Dental Problems of Children with Special Health Care Needs

INTELLECTUAL DISABILITY

Intellectual disability is a general term used when an individual's intellectual development is significantly lower than average and his or her ability to adapt to the environment is consequently limited. The condition varies in severity and cause .

DENTAL TREATMENT OF A PERSON WITH INTELLECTUAL DISABILITY

Children with intellectual disability may have a higher incidence of poor oral hygiene , gingivitis, malocclusion, and untreated caries. As the severity of intellectual disability increases, typical oral signs of clenching, bruxism, drooling, pica, trauma, missing teeth ,and self-injurious behaviors increase. Providing dental treatment for a person with intellectual disability requires adjusting to social, intellectual, and emotional delays. A short attention span, restlessness, hyperactivity, and erratic emotional behavior may characterize patients with intellectual disability undergoing dental care. The dentist should assess the staff rapport and reducing the patient's anxiety about dental care :

degree of intellectual disability by consulting the patient's physician for frequent medical assessment and coordinate care when appropriate .

The following procedures have proved beneficial in establishing dentist-patient-parent

1. Give the family a brief tour of the office before attempting treatment. Introduce the patient and family (parent/caretaker/guardian) to the office staff. This will familiarize the patient with the personnel and facility and reduce the patient's fear of the unknown. Allow the patient to bring a favorite item (stuffed animal, blanket, or toy) to hold for the visit .
2. Be repetitive; speak slowly and in simple terms. Make sure explanations are understood by asking the patient if there are any questions. If the individual has an alternative communication system, such as a picture board or electronic device, be sure it is available to assist with dental explanations and instructions .
3. Give only one instruction at a time. Reward the patient with compliments after the successful completion of each procedure .
4. Actively listen to the patient. People with intellectual disability often have trouble with communication, and the dentist should be particularly sensitive to gestures and verbal requests .
5. Invite the parent/guardian into the operatory for assistance and to aid in communication with the patient when helpful .
6. Keep appointments short. Gradually progress to more difficult procedures (e.g ,.anesthesia and restorative dentistry) after the patient has become accustomed to the dental environment .
7. Schedule the patient's visit early in the day, on a lightly scheduled day, when the dentist ,the staff, and the patient will be less fatigued .

DOWN SYNDROME (TRISOMY 21 SYNDROME)

Down syndrome is the best-known chromosomal disorder and is caused by the presence of an extra copy of chromosome 21(trisomy 21). Medical conditions that occur more frequently in infants and children with Down syndrome and increase the mortality of these individuals include cardiac defects, leukemia, and upper respiratory infections. The incidence of congenital cardiac defects is about 40%, and because of these patients' high susceptibility to periodontal disease, knowledge of a heart condition is essential for dental treatment .

Skeletal findings are an underdeveloped midface, creating a prognathic occlusal relationship. Oral findings include mouth breathing, open bite, appearance of macroglossia ,fissured lips and tongue, angular cheilitis, delayed eruption times, missing and malformed teeth, oligodontia, small roots, microdontia, crowding, and a low level of caries. Children with Down syndrome experience a high incidence of rapid, destructive periodontal disease ,which may be related to local factors such as tooth morphology, bruxism, malocclusion ,and poor oral hygiene. Many children with Down syndrome are affectionate and cooperative, and dental procedures can be provided without compromise if the dentist works at a slightly slower pace. Emphasis should be placed on preventive dental care with frequent follow-up visits to monitor oral hygiene. Light sedation and immobilization may be indicated in those children who are moderately apprehensive. Severely resistive patients may require general anesthesia .

LEARNING DISABILITIES

Learning disabilities are neurological conditions that interfere with the individual's ability to store, process, or produce information. They can affect a person's ability to read, write, count, speak, or reason. In addition, they may affect memory, attention , coordination, social skills, and emotional maturity. Learning disabilities affect between 3% and 15% of the population. They occur four times more frequently among boys than among girls .

Learning disabilities may run in families, indicating a possible genetic factor, and are sometimes confused with intellectual disabilities, autism, deafness, and behavioral disorders. They include conditions that have been referred to as perceptual handicaps ,brain injury, minimal brain dysfunction, dyslexia, and developmental aphasia. The cause of learning disabilities remains unclear. Physiologic factors, such as minimal brain injury or damage to the central nervous s system, have been implicated. The possibility exists that severe emotional disturbances can develop as a result of learning disabilities. This potential has prompted the early diagnosis and treatment of affected persons. Most children with learning disabilities accept dental care and cause no unusual management problem s for the dentist. If a child is resistant, behavioral management and conscious sedation techniques may be used with success .

FRAGILE X SYNDROME

Fragile X is an X-linked developmental disorder. It accounts for 30% to 50% of cases of X-linked mental disability. The defect is an abnormal gene on the terminal portion of the long arm of an X chromosome. Males are more vulnerable because they have only X chromosome and are more significantly affected than females. Numerous

studies have investigated fragile X syndrome in males, but ·fragile X syndrome in females has not been investigated as extensively because the physical and cognitive deficits in females are usually less severe. It is one of the most common genetic causes of learning disability .

A history of developmental delay and hyperactivity, and physical features such as prominent ears, long face, and prominent jaw, flattened nasal bridge, hyperextensible joints ,flat feet, mitral valve prolapse (MPV), simian creases of the palms, and post adolescent macroorchidism in males should be considered potential indicators for fragile X syndrome. A higher incidence of malocclusions including an open bite and crossbites has been reported .

Behavioral features such as hand slapping, hand biting, and poor eye contact are frequently seen. Fragile X syndrome may be diagnosed in individuals with another diagnosis such as Down syndrome or cerebral palsy .Treatment of children with fragile X syndrome is multidisciplinary, and speech, language ,and occupational therapy is required to address the cognitive, language, and sensory integration problems. Medical intervention can be useful in decreasing the hyperactivity and improving the attention span. Females with fragile X syndrome have a more favorable outcome with appropriate intervention than do males with fragile X syndrome. The mode of dental treatment depends on the level of developmental delay, cognitive ability, and degree of hyperactivity. Children with mild cases may be treated by scheduling short appointments ·and using immobilization and/ or conscious sedation. Severely affected individuals must be treated in the operating room under general anesthesia .

AUTISM SPECTRUM DISORDER

Autism spectrum disorder (ASD) includes three neurodevelopmental disorders : autism disorder, Asperger syndrome, and pervasive development disorder (PDD). The prevalence is estimated to be 6 per 1000 children. The rise in the rates of ASD has been attributed to increased awareness and better diagnostic tools. It occurs with greater frequency in boys than girls .

The exact cause of ASD is not completely known, although genetic factors and environmental factors may play a role. Although the majority of cases are idiopathic, a small percent has a known inheritance such as fragile X syndrome, tuberous sclerosis, Rett syndrome, and Angelman syndrome. Many children with ASD present with a typical developmental period followed by regression in the second year. There are three levels of impairment noted :

- **The first notable impairment** is social, which, in some cases is extreme, with lack of eye contact and not responding to one's name .
- **The second is impairment** in communication, which can result in the delay or complete lack of spoken language. Children with Asperger syndrome do not have a general in language or cognitive development; however, they often have communication difficulties ,especially in sustain conversations .
- **The third area of impairment** in ASD is repetitive behaviors. They may include staring ,floppy hands, an odd interest in or preoccupation with specific objects .

delay There is great variability in presentation in children with ASD, and the diagnosis is made based upon the number of symptom s involved. Children with ASD have multiple medical and behavioral problems that may make dental treatment difficult. These children often have poor muscle tone, poor coordination, drooling, a hyperactive knee jerk, and strabismus; 30% eventually develop epilepsy. Children with ASD may have strict routines and prefer soft foods and sweetened foods. Because of poor tongue coordination, children with ASD tend to "pouch "food instead of swallowing. This habit, combined with the desire for sweetened foods, leads to increased susceptibility to caries. Because of their tendency to adhere to routines, children with ASD may require several dental visits to acclimate to the dental environment. The use of a Papoose Board or Pedi-Wrap and preappointment conscious sedation may be necessary and in some instances has a calming effect on the child .

CEREBRAL PALSY

Cerebral palsy is one of the primary handicapping conditions of childhood. It is not a specific disease entity but rather a collection of disabling disorders caused by insult and permanent damage to the brain in the prenatal and perinatal periods, during which time the central nervous system is still maturing. This disability might involve muscle weakness, stiffness, or paralysis, poor balance or irregular gait, and uncoordinated or involuntary movements. It has been well established that any factor contributing to decreased oxygenation of the developing brain can be responsible for brain damage. In addition, causal relationships have been established between cerebral palsy and complications of labor or delivery; infections of the brain, such as meningitis and encephalitis; toxemias of pregnancy; congenital defects of the brain; kernicterus ;poisoning with certain drugs and heavy metals; and accidents resulting in trauma to the head .

There is a high correlation between premature birth and cerebral palsy .The clinical manifestations of Cerebral palsy depend on the extent and location of damage to the brain. The following are some common manifestations :

1. Intellectual disability .
2. Seizure disorders .
3. Sensory deficits or dysfunctions .
4. Speech disorders .
5. Joint contractures .

No intraoral anomalies are unique to persons with cerebral palsy. However, several conditions are more common or more severe than in the general population. These conditions are as follows :

1. **Periodontal disease**. Periodontal disease and poor oral hygiene occur with great frequency in persons with cerebral palsy. (Patients with cerebral palsy and those who take phenytoin to control seizure activity will generally have a degree of gingival hyperplasia)
2. **Dental caries.** Increase the incidence of dental caries because of the type of diet, which is usually soft, and contain high carbohydrates .

3. **Malocclusions.** The prevalence of malocclusions in patients with cerebral palsy is approximately twice that in the general population. Commonly observed conditions include noticeable protrusion of the maxillary anterior teeth, excessive overbite and overjet, open bites, and unilateral crossbites
4. **.Bruxism.** It is commonly observed in patients with cerebral palsy. Severe occlusal attrition of the primary and permanent dentition may be noted, with the resulting loss of vertical interarch dimension. TMJ disorders may be sequelae of this condition in adult patients
5. .**Trauma.** People with cerebral palsy are more susceptible to trauma, particularly to the maxillary anterior teeth .

The following suggestions are offered to the clinician as being of practical significance in treating a patient with cerebral palsy：

1. Consider treating a patient who uses a wheelchair in the wheelchair .
2. If a patient is to be transferred to the dental chair, ask about a preference for the mode of transfer. If the patient has no preference, the two-person lift is recommended .
3. Stabilize the patient's head throughout all phases of dental treatment .
4. Keep the patient's back slightly elevated to minimize difficulties in swallowing. Do not force the limbs into unnatural positions .
5. For control of involuntary jaw movements, choose from a variety of mouth props .
6. To minimize startle reflex reactions, avoid presenting stimuli such as abrupt movements, noises, and lights without forewarning the patient .
7. Introduce intraoral stimuli slowly to avoid eliciting a gag reflex or to make it less severe .
8. Work efficiently and quickly and minimize patient time in the chair to decrease fatigue of the involved muscles .
9. Sedation or general anesthesia may be an option for more complex patients.