disability. The patient may have varying degrees of mandibular retrognathia with a steep mandibular plane, anterior open bite, mandibular asymmetry (in patients with unilateral involvement - Fig. 4), and signs and symptoms of temporomandibular joint dysfunction. These may include difficulty in wide mouth opening, pain on mandibular movements and joint sounds. Erosion of the cortical outline in the TMJ is the most common radiographic finding, followed by flattening with or without erosion, and the complete loss of the condylar head in the very severely affected patients.

A multidisciplinary approach is usually required for the management of various components of juvenile rheumatoid arthritis. Medical treatment involves steroidal and non-steroidal anti-inflammatory agents, while gold salts, d penicillamine and cytotoxic drugs may be required for select patients. Temporomandibular therapy is aimed at reducing pain and dysfunction in the masticatory system, restoring and maintaining mandibular mobility to correct and prevent occlusion problems and deformities, and at stimulating mandibular growth. Therapeutic exercises against resistance and chewing training are beneficial to increase muscle strength and mandibular mobility. Occlusal splints or passive activators may be helpful to decrease the load on the TMJ and reduce masticatory muscle tension.

Children with juvenile rheumatoid arthritis should have annual orthodontic examinations, which should include a functional evaluation of the masticatory system, and radiographic studies of the face and the temporomandibular joints. Orthodontic treatment in patients with juvenile rheumatoid arthritis should be attempted only when the disease is under control. It must be remembered that stress on the joint during orthodontic treatment may result in further degeneration of the condyle. Functional appliances with large mandibular propulsions, heavy intermaxillary elastics and orthognathic surgery involving large mandibular advancements can lead to increased joint stress. Therefore, in the more severely retrognathic patients, surgical orthodontic treatment options involving maxillary surgery and genioplasty should be considered when possible.[2]

HEMOPHILIA

This bleeding disorder occurs in one out of 7,500 males and is marked by common bleeding episodes, which increase in frequency with increasing severity of deficiency of the clotting mechanism. The most common sites of bleeding are joints, muscles and skin, and important complications include arthritis and degenerative joint disease secondary to recurrent bleeding. Mouth lacerations are a common cause of bleeding with all severities of hemophilia, and persistent oral bleeding is seen in about 14 percent of all hemophilic patients. Early recognition of the developing malocclusion is important in the orthodontic management of the hemophilic child as selective guidance can diminish or eliminate developing complex orthodontic problems.[3] Orthodontic treatment is certainly not contraindicated, but caution should be exercised to avoid any lacerations during procedures. Direct bonding of attachments rather than fitting bands helps to reduce these risks. Care should be taken to ensure that there are no sharp edges or wires protruding from the orthodontic appliances. The orthodontist should carefully weigh the advantages of functional appliances in these children against the potential of bleeds due to tissue irritation, as well as in the temporomandibular joint. Prolonged orthodontic treatment increases the risks of a bleeding episode, and therefore, orthodontic treatment in conjunction with planned orthognathic surgery with prior transfusion should be a major consideration for them.[2] During orthodontic treatment with fixed appliances, oral hygiene is particularly important to avoid inflamed and edematous gingival tissues, which are prone to hemorrhage. Hemophiliacs with a history of transfusion treatment with Factor VIII or IX concentrate are considered potential carriers of blood-borne viral infections, and the orthodontist is obligated to take necessary precautions for infection control.

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SICKLE CELL SYNDROMES

These hereditary disorders are the result of the presence of an abnormal Hemoglobin (Hb S) in the red blood cells. There are two main types of presentations of this condition. Children affected by Sickle Cell Trait, the heterozygous form, generally do not exhibit anemic symptoms unless exposed to low oxygen pressure conditions. Orthodontic treatment can be undertaken for them with only a moderately higher risk than in unaffected patients.[2] The less frequently occurring homozygous form, Sickle Cell Anemia, is characterized by chronic anemia, delayed wound healing and retarded dental development. Blood transfusions are required during acute episodes, with a resultant increased risk of iron overload. A vaso-occlusive or aplastic crisis may be triggered due to infection or trauma, leading to significant morbidity and mortality. There is a generalized osteoporosis of the jaws related to the degree of hyperplasia of the bone marrow, which in some patients may cause enlargement and protrusion of the maxillary alveolar ridge. Orthodontic treatment should have definitive goals for such children and should preferably be of limited duration. Orthognathic surgery under general anesthesia places these patients under high risk and, therefore, should generally be avoided.[2]

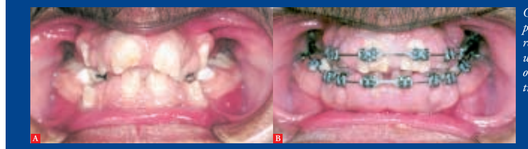
HEMATOLOGIC MALIGNANCIES

More than half of pediatric malignancies are hematologic (leukemias or lymphomas). With present antineoplastic protocols, the mortality rate has been steadily declining, and nearly 60 percent of diagnosed patients are long-term survivors. Oral symptoms do not play a major role in the diagnosis of leukemias. However, in a patient undergoing orthodontic treatment,

FIG. 4

Mandibular asymmetry and radiographic evidence of erosion of the left condyle in a patient with juvenile rheumatoid arthritis.

FIG. 5



Cyclosporine induced gingival hyperplasia in a patient who has had a renal transplant (a). Gingivectomies were required prior to commencing orthodontic treatment and during treatment with fixed appliances (b).

oral changes, such as gingival oozing, petechiae, hematomas, ulcerations, gingival pain, gingival hypertrophy, mucosal pallor, pharyngitis and lymphadenopathy, should raise the clinician's index of suspicion. Referral to a physician should be made for a patient exhibiting these oral symptoms without evidence of local causative factors.[5] Chemotherapy is now the mainstay of therapy, with radiation and surgery playing a smaller role than earlier. Once a diagnosis of malignancy has been made, the goal of the dental team, including the orthodontist, should be to first eliminate oral infection. It must be remembered that infection due to the compromised immune status is the leading cause of death. Xerostomia and mucositis are common side effects resulting from antineoplastic therapy. Oral infections by opportunistic organisms may also occur.

Due to the impaired regenerative capability of the mucous membrane, orthodontic appliances can cause stress to the oral mucosa, which may lead to ulcerations and painful stomatitis with even the slightest oral insult. For a patient undergoing orthodontic treatment who is diagnosed with malignancy, the patient's safety and comfort are enhanced if all fixed appliances are removed and replaced with comfortable and well-fitting removable retainers. The orthodontist should consult the physician for a realistic appraisal of the prognosis and to jointly determine the best approach for management. A consultation among the patient, parents, physician, dentist and orthodontist before the removal of fixed appliances helps to make the transition to holding retainers less traumatic and helps to avoid any misinterpretation of "giving up" on the patient. The patient and the patient's family should be reassured and told that this is not a permanent change, but a holding phase during which active treatment is being suspended. During the phase of antineoplastic therapy, maintaining good oral hygiene and a periodic check-up with the dentist are important for caries control and fluoride prophylaxis, and to keep a close guard on situations that could lead to infection. Once a patient has completed antineoplastic treatment and has at least a two-year event-free survival, orthodontic treatment can be restarted.[5]

HEART DISEASE AND CHILDREN REQUIRING ANTIBIOTIC PROPHYLAXIS

Infective endocarditis is a rare but very serious complication of dental treatment.[6] Patients with congenital heart disease, cardiac damage from rheumatic fever or other causes, a prosthetic heart valve, a previous history of endocarditis or recent cardiovascular surgery require antibiotic prophylaxis to prevent infective endocarditis whenever there is a chance of bacteremia from dental treatment. Patients at risk can potentially undergo orthodontic treatment, but the patient's cardiologist should be consulted before starting treatment to assess the risk and to plan the most appropriate antibiotic prophylaxis for risky procedures.

Most routine orthodontic procedures, such as archwire changes or adjustments to fixed or removable orthodontic appliances, are not invasive and do not warrant antibiotic prophylaxis. Antibiotic prophylaxis for susceptible patients is required for the placement and removal of bands, scaling and polishing of teeth, for long or complex appliance changes and adjustments,[2] surgical exposure of teeth, gingival surgical procedures, and orthognathic surgeries. Orthodontic traction of unerupted teeth following excisional exposure results in a reduced risk of bacteremia.[6] However, it is debatable whether traction following replaced flap techniques significantly increases the risk of infection. The orthodontist should carefully evaluate if alternative options, such as premolar substitution for a deep impacted canine, can satisfactorily restore the occlusion. An effective method for reducing the chances of bacteremia during routine orthodontic appointments is the use of an oral rinse of chlorhexidine solution prior to the procedure. The virtue of maintaining a high standard of oral hygiene for patients at risk for infective endocarditis cannot be overemphasized. If the patient's oral hygiene lapses during treatment and does not rapidly improve, then discontinuing orthodontic therapy and removal of fixed appliances may be in the best interest of the patient's safety.

PAGE 4

Children with congenital heart disease are often quite small, and extraction of permanent teeth to relieve the crowding may be required more frequently than in some other types of patients.

Children with organ transplants are immunosuppressed, and their transplants are at greater risk for infection. Therefore, they should also receive antibiotic prophylaxis prior to the above mentioned procedures. They frequently have gingival hyperplasia as a result of the immunosuppressive drugs that they are taking to avoid rejection of the transplanted organs (Fig. 5).

CONCLUSION

During the orthodontic treatment of a child with special needs, the perceptions of the individual situation by the patient, the family and the clinician are important. The clinician should make a critical assessment of the severity of the malocclusion, estimate the possible effects of leaving the malocclusion untreated, as well as establish realistic goals and outcomes of treatment. The treatment plan should be practical, achievable and not unnecessarily overzealous. Planning and discussing the strategy for corrective treatment with the patient and the family, undertaking orthodontic treatment under good medical control of the condition, taking the necessary precautions during treatment, and working in close collaboration with other health-care professionals involved with the care of these children are critical to their safe and successful management. ■

(see back cover for reference section)

ORTHODONTIC DIALOGUE

VOLUME THIRTEEN NUMBER ONE SPRING 2001

The American Association of Orthodontists is a national dental specialty organization that was founded in 1900. The AAO is comprised of more than 13,500 members. Among its primary goals are the advancement of the art and the science of orthodontics; the encouragement and sponsorship of research; and the achievement of high standards of excellence in orthodontic instruction, practice and continuing education.

Orthodontic Dialogue is published to help communicate with the dental profession about orthodontics and patient care. Unless stated otherwise, the opinions expressed and statements made in this publication are those of the authors and do not imply endorsement by or official policy of the AAO. Reproduction of all or any part of this publication is prohibited without written permission of the AAO.

Correspondence is welcome and should be sent to: American Association of Orthodontists, Council on Communications, 401 N. Lindbergh Blvd., St. Louis, MO 63141-7816.

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Dr. Bryan Tompson & **Dr. George Sandor**
The Hospital for Sick Children
Toronto, Ontario

The AAO recommends that every child should have an orthodontic check-up no later than age 7.

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For further information on the health conditions discussed in this issue of the Orthodontic Dialogue, contact the national organizations that represent these patients. Your community may have local support groups for these patients as well.

Please share and discuss the treatment information in this Orthodontic Dialogue with your dental colleagues and other health-care professionals.

The AAO encourages you and your patients to visit the AAO Web site to learn more about the AAO and orthodontics.

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American Association of Orthodontists

VOLUME THIRTEEN NUMBER ONE SPRING 2001

ORTHODONTIC CARE OF CHILDREN WITH SPECIAL NEEDS

- DOWN SYNDROME
- CEREBRAL PALSY
- CYSTIC FIBROSIS
- JUVENILE RHEUMATOID ARTHRITIS
- HEMOPHILIA
- SICKLE CELL SYNDROMES
- HEMATOLOGIC MALIGNANCIES
- HEART DISEASE

ORTHODONTIC CARE OF CHILDREN WITH SPECIAL NEEDS

"The world should be a beautiful place for a child to live. If he is handicapped by facial deformity that is marring his happiness, we should make every effort to restore that happiness. To say that there is no use trying to help a patient because he has a certain facial type or he has a facial pattern with serious abnormal deviations, is not courageous. We must strive for maximum harmony and balance as near to normal as conditions will allow." [1]

DR. CHARLES H. TWEED

As a result of tremendous progress made in the fields of medicine and dentistry in the 20th century, a remarkable improvement in the survival rates, longevity and quality of life of children affected by congenital, developmental or pathologic conditions is continually occurring. Coupled with elevations in public awareness, changing social policies and opinion, and favorable legislation, higher standards of non-institutionalized medical and dental care are becoming routinely available to these individuals. In the present scenario, the practicing clinician in the community responsible for addressing the needs of these special patients has to be accessible to them, and competent and willing to provide them the required optimal level of care.

Orthodontic treatment is an elective procedure for essentially all patients, including those with medical problems. Correction of disfiguring dental and facial problems contributes in an important way to an individual's self-esteem. The positive benefits of orthodontic treatment influence social integration and interaction, and can lead to significant improvement in overall well-being.[2] However, there are important considerations while planning and rendering orthodontic care to children with special needs. The goal of this communication is to discuss the indications and implications of orthodontic therapy for children in some of these special situations.

MENTAL RETARDATION

Mental retardation is defined as a significant decrease in the intellectual ability with consequent limited ability to adapt to the environment.[3] It is found to be present in about 3 percent of the North-American population. The degree of retardation varies among individuals, ranging from mild to severe, and often occurs along with other systemic problems. Mental retardation is frequently associated with a greater occurrence of malocclusion. Orthodontic treatment can provide significant esthetic and functional benefits to affected individuals. The orthodontic treatment plan for a mentally challenged patient should be individualized and developed keeping the child's strengths and weaknesses in sight. Short appointments should be planned, and the clinician should ensure that a good level of communication is established with the child, and that all explanations and instructions are simple and well understood by the patient.

In some conditions, such as Down syndrome, a generalized retardation of growth and development is often found. Eruption of both deciduous and permanent teeth is frequently delayed, and there is also a delay in the exfoliation of the deciduous teeth. Pseudoprognathism, decreased lower facial height, small midface, perioral hypotonia, a large and protruded tongue, crossbite, anterior open bite, and crowding are common associated craniofacial features. Additionally, children with Down syndrome have an increased susceptibility to rapid, destructive periodontal disease due to both local and systemic factors. These children are also more prone to suffer from cardiac defects, leukemias and respiratory infections.

Children with Down syndrome are frequently the victims of a stereotype image that has come to be associated with their mental condition even though their mental retardation is usually of a mild or moderate nature, and these children often have a wide range of comprehensive and performance capabilities. The clinician should be careful to assess the potential of each child individually and structure treatment strategies accordingly. The extent to which orthodontic appliance therapy can be successfully instituted varies with the cooperative abilities of the patient, but a good orthodontic treatment result is certainly achievable for many patients (Fig. 1). In the more severely mentally retarded patients, the initial placement of limited fixed appliances or bonded/cemented bite planes can be accomplished under general anesthesia. Surgical orthodontic treatment is an important consideration in this group of patients.

CEREBRAL PALSY

Cerebral palsy is a collection of disabling conditions due to permanent brain damage in the prenatal and perinatal period. One newborn in approximately 200 live births is afflicted with this condition.[3] Cerebral palsy is characterized by variable severities of muscle weakness, stiffness or paralysis, poor balance, irregular gait, and uncoordinated, involuntary movements. Mental retardation,

continued on page 2

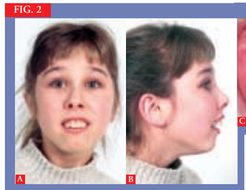
PAGE 1

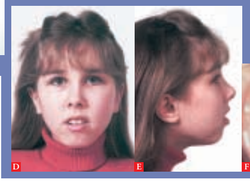
FIG. 1

A patient with Down syndrome after orthodontic treatment. A well-motivated patient and family, and well-sequenced treatment by the orthodontist can achieve optimal treatment results in many affected children.

You may wish to share this issue of **Orthodontic Dialogue** with your hygienists and other staff members.

FIG. 2





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Crowding and enamel discoloration in a child with cystic fibrosis. (a) Pre-treatment and (b) after orthodontic treatment with fixed appliances.

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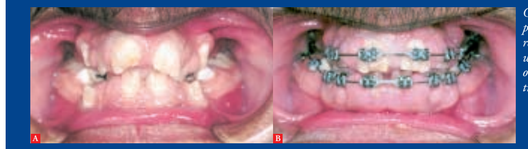

Cyclosporine induced gingival hyperplasia in a patient who has had a renal transplant (a). Gingivectomies were required prior to commencing orthodontic treatment and during treatment with fixed appliances (b).

oral changes, such as gingival oozing, petechiae, hematomas, ulcerations, gingival pain, gingival hypertrophy, mucosal pallor, pharyngitis and lymphadenopathy, should raise the clinician's index of suspicion. Referral to a physician should be made for a patient exhibiting these oral symptoms without evidence of local causative factors.[5] Chemotherapy is now the mainstay of therapy, with radiation and surgery playing a smaller role than earlier. Once a diagnosis of malignancy has been made, the goal of the dental team, including the orthodontist, should be to first eliminate oral infection. It must be remembered that infection due to the compromised immune status is the leading cause of death. Xerostomia and mucositis are common side effects resulting from antineoplastic therapy. Oral infections by opportunistic organisms may also occur.

Due to the impaired regenerative capability of the mucous membrane, orthodontic appliances can cause stress to the oral mucosa, which may lead to ulcerations and painful stomatitis with even the slightest oral insult. For a patient undergoing orthodontic treatment who is diagnosed with malignancy, the patient's safety and comfort are enhanced if all fixed appliances are removed and replaced with comfortable and well-fitting removable retainers. The orthodontist should consult the physician for a realistic appraisal of the prognosis and to jointly determine the best approach for management. A consultation among the patient, parents, physician, dentist and orthodontist before the removal of fixed appliances helps to make the transition to holding retainers less traumatic and helps to avoid any misinterpretation of "giving up" on the patient. The patient and the patient's family should be reassured and told that this is not a permanent change, but a holding phase during which active treatment is being suspended. During the phase of antineoplastic therapy, maintaining good oral hygiene and a periodic check-up with the dentist are important for caries control and fluoride prophylaxis, and to keep a close guard on situations that could lead to infection. Once a patient has completed antineoplastic treatment and has at least a two-year event-free survival, orthodontic treatment can be restarted.[5]

HEART DISEASE AND CHILDREN REQUIRING ANTIBIOTIC PROPHYLAXIS

Infective endocarditis is a rare but very serious complication of dental treatment.[6] Patients with congenital heart disease, cardiac damage from rheumatic fever or other causes, a prosthetic heart valve, a previous history of endocarditis or recent cardiovascular surgery require antibiotic prophylaxis to prevent infective endocarditis whenever there is a chance of bacteremia from dental treatment. Patients at risk can potentially undergo orthodontic treatment, but the patient's cardiologist should be consulted before starting treatment to assess the risk and to plan the most appropriate antibiotic prophylaxis for risky procedures.

Most routine orthodontic procedures, such as archwire changes or adjustments to fixed or removable orthodontic appliances, are not invasive and do not warrant antibiotic prophylaxis. Antibiotic prophylaxis for susceptible patients is required for the placement and removal of bands, scaling and polishing of teeth, for long or complex appliance changes and adjustments,[2] surgical exposure of teeth, gingival surgical procedures, and orthognathic surgeries. Orthodontic traction of unerupted teeth following excisional exposure results in a reduced risk of bacteremia.[6] However, it is debatable whether traction following replaced flap techniques significantly increases the risk of infection. The orthodontist should carefully evaluate if alternative options, such as premolar substitution for a deep impacted canine, can satisfactorily restore the occlusion. An effective method for reducing the chances of bacteremia during routine orthodontic appointments is the use of an oral rinse of chlorhexidine solution prior to the procedure. The virtue of maintaining a high standard of oral hygiene for patients at risk for infective endocarditis cannot be overemphasized. If the patient's oral hygiene lapses during treatment and does not rapidly improve, then discontinuing orthodontic therapy and removal of fixed appliances may be in the best interest of the patient's safety.

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Children with congenital heart disease are often quite small, and extraction of permanent teeth to relieve the crowding may be required more frequently than in some other types of patients.

Children with organ transplants are immunosuppressed, and their transplants are at greater risk for infection. Therefore, they should also receive antibiotic prophylaxis prior to the above mentioned procedures. They frequently have gingival hyperplasia as a result of the immunosuppressive drugs that they are taking to avoid rejection of the transplanted organs (Fig. 5).

CONCLUSION

During the orthodontic treatment of a child with special needs, the perceptions of the individual situation by the patient, the family and the clinician are important. The clinician should make a critical assessment of the severity of the malocclusion, estimate the possible effects of leaving the malocclusion untreated, as well as establish realistic goals and outcomes of treatment. The treatment plan should be practical, achievable and not unnecessarily overzealous. Planning and discussing the strategy for corrective treatment with the patient and the family, undertaking orthodontic treatment under good medical control of the condition, taking the necessary precautions during treatment, and working in close collaboration with other health-care professionals involved with the care of these children are critical to their safe and successful management. ■

(see back cover for reference section)

ORTHODONTIC DIALOGUE

VOLUME THIRTEEN NUMBER ONE SPRING 2001

The American Association of Orthodontists is a national dental specialty organization that was founded in 1900. The AAO is comprised of more than 13,500 members. Among its primary goals are the advancement of the art and the science of orthodontics; the encouragement and sponsorship of research; and the achievement of high standards of excellence in orthodontic instruction, practice and continuing education.

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Agreement Number: 1474138

The AAO recommends that every child should have an orthodontic check-up no later than age 7.

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For further information on the health conditions discussed in this issue of the Orthodontic Dialogue, contact the national organizations that represent these patients. Your community may have local support groups for these patients as well.

Please share and discuss the treatment information in this Orthodontic Dialogue with your dental colleagues and other health-care professionals.

The AAO encourages you and your patients to visit the AAO Web site to learn more about the AAO and orthodontics.

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American Association of **Orthodontists**

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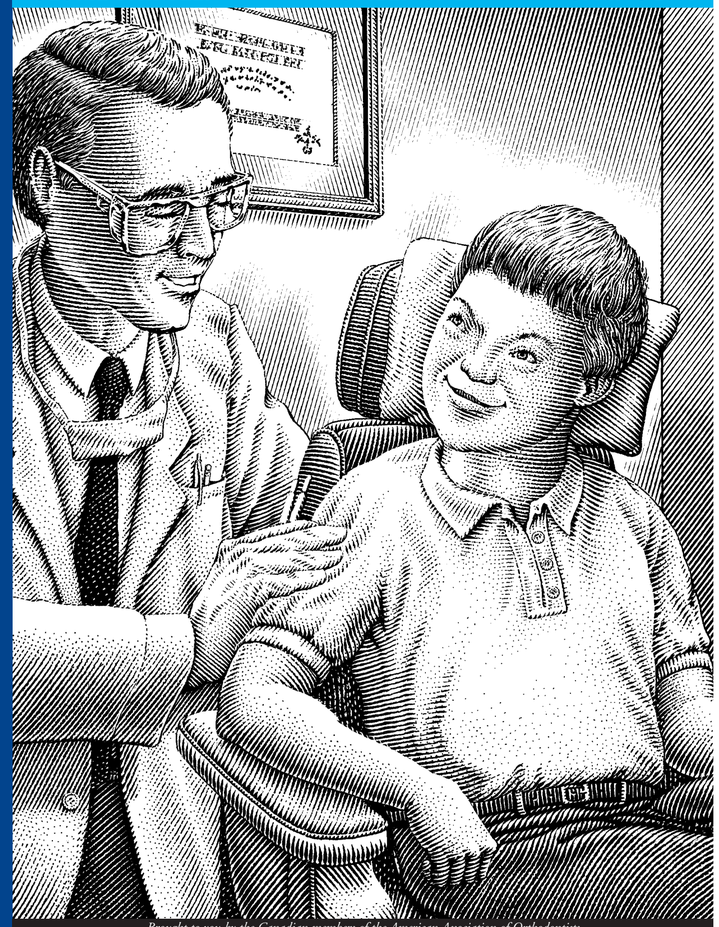

Brought to you by the Canadian members of the American Association of Orthodontists

ORTHODONTIC CARE OF CHILDREN WITH SPECIAL NEEDS

- DOWN SYNDROME
- CEREBRAL PALSY
- CYSTIC FIBROSIS
- JUVENILE RHEUMATOID ARTHRITIS
- HEMOPHILIA
- SICKLE CELL SYNDROMES
- HEMATOLOGIC MALIGNANCIES
- HEART DISEASE

"The world should be a beautiful place for a child to live. If he is handicapped by facial deformity that is marring his happiness, we should make every effort to restore that happiness. To say that there is no use trying to help a patient because he has a certain facial type or he has a facial pattern with serious abnormal deviations, is not courageous. We must strive for maximum harmony and balance as near to normal as conditions will allow."[1]

DR. CHARLES H. TWEED

As a result of tremendous progress made in the fields of medicine and dentistry in the 20th century, a remarkable improvement in the survival rates, longevity and quality of life of children affected by congenital, developmental or pathologic conditions is continually occurring. Coupled with elevations in public awareness, changing social policies and opinion, and favorable legislation, higher standards of non-institutionalized medical and dental care are becoming routinely available to these individuals. In the present scenario, the practicing clinician in the community responsible for addressing the needs of these special patients has to be accessible to them, and competent and willing to provide them the required optimal level of care.

Orthodontic treatment is an elective procedure for essentially all patients, including those with medical problems. Correction of disfiguring dental and facial problems contributes in an important way to an individual's self-esteem. The positive benefits of orthodontic treatment influence social integration and interaction, and can lead to significant improvement in overall well-being.[2] However, there are important considerations while planning and rendering orthodontic care to children with special needs. The goal of this communication is to discuss the indications and implications of orthodontic therapy for children in some of these special situations.

MENTAL RETARDATION

Mental retardation is defined as a significant decrease in the intellectual ability with consequent limited ability to adapt to the environment.[3] It is found to be present in about 3 percent of the North-American population. The degree of retardation varies among individuals, ranging from mild to severe, and often occurs along with other systemic problems. Mental retardation is frequently associated with a greater occurrence of malocclusion. Orthodontic treatment can provide significant esthetic and functional benefits to affected individuals. The orthodontic treatment plan for a mentally challenged patient should be individualized and developed keeping the child's strengths and weaknesses in sight. Short appointments should be planned, and the clinician should ensure that a good level of communication is established with the child, and that all explanations and instructions are simple and well understood by the patient.

In some conditions, such as Down syndrome, a generalized retardation of growth and development is often found. Eruption of both deciduous and permanent teeth is frequently delayed, and there is also a delay in the exfoliation of the deciduous teeth. Pseudoprognathism, decreased lower facial height, small midface, perioral hypotonia, a large and protruded tongue, crossbite, anterior open bite, and crowding are common associated craniofacial features. Additionally, children with Down syndrome have an increased susceptibility to rapid, destructive periodontal disease due to both local and systemic factors. These children are also more prone to suffer from cardiac defects, leukemias and respiratory infections.

Children with Down syndrome are frequently the victims of a stereotype image that has come to be associated with their mental condition even though their mental retardation is usually of a mild or moderate nature, and these children often have a wide range of comprehensive and performance capabilities. The clinician should be careful to assess the potential of each child individually and structure treatment strategies accordingly. The extent to which orthodontic appliance therapy can be successfully instituted varies with the cooperative abilities of the patient, but a good orthodontic treatment result is certainly achievable for many patients (Fig. 1). In the more severely mentally retarded patients, the initial placement of limited fixed appliances or bonded/cemented bite planes can be accomplished under general anesthesia. Surgical orthodontic treatment is an important consideration in this group of patients.

CEREBRAL PALSY

Cerebral palsy is a collection of disabling conditions due to permanent brain damage in the prenatal and perinatal period. One newborn in approximately 200 live births is afflicted with this condition.[3] Cerebral palsy is characterized by variable severities of muscle weakness, stiffness or paralysis, poor balance, irregular gait, and uncoordinated, involuntary movements. Mental retardation,

continued on page 2

FIG. 1

A patient with Down syndrome after orthodontic treatment. A well-motivated patient and family, and well-sequenced treatment by the orthodontist can achieve optimal treatment results in many affected children.

You may wish to share this issue of **Orthodontic Dialogue** with your hygienists and other staff members.