

**Role of Pedodontists in Post Anesthesia Recovery and Care - Two Case Reports.**

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**Abstract**

Attention Deficit Hyperactivity Disorder (ADHD) is a behavioral disorder that makes it difficult for an individual to pay attention and control impulsive behaviors. They might be restless and constantly active. ADHD is not only a disease of childhood but can continue through adolescence and adulthood. Most cases are diagnosed when children are 6-12 years of age. Moreover, people diagnosed with this disorder may have additional problems such as sleep and anxiety issues. 4.4% of the adult population in the U. S. A. have ADHD but less than 20% of them seek help for it. 41.3% of ADHD cases are considered to be severe.

**Keywords:** General Anesthesia, Child, Neurology, Autism, Behavior, Attention Deficit Hyperactivity Disorder.

**Introduction**

Providing an excellent quality of dental treatment has been a huge challenge in the field of pediatric dentistry. Uncooperative children have always proven to be difficult to manage in the dental operatory. Special children are prone to the fear of unknown situations and the unfamiliar surroundings that evoke a sense of uncertainty. Their lack of understanding and disorientation with the surroundings can be a hurdle in establishing communication with the

child. With the advent of general anesthesia and sedation, a path has been paved in providing satisfactory dental treatment for these children.

**Case Report 1**

A 3 year and 10 months old boy residing in the far east had been referred from a neurology institute for dental treatment with a chief complaint of pain in upper front region of the jaw since a period of 3-4 months. The nature of pain was continuous, throbbing and aggravated on lying down. There was no relief from the pain on consuming analgesics; thus, the parents reported to the dental clinic for pain relief.

This child was diagnosed at the neurosciences institute with attention deficit hyperactive (ADHD) disorder along with autism. Characteristic behavioral pattern noticed by the parent was that the child was self-mutilating himself and others in the vicinity. On recording the drug history, it was noted that the child was on clonidine (1mg) and risperidone for the last 2 weeks. On assessment of his behavior, a rating of Frankel's definitely negative was made.<sup>[1]</sup>

During clinical observation, the child was very uncooperative for intra-oral examination, lacking communication skills, was extremely mobile and preferred to be walking around the clinic. As stated by Woloshin et

al, without effective use of language, the doctor-patient relationship is impaired.<sup>[2]</sup> In this particular case, language was a barrier to communicate with the child and the mother. With limited access, intraoral examination was carried out and a tentative diagnosis of 'severe early childhood caries' was made.<sup>[3]</sup> Keeping in mind the behavior pattern and self-mutilation it was decided to manage the child using the pharmacological technique and it was decided to perform the treatment under general anesthesia. Preanesthetic evaluation (routine blood and urine investigations) was advised as a preanesthetic protocol. Patient was advised nil per oral (NPO) eight hours prior to procedure.

Since the patient was uncooperative and presented with neurological issues, it was decided to treat him under general anesthesia. Midazolam, 0.5 mg/kgwt (i.e. 9 mg) was given as a premedication. With the assistance of the mother, it was administered to the patient. Once the child was a little drowsy and showed less agitation, he was taken into the operatory area, and induction of anesthesia was done. The child was seated on the parent's lap during induction. The mask was gently placed on the nose. Propofol was administered intravenously. Thorough intraoral examination was done under general anesthesia and the treatment planning was carried out as follows:

Firstly, preventive treatment was done followed by an invasive procedure. Teeth that required preventive restorations were identified and sealants were placed. Topical fluoride application was done. Teeth (51, 54,61,64,74) that were non restorable and had pulpal involvement were extracted and vicryl resorbable sutures were placed.

### **Case Report 2**

A 9-year old boy, resident of Bangalore had been referred from a neurology institute for dental treatment with a chief complaint of pain in lower left back tooth region since a

period of 1-2months. Nature of pain was continuous and throbbing. There was no relief from the pain on consuming analgesics; thus, the parents reported to the dental clinic for pain relief.

The child was diagnosed at the neurological institute with attention deficit hyperactive disorder, autism and hyperthyroidism. Characteristic behavioral pattern noticed by the parent was that the child was self-mutilating (banging his head on objects).

He was treated with sizodon (1mg), lithium (300mg), valproate (200mg), thyronome (100mg) and clonidine (100mg). On assessment of the behavior, a rating of Frankel's definitely negative was made. On clinical observation, the child was very uncooperative for intra-oral examination and was lacking communication skills. With the limited intraoral examination, a provisional diagnosis of 'rampant caries' was made. Bearing the behavior pattern and self-mutilation in mind, it was decided to manage the child using pharmacological technique and a decision to perform the treatment under general anesthesia was made. Preanesthetic evaluation was done by the anesthesiologist and NPO instructions were given to parent.

Since the patient was uncooperative and presented with neurological issues, it was decided to treat him under general anesthesia. Premedication of midazolam 0.5 mg/kgwt (i.e. 12 mg) was administered. Parental presence played an important in role in calming the child and additionally helped him to emulate what was given by the mother. Once the patient was drowsy and less agitated, he was shifted into the operatory area with the help of the mother, and induction of anesthesia was done. Teeth that required preventive restorations were identified and sealants were placed. Topical fluoride application was done. Teeth (36, 74, 75, 55, 85, 84) that were non

restorable and had pulpal involvement were extracted and vicryl resorbable sutures were placed.

### Discussion

Post-anesthetic recovery is a complex process that encompasses several outcomes including normalization of physiological endpoints, return of vital signs to baseline and psychological recovery. Post-anesthetic recovery in both the patients was uneventful. The main challenge was the behavior pattern in the recovery room. Preparedness, knowledge and ability to have a foresight into possible behavior tantrums post anesthesia in the recovery room of these special children is essential. These were further compounded with communicative disorders in these children where communication with one of the parent's was a hurdle as they did not speak or communicate in English or the local language. The need of an interpreter in their local language was strongly recognized (Patient no.1). Despite the verbal and written instructions, this child was on liquid diet for two days post-surgery which made the child irritable and whining.

In both the cases, the mother played a major role during the transition of the patients from the pre-operative area into the operatory area and during the induction. Both these patients were comfortable, assured and relatively less distressed with the presence of the mother in the operatory room until the induction.

In the above discussed cases, the patients were highly agitated, mobile, whining and demanded for parental presence and were soothed by physical contact with their mother. Post-operatively it was seen that both the patients were comfortable. Considering this, liquid diet was commenced in the first hour (clear fruit juice) post recovery and they were able to hold it well. As per Aldrete discharge criteria,<sup>[4]</sup> the patient was awake, conscious and crying, responded to verbal commands, had good airway maintenance and purposeful movements of the limbs were

noted. Keeping in mind the discharge criteria and maintenance of vital signs to baseline the patient was discharged. Post-operative antibiotics and anti-inflammatory drugs were prescribed as per the requirement (syrup augmentin duo, syrup ibugesic kid).

Patients subjected to general anesthesia may show delayed cognitive response, reduced functional ability, reduced speed of recovery and increased rate of morbidity in the immediate post-operative period.

One can overcome these using drugs having a rapid onset, short duration and minimal adverse effects. Authors such as Pedulto et al, in 2002 have found reduced cognitive function in the patients subjected to propofol as the anesthetic agent.

In 2000, Larsen et al <sup>[5]</sup> compared cognitive functions of patients subjected to propofol, sevoflurane and desflurane. The propofol group of patients gave about 98% correct answers when compared with the sevoflurane group of patients, which was about 78%. Prolonged sedative capability of volatile anesthetic agents like propofol may be due to increased half-life of the drug. The recovery of the patient can be delayed, and the cognitive side effects may not be recorded. Higher doses than those recommended can lead to some cognitive dysfunction. Cognitive impairment can be seen up to 24 hours post-operatively.

Special children may show some form of cognitive impairment when compared to their baseline assessment. Post-operative care of the patients should be meticulous and planned with the participation of the caregivers, operators and the nursing staff. Recognizing unambiguous changes in the behavioral pattern immediately post-surgery can help prevent any untoward events in the chain of post-anesthesia recovery.

The cases discussed above showed baseline behavior patterns post anesthetic recovery, with improvement in the

self-mutilating behavior. Parental presence and touch comforted both the children. The constant monitoring of the children in post anesthetic recovery period by the staff helped instill confidence in the parents/ caregivers.

**Figures**

**Case 1**

Pre- operative photographs:



Fig 1: Lateral profile of child



Fig 3: Child under general anesthesia in operating room



Fig 4: Armamentarium used during the procedure



Fig 2: Intra-oral view of the arches



Fig 5: X- ray showing teeth 52, 51, 61, 62, 74 and 75

Post- operative photographs:



Fig 6: Extraction of 51, 61 done and vicryl resorbable sutures placed, strip crown placed on 62, composite restoration done on 52



Fig 7: Teeth 54 and 64 extracted



Fig 8: Extraction of 74 done and vicryl resorbable sutures placed

## Case 2

Pre- operative photographs:



Fig 9: Views of defective teeth when child under general anesthesia



Fig 10: Intra- oral view of maxillary arch showing decayed teeth



Fig 11: Intra- oral view of decayed mandibular teeth

Post- operative photographs



Fig 12: Extraction of teeth 74, 75 and 36 done, resorbable sutures placed



Fig 13: Extraction of teeth 84, 85 done, resorbable sutures placed



Fig 14: Extraction of teeth 55, 64 and 65 done, resorbable sutures placed

### Conclusion

Post-operative care of patient is as important as pre-operative care. Adhering to the guidelines can be advantageous for managing a child with behavioral disorders.

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