

AUTISM SPECTRUM DISORDERS: DENTAL TREATMENT CONSIDERATIONS

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Abstract

Autism spectrum disorders, or ASD, are an umbrella term commonly used to describe several developmental disorders in which individuals have substantial differences in the nature of their social development and communication skills, as well as unusual behaviors and interests.

This disorder needs the administration of multiple medications to help the affected person participate effectively in the educational and rehabilitative process. Dentists treating the children with autism must be familiar with the manifestations of the disease and its associated features so that they can provide the highest level of patient cooperation.

This article provides a guide towards the dental management for patients with Autism spectrum disorders. Dental professional must also be familiar with the drugs used to treat the disorder because many of them cause unpleasant oral and systemic side effects. Learning about autism will help dentist provide better care and make the visit to the dental clinic a better experience for everyone.

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Introduction

The autism spectrum disorders (ASD) was first described in 1943 by the American child psychologist, Leo Kanner. This disorder is a pervasive developmental disorder defined behaviorally as a syndrome consisting of abnormal development of social skills (withdrawal, lack of interest in peers), limitations in the use of interactive language (speech as well as nonverbal communication), and sensorimotor deficits (inconsistent responses to environmental stimuli)^{1,2,3}.

It is more common in the pediatric population than are some better known disorders such as diabetes, spinal bifida, or Down syndrome. Prevalence studies have been done in several states including United Kingdom, Europe, and Asia. Prevalence estimates range from two to six per 1,000 children. The wide range of prevalence points to a need for earlier and more accurate screening for the symptoms of ASD^{4,5}. The earlier the disorder is diagnosed, the sooner the child can be helped through treatment interventions.

The etiology of ASD is a mystery. Highly regarded researchers are of the opinion that there is probably more than one cause since the disorder can have such disparate manifestations. Genetics, environmental poisons, neurologic psychopathy, dietary deficiencies, and allergies have all been implicated. Pervasive developmental disorders, Asperger's syndrome, Rett syndrome, and childhood degenerative disorders are all considered a part of the ASD group, but the distinction between the various entities is not always clear. Some theories are that children with autism have abnormal levels of serotonin or other neurotransmitters in the brain

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or have irregularities in several brain regions that affect normal development^{4,5}.

Possible contributing factors in the development of autism include infections, errors in metabolism, immunology, lead poisoning, and fetal alcohol syndrome⁶.

Given the fact that the etiology and the increased incidence of the various ASDs are scientifically puzzling, treatment modalities tend to be wide ranging and very much trial and error, especially since there is no cure⁷.

Dental professionals who treat patients with ASDs should be knowledgeable about the special needs of not only these patients, but also of their parents. All children with ASD demonstrate deficits in:

- Social interaction,
- Verbal and nonverbal communication, and
- Repetitive behaviors or interests.

In addition, they will often have unusual responses to sensory experiences, such as certain sounds or the way objects look. Each of these symptoms runs the gamut from mild to severe. Each child will display communication, social, and behavioral patterns that are individual but fit into the overall diagnosis of ASD^{4,5,7}.

People with autism experience few unusual oral health conditions. Although commonly used medications and damaging oral habits can cause problems, the rates of caries and periodontal disease in people with autism are comparable to those in the general population. Communication and behavioral problems pose the most significant challenges in providing oral care⁸.

This review article provides a guide towards the dental treatment considerations for ASD patients.

Although the treatment for autistic disorders is mostly behavioral therapies, medications are often prescribed to treat some of the symptoms of autism. These include antidepressants, antipsychotic, anticonvulsant and CNS stimulant drugs. Many of these drugs have systemic and oral side effects and need to be addressed during the dental appointment. Antipsychotic medications may cause motor disturbances that affect speech and swallowing and cause xerostomia as well as orthostatic hypotension.

Antidepressants have a myriad of side effects that include dysgeusia, stomatitis and glossitis. One commonly prescribed medication, Fluoxetine, causes sucking, lip-smacking and tongue protrusion, making oral hygiene difficult

for both patient and dental hygienist. Long-term use of the anticonvulsant medications often prescribed may lead to an increase in bleeding due to either leukopenia and thrombocytopenia, or anemia disorders. Methylphenidate specifically may lead to tachycardia or a hypertensive episode if local anesthesia with vasoconstrictors is administered^{9,10,11}.

Drugs	Side effects
CNS Stimulants (Methylphenidate, Dextroamphetamine, Mixed amphetamine salts, Pemolin)	Xerostomia
Antihypertensive (Clonidine)	Xerostomia, dysphagia, sialadenitis.
Antidepressants (Fluoxetine and Sertraline)	Xerostomia, dysphagia, sialadenitis, dysgeusia, stomatitis, gingivitis, glossitis, discolored tongue, bruxism.
Anticonvulsants (Carbamazepine and Valproate)	Xerostomia, stomatitis, glossitis, and dysgeusia. Excessive bleeding can result when either medication is combined with aspirin or non-steroidal anti-inflammatory drugs.
Antipsychotics (Risperidone, Clozapine, Olanzapine, Quetiapine, Ziprasidon)	Xerostomia, sialorrhea, dysphagia, dysgeusia, stomatitis, gingivitis, tongue edema, glossitis, discolored tongue.

Table 1. Oral side effects of commonly used medications in Autism Spectrum Disorders.

ORAL MANIFESTATIONS AND ITS DENTAL TREATMENT

Harmful oral habits are common which consist of bruxism; tongue thrusting. Bruxism or forceful grinding of teeth is one of the sleep problems commonly observed in children with autism. Dentist can recommend a mouth guard to stop the self-injurious behavior. Even though the communication and behavioral problems in children with autism pose challenges for the dentist, treatment with proper planning and a lot of patience can definitely make a difference¹².

Dental caries risk enhances in patients who eat soft, sticky, or sweet foods; damaging oral habits; and difficulty brushing and flossing. Rajic and Dzingalasevic (1989) reported that a combined treatment, provided by a dental team and a pedopsychiatric team working together, resulted in a decreased prevalence of caries in a group of children with autism as compared to another group who did not receive any treatment¹³.

In 2008 Loo CY et al., have demonstrated that the patients with ASD were more likely to be

caries-free and have lower decayed, missing and filled teeth (DMFT) scores than controls¹⁴.

Dentist should recommend preventive measures such as topical fluorides and sealants and advise the patients or their caretakers about medicines that reduce saliva or contain sugar. Additionally, doctor must recommend patients to drink plenty of water, take sugar-free medicines and rinse the mouth with water after taking any drug. Apart from this, dentist must discourage the patient on usage of cariogenic foods and beverages, and convince them to maintain daily oral hygiene. Moreover, dentists should perform hands-on demonstrations to show patients the best way to clean their teeth if they find that patients are not following the specific procedure. Some patients cannot brush and floss independently, hence the doctor need to advice the caretakers or parents about daily oral hygiene^{15,16,17}.

Periodontal disease happens in people with autism in much the same way it does in persons without developmental disabilities. Previous studies have shown that the child with autism have shown poorer oral hygiene and increased periodontal disease. It is well known that good oral hygiene, particularly tooth brushing with fluoride toothpaste, is also important for keeping the teeth free from caries^{18,19}.

Maintaining good oral hygiene in children with autism is a significant task for both the parents or carers of the child, and dental staff^{19,20}.

Even dentist needs to prescribe antimicrobial agent such as chlorhexidine for their daily use and also explain them the importance of conscientious oral hygiene and frequent prophylaxis^{15,16,20}.

Tooth eruption may be delayed due to phenytoin-induced gingival hyperplasia. Phenytoin is commonly prescribed for people with autism^{16,20}.

Trauma and injury to the mouth from falls or accidents happen in patient with seizure disorders. Dentist should emphasize to caregivers that traumas require immediate professional attention and explain the procedures to follow if a permanent tooth is knocked out^{18,19,20}. Besides, train parents to locate any missing pieces of a fractured tooth and also highlight the parents that the chest x-ray of the patient's chest may be necessary if any fragments have been aspirated. Physical abuse is reported more frequently in people with

developmental disabilities than in the general population, therefore proper education is warranted to overcome this problem^{21,22}.

Rade RE (2010) has found that autistic patients have allergies, immune system problems, gastrointestinal disturbances and seizures. The dentist must be aware of these comorbid conditions so that they can give optimal care to the children with autism spectrum disorders²³.

Besides, pediatric dentist needs to have in-depth Knowledge and understanding of behavioral principles when they are dealing with ASD patients²⁴.

The dentist also needs to consider the following aspects before treating the ASD patients; understand the sensory needs of the child with ASD, use of motivating games, give rewards, discuss with caretakers in advance and use of behavior modification techniques in an autistic child having self-injurious behavior²⁵.

However adults with autism demonstrate increased independence by developing skills through a structured teaching²⁶ or visual teaching²⁷ model, such models can be used to introduce children with autism to dentistry. Comprehensive dental treatment under general anesthesia may be required 30 percent of the time²⁸. In a 10-year follow-up, patients resisted efforts to establish personal contact with the dental staff. Furthermore, sedative techniques were ineffective because of atypical response patterns. Use of general anesthesia was the only solution to provide necessary dental care²⁹.

- Discourage use of cariogenic foods and beverages.
- Suggest sugar-free medications if available.
- Dentist must advice on preventive measures such as topical fluoride and sealants.
- Recommend brushing teeth with fluoridated toothpaste twice daily.
- Dentist must instruct parents on appropriate protocol following dental trauma like seek immediate professional care and locate/save missing tooth if separated.
- Dentist should recommend rinsing with water thoroughly after taking each dose of sugar containing medication
- Suggest frequent water intake for children taking xerostomic medications.
- Elaborate on safety issues appropriate to the age of the child, such as car seats, stair gates, bike helmets, and mouth guards to prevent oral-facial trauma.
- Dentist should emphasize on habits that may harm the child's teeth such as propping baby bottles, putting child to bed with bottle.
- Refer to oral surgeon if any oral developmental abnormalities diagnosed during the dental checkup.

Table 2. Outline of dental management for the autism spectrum disorders patient.

When dental needs are great and attempts at behavior modification are unsuccessful, general anesthesia in the operating room creates a controlled environment

where care is delivered efficiently and effectively³⁰. Dentist must be familiar with the medications used to treat the associated features of the disorder because many of them cause inconvenient orofacial and systemic reactions and may precipitate adverse interactions with dental curative agents.

Conclusions

Given the high prevalence of children with autism, it is very likely pediatric dentists will have one or more of these children in their practice for many years. As a dentist, one needs to show compassion and provide optimum care for the patients and their families. Besides, Dentists treating the people with autism must be well versed with the manifestations of the disorder and its connected features so that they can acquire the maximum level of patient cooperation.

Educating patients and their caretakers and modifying those plans to continually meet their needs are critical to the success of the patient with autism in obtaining optimal oral hygiene. Therefore an oral health program that emphasizes prevention is considered of particular significance for children and young people with autism.

Declaration of Interest

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