

CASE REPORT



# Diagnosis and management of attention-deficit hyperactivity disorder patient in dental operator

Ketaki Gudadhe, Gagandeep Lamba, Devendra Nagpal, Purva Chaudhari

Department of Pediatric and Preventive Dentistry, VSPM's Dental College and Research Centre, Nagpur, Maharashtra, India

## Correspondence:

Ketaki Gudadhe, Department of Pediatric and Preventive Dentistry, VSPM's Dental College and Research Centre, Nagpur, Maharashtra, India. Phone: +91-9881124995. Email: ketki.gudadhe@gmail.com

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## Abstract

Attention-deficit hyperactivity disorder is an often neglected neurodevelopment disorders. The provision of dental care for affected children can be challenging because they are often unsettled in the dental environment. The dentist must frequently make adjustments in clinical practice and use behavior management strategies according to the special needs of the patients with this disorder. This case report aims to report the dental care of a 7-year-old child with attention-deficit hyperactivity disorder and to discuss the dental management therapies that were utilized for the patient.

**Keywords:** Attention-deficit hyperactivity disorder, dental operator, special health care needs

## Introduction

American association of pediatric dentistry defines special health care needs as “any physical, developmental, mental, sensory, behavioral, cognitive, or emotional impairment or limiting condition that requires medical help, health-care intervention, and/or use of specialized services or programs.”<sup>[1]</sup> Attention-deficit hyperactivity disorder (ADHD) is one of the most common behavioral disorders found in outpatient settings.<sup>[1]</sup> The prevalence of ADHD ranged from 4.7 to 29.2%.<sup>[2]</sup> ADHD is assumed to develop in childhood, but <40% of these children meet the diagnostic criteria in their teenage years.<sup>[2,3]</sup> The three subtypes of ADHD according to DSM-IV based on symptoms displayed are primarily inattentive, primarily hyperactive/impulsive types, and combined types.

## Case Report

A 7-year-old male patient reported to the Department of Pediatric and Preventive Dentistry with the complaint of pain in maxillary left back region of jaw for 3 days. The pain was mild, throbbing, spontaneous, aggravated on chewing, and relieved after sometime. It was not associated with swelling and fever. The patient visited to a private dental clinic, for the same dental complain. The patient showed definitely negative behavior according to Frankel behavior rating scale and, hence,

was referred to VSPM Dental College by the practitioner. The patient's parents mentioned the history of high-grade fever and septicemia at the age of one year. The patient was hospitalized for a week during the same episode. Patients mother reported delay in achieving milestones such as walking and talking, for which the patient had undergone physiotherapy treatment at the age of 2 and a half years.

The child was referred to the Department of Psychiatry, to diagnose the mental condition, and also to assess the intelligence quotient with the aim of parental counseling. As per the reports from Psychiatrist, the child showed delayed gross motor skills. He is unable to read the words and often gets confused between similar looking alphabets – d and b, i.e., dysgraphia. He cannot tie his shoe laces and also cannot close the buttons of shirt. He cannot solve simple math's problems. He does not have any friends and is inactive in school.

Tests which were conducted were – clinical interview, Binet-Kamat intelligence (BKT) test, and adaptive behavior rating scale (ABRS). The BKT results stated that the child had under borderline intelligence. The ABRS results stated that the child is at risk of ADHD inattentive type and clinically significant symptoms of ADHD hyperactive type. The child was diagnosed with ADHD with clinically significant hyperactive symptoms. Occupational therapy along with cognitive intervention was recommended by the psychologist. Fine motor interventions were suggested to improve his:

- Grip strength.
- Finger and thumb control.
- Eye-hand coordination.
- Bilateral coordination.
- Shoulder stability.
- Releasing objects.

Intraoral examination showed deep proximal caries seen with 64 [Figure 1]; tenderness presents on vertical percussion with 64. Occlusal caries seen with 84. Radiographic examination confirmed chronic dentoalveolar infection with 64 and Class I dental caries with 84 [Figure 2].

Treatment that was carried out – In the 1<sup>st</sup> appointment, oral screening was done complete medical and dental history was recorded. The patient was referred to pediatrician for opinion regarding general condition of the patient and to obtain consent for dental procedure under local anesthesia. Desensitization was done to reduce the anxiety of the patient. Step of diagnostic impression making was excluded to avoid discomfort to the patient.



**Figure 1:** Deep occlusal caries seen with 64



**Figure 2:** IOPA showing radiolucency involving enamel, dentin and involving pulp seen with 64, more than 2/3<sup>rd</sup> root resorption seen with distal root of 64

In the 2<sup>nd</sup> appointment, band pinching was done with 65 and a quadrant alginate impression extending 5 mm beyond the distal abutment tooth was made. The band was stabilized with pins and the cast was poured. The band and loop space maintainer was fabricated with 0.9-mm gauge (0.036") orthodontic stainless steel wire.

In the 3<sup>rd</sup> appointment, extraction of 64 was done under local anesthesia (2% lignocaine with 1:200,000 adrenaline), band and loop space maintainer was cemented on 65 [Figure 3]. The patient was advised for the use of electronic toothbrush to maintain oral hygiene. Biannual application of 5% fluoride varnish was also suggested.

### Behavior management

Behavior management techniques used were audio-visual aids. All appointments were scheduled 1 hr after his medication in morning. All the appointments were kept short and breaks were given after every 15 min to the patient. The child did not cooperate while making impressions. Hence, a quadrant impression tray [Figure 4] was used along with physical restraints and a successful impression was made.



**Figure 3:** Extraction done with 64, band and loop space maintainer given with 64 region



**Figure 4:** Quadrant tray

## Discussion

The exact pathophysiology of ADHD is unknown. Brain imaging studies suggest that there is smaller total cerebral volume as well as reduced global and local activation of the basal ganglia and the anterior frontal lobe in patients with ADHD. Multiple studies indicate genetics may account for approximately 80% of ADHD cases. Other factors thought to contribute to ADHD include prenatal exposure to smoke, lead or alcohol, prematurity, and intrauterine growth retardation. Environmental factors such as excessive screens viewing, low parental education, and prenatal maternal anxiety have also been proved as contributing factors. Comorbid conditions including behavioral conditions (anxiety, depression, oppositional defiant, and conduct disorder and obsessive-compulsive disorder), developmental issues (learning and language disorders, dyslexia, or other neurodevelopmental disorders), and physical conditions (Tourette's syndrome, and sleep apnea) have been reported.<sup>[4]</sup>

One should have a thorough knowledge of health history/medication, recognition of possible oral presentations as ADHD patients present high caries risk, poor oral hygiene, xerostomia from medications, and altered pH in oral cavity due to excess caffeine/soda pop consumption. Care should be taken during dental treatments for potential drug interactions with sedatives and vasoconstrictors. ADHD patients show increased bruxism, increased frequency of dental trauma, and possible disruptive behavior during dental treatments. Older children show increased possibility for risky behaviors such as smoking or recreational drug use/abuse.

### Possible Drug Interactions<sup>[5]</sup>

Drug	Side effects
Bupropion (Wellbutrin, Zyban)	Xerostomia, stomatitis, altered taste, gingivitis, glossitis, Bruxism, toothache, oral edema, and dysphagia
Clonidine (Catapres)	Xerostomia, dysphagia, sialadenitis, parotid gland swelling, and pain
Desipramine (Norpramin)	Xerostomia, sialadenitis, altered taste, tongue edema, discolored tongue, and facial edema
Dextroamphetamine (Dexedrine)	Xerostomia, altered taste, bruxism, loss of smell, and taste acuity
Imipramine (Tofranil)	Xerostomia, sialadenitis, altered taste, stomatitis, tongue edema, discolored tongue, and facial edema
Methylphenidate (Ritalin, Concerta, Ritalin SR it is instead of RS)	Xerostomia and erythema multiforme

The child should be made familiar to the terms such as “shot,” “pain,” and “drill” before dental appointments.<sup>[3]</sup> ADHD medications should ideally be taken 30–60 min before the dental visit. Procedures can be carried out under the influence of

the drug to enhance cognition and behavior.<sup>[5]</sup> Between doses of short-acting stimulants, children are not covered by medication and thus may be highly symptomatic of ADHD. Further, they may experience “rebound” between doses. It is advisable to avoid dental appointments during this phase. Short and concise instruction should be given to the patient, as the attention span of these patients is very small, also only one instruction should be given at a time.<sup>[6]</sup> Positive reinforcements in the form of praising and small tangible rewards should be included.<sup>[4]</sup> Multiple short visits with small breaks at regular intervals will be more successful than one prolonged visit.<sup>[3]</sup> Prior notification should be given to the patient to facilitate any transition, for example, your break will be over in 2 min and we will resume to our treatment.<sup>[6]</sup> Physicians consultation should be taken regarding other comorbid conditions. Preventive measures like fluoride application can be carried out. Local anesthesia should be used with caution. Attempts should be made for painless dentistry to avoid secretion of endogenous epinephrine which may cause undue hyperactivity of the patient. The use of Tell-Show-Do technique of behavior management has been found to be useful in managing children with ADHD during a dental procedure.<sup>[7]</sup>

## Conclusion

ADHD is a medical disorder that can be affected both positively and negatively by environmental stimuli. Children with ADHD present a unique challenge to dentists. Behavioral situations, medications, and high risk for oral problems require the clinician to be aware of the adjustments that need to be made for successful oral health both in the office and at home.

### Clinical significance

The current report reflects the appropriate use of the behavior management techniques that resulted in improved acceptance for dental treatment by such challenging patients.

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### References

1. American Academy of Pediatric Dentistry. Guideline on management of dental patients with special health care needs. *Pediatr Dent* 2012;34:160.
2. Kuppili PP, Manohar H, Pattanayak RD, Sagar R, Bharadwaj B, Kandasamy P, *et al.* ADHD research in India: A narrative review. *Asian J Psychiatr* 2017;30:11-25.
3. Adyanthaya A, Ismail S. Attention deficit hyperactivity disorder—a review, dental implications and treatment recommendations for dental professionals. *IOSR J Dent Med Sci (IOSR-JDMS)* 2016;15:115-22.
4. Frese RD, McClure RD. Dental Implications of the ADHD

- Patient. Provider; 501. p. 211886.
5. James B. Attention-deficit hyperactivity disorder and dentistry. *Ont Dent* 2006;83:28.
  6. Friedlander AH, Yagiela JA, Paterno VI, Mahler ME. The pathophysiology, medical management, and dental implications of children and young adults having attention-deficit hyperactivity disorder. *J Calif Dent Assoc* 2003;31:669-78.
  7. Blomqvist M, Holmberg K, Fernell E, Ek U, Dahllöf G. Dental caries and oral health behavior in children with attention deficit hyperactivity disorder. *Eur J Oral Sci* 2007;115:186-91.

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