

Case Report
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Dental Management of Pediatric Patient with Autism Spectrum Disorder under General Anesthesia: A Case Report

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ABSTRACT

Autism spectrum disorder or autism, corresponds to "a pervasive developmental disorder (PDD), characterized by an abnormal or a deficient development. It is manifested before the age of three, with a characteristic disturbance in the functioning of each of the following three areas: social interaction, verbal and non-verbal communication, and restricted and repetitive behaviors. The combination of these three elements corresponds to the autistic triad. The latter appears in different forms, with varying degrees of severity, and can also vary with age. The oral care of this patient remains delicate, due to the difficulty of communication and the apprehension of his behavioral response. The young female, 13 years old and in good general health, presented to the dental center of Cheikh Khalifa Hospital with spontaneous pain in the right mandibular and left maxillary sectors. She was diagnosed with one of the autistic spectrum disorders: Asperger's syndrome. In our case, the patient was uncooperative and unable to attend the dental treatment in a vigorous state or under conscious sedation. General anaesthesia was the choice option. This last resort allows the patient to lose consciousness, eliminates pain and relaxes the muscles, making dental treatment a pleasant experience. The aim of this poster is to illustrate, through a case study, the protocol for managing a patient with autism spectrum disorder, and to demonstrate the indication for general anesthesia in the treatment of this patient.

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Received: September 16, 2024; **Accepted:** September 25, 2024; **Published:** September 30, 2024

Keywords: General Anesthesia, Autism Spectrum Disorder, Pediatric Dentistry

Introduction

Paediatric dentistry requires special skills and knowledge of child development and behaviour. It necessitates tailored approaches to enable appropriate functional and aesthetic rehabilitation, with the aim of acting early and preventing complications.

There are several treatment modalities: in the vigilant state, the cognitive-behavioral approach, under sedative premedication; under conscious sedation or under general anesthesia [1-3].

General anaesthesia, as a last resort, is the solution of choice when the aforementioned methods fail, and when the oral care of the young children appears long and laborious.

This method delivers reliable, effective results and enables all necessary oral treatments to be carried out in a single session.

Before deciding on the indication for general anesthesia, it is important to assess the risk/benefit ratio. The aim of general anesthesia is to make the patient lose consciousness, eliminate

pain, relax muscles, monitor respiratory and cardiovascular functions before, during and after the intervention.

According to the French National Authority of Health (HAS), general anesthesia can be linked to: the patient's general state of health: (anxiety, fear, phobia or autism), to the procedure itself: Heavy and urgent oral conditioning (locregional infectious state) or to local anesthesia (rare allergies or hypersensitivity) [4].

The young female was diagnosed with one of the autism spectrum disorders, Asperger's Syndrome, and has assembled the main components of the autistic triad- Social interaction disorders, verbal and non-verbal communication disorders, Presence of stereotyped and repetitive behaviors.

After trying various treatment modalities, general anaesthesia was the last alternative for managing our patient.

Case Report

The young female, 13 years old, in good general health, presented to the dental center of Cheikh Khalifa Hospital with spontaneous pain in the right mandibular and left maxillary sectors. She was diagnosed with one of the autistic spectrum disorders: Asperger's

syndrome. In our case, the patient was uncooperative and unable to attend the dental treatment in a vigorous state or under conscious sedation. General anaesthesia was the choice option.



Figure 1

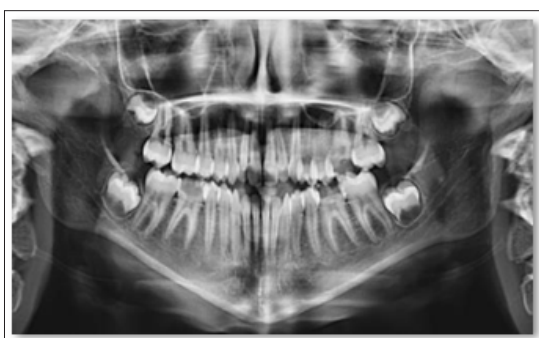


Figure 2: Panoramique X-ray

During the pre-operative odontological consultation, the patients mother reports pain in the right mandibular and left maxillary area.

At the end of the consultation, the indication for general anesthesia has been established. In a second phase, the oral care needs have been determined, a pre-treatment plan has been drawn up and the duration of the intervention has been estimated.

This is followed by the pre-anaesthetic consultation. The latter is carried out by an anaesthetist at least 48 hours before the operation.

There are several aims to this consultation: complete medical assessment of the patient, prescription of additional tests if necessary, assessment of the anaesthetic risk according to the ASA classification, performance of a clinical examination including predictive criteria for difficult intubation and factors favouring the occurrence of intraoperative respiratory complications, assessment of the benefit/risk ratio of the operation, explaining to the child's parents or legal representatives the course of the operation, if there's any risks involved and the instructions to be followed before and after the intervention. At the end, all the above information are recorded in the patient's medical file. This exchange of communication with parents was carried out in order to obtain informed and documented consent.

The child's parents must follow specific pre-operative instructions: Stopping or continuing to take medication before the operation, depending on the patient's illness and the type of medication.

A pre-operative fasting period of at least 6 to 8 hours for solid foods and 2 hours for liquids is required. The aim of this fasting period is to avoid the risk of inhalation of gastric contents during anaesthetic induction, and inflammation of the lungs following the penetration of gastric fluid into the bronchi.

On entering the operating room, the patient is rapidly monitored, with electrodes placed to record the electrocardiogram, a blood pressure monitor placed on the arms to measure blood pressure, a pulse oximeter attached to the finger to measure oxygen saturation, and a heating blanket used to keep the patient's body temperature stable. The aim is to monitor vital signs, in particular heart rate and oxygen saturation.

If the oxygen supply is impaired, pre-oxygenation is conducted for approximately three minutes using a mask before starting the procedure, in order to reduce the risk of hypoxaemia during the intervention.

Once all the vital signs have been checked and validated by the anaesthetic team, the GA phase properly begin

- Anaesthetic Induction involves the controlled sedation of patients, and is characterised by a rapid loss of consciousness and the attainment of the stage of anaesthesia known as "surgical", corresponding to stage III of Guedel. Induction is by the administration of a hypnotic by the venous route or by inhalation. In our case it was carried out by intravenous administration of Propofol.
- Intubation is a procedure that can be either nasotracheal or orotracheal. The decision is taken by the anaesthetist during the pre-anaesthetic consultation, taking into account a number of factors such as age, anatomical and morphological features, and the difficulty of intubation. For oral care, nasotracheal intubation is the technique of choice, as it allows easy access to the oral cavity, reduces the risk of intraoperative mobilisation and ensures surgical comfort. It is performed by inserting a tube into the most permeable nostril.

Before beginning oral care, dressings are applied to the patient's eyes to protect them from drying out and debris. The patient is then covered with a surgical drape.

The mouth is opened with a mouth opener before a laryngeal protector or "packing" is inserted. This consists of gauze moistened with physiological serum or sterile water, which is placed behind the tongue. The aim was to avoid inhalation of saliva, blood or water and to prevent any bone, dental or foreign body debris from falling out.

The care envisaged should be carried out in quadrants, generally with 4-handed isolation, starting with conservative and prophylactic therapies, ending with surgical care.

This sequential approach ensures that oral and dental care is carried out in an orderly fashion and in complete safety for the patient.

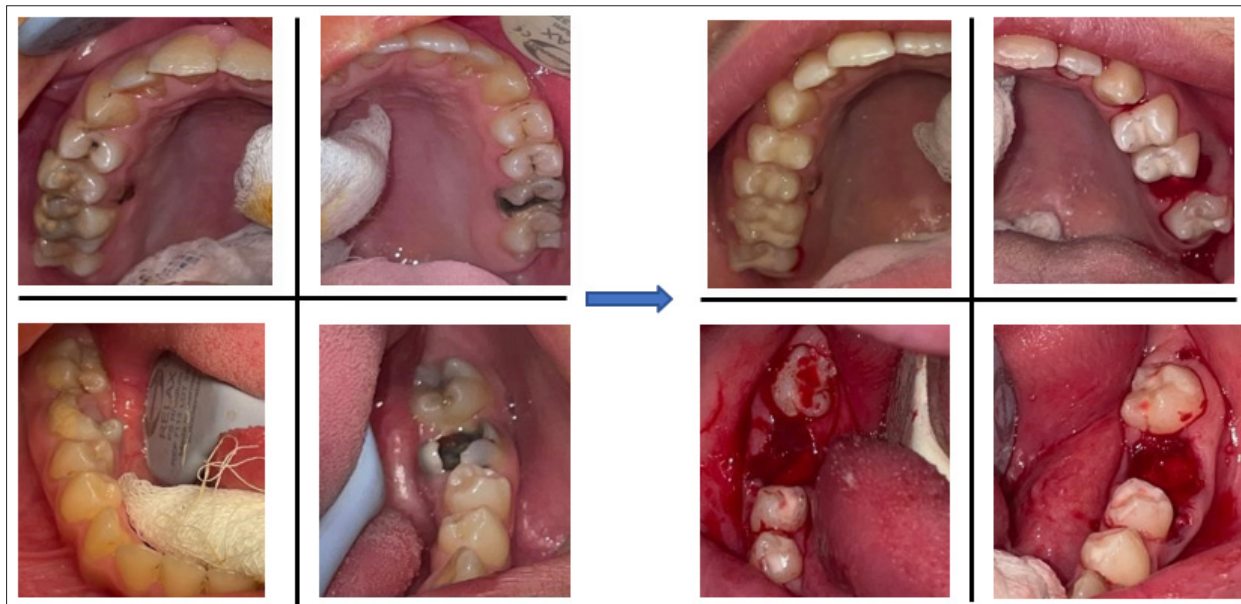


Figure 3: Before Treatment

Figure 4: After Treatment

At the end of the operation, the anaesthetist stopped the anaesthetic agents and ensured oxygenation to facilitate the patient's awakening. The endotracheal tube was removed when breathing became spontaneous and regular. The patient was transferred to the monitoring room, where he was monitored for several hours until his awakening.

Discussion

The procedure of General Anaesthesia follows several stages, beginning with the induction.

According to Dave and al, induction can be achieved by 2 different techniques

- **Inhalation:** Sevoflurane is the anesthetic agent of choice. It provides a safe, reliable and rapid induction and is also well accepted by patients [5].
- **Intravenous:** Currently, propofol is the preferred agent due to its short duration of action [5].

The efficacy of premedication with intranasal dexmedetomidine was mentioned by Chengfeng Xu in 2021: administered intranasally at 2 ug/kg and improves sedation levels.

According to Yuanxia Tangn this procedure reduces incidence of nausea, vomiting, laryngospasm and postoperative agitation. It offers a more effective sedation and decreases the anxiety due to the separation with parents [6-8].

Concerning intubation modalities, a study conducted by Bowman and al comparing Nasal vs Oral Intubation concluded that nasotracheal intubation is the procedure of choice as it offers a good oral access, while keeping the airway clear for the patient [9].



Figure 5: Intubation

The use of local anesthesia combined with general anesthesia has also been discussed in literature and Rania Baakdah and al found that this combination improves patient recovery, reduces post-operative pain and risk of bleeding (hemorrhagic risk) [10].

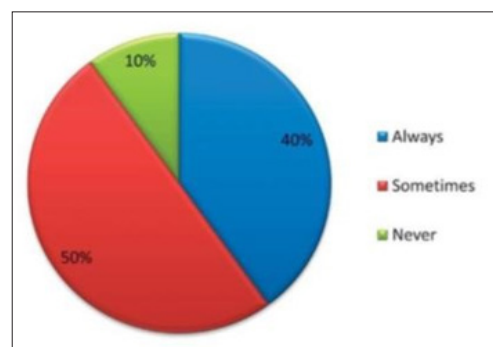


Figure 6: Administration Frequency of Local Anaesthesia during Dental Treatment under General Anaesthesia

Relating to post-operative instructions and follow-up, Erkmén Almaz and al concluded that regular meetings should be organized with parents to reinforce oral hygiene instructions and educate them about dietary changes.

In this respect, a follow-up schedule should be set up after dental treatment under general anaesthesia.

Also, Raghu and al insisted on Instructions to remember at each follow-up visit [11]

- The use of fluoride toothpaste to improve the child's oral hygiene
- A limit consumption of sugary foods and cariogenic beverages

In our clinical case, we opted for the induction of general anesthesia through the intravenous administration of propofol, chosen for its effectiveness and brief duration of action. Nasotracheal intubation also facilitated convenient access to the oral cavity.

Follow-up appointments were strategically designed to enhance post-operative assessment, reinforce oral hygiene practices, and provide dietary guidance aimed at reducing the risk of recurrence. These appointments carry heightened significance for patients with special needs. Throughout this case, we delved into various aspects of employing general anesthesia in pediatric dentistry. Resorting to general anesthesia, considered a last resort, emerges as a preferred solution when conventional methods prove unsuccessful, and the oral and dental care for young children appears intricate and time-consuming [12].

Despite the inherent risks and potential complications, this option remains a secure and effective method. It is crucial to underscore key factors that contribute to minimizing these risks. This involves providing thorough pre- and postoperative instructions to parents and caregivers, implementing vigilant monitoring, and employing state-of-the-art equipment, complemented by the training of qualified resuscitation professionals.

Conclusion

The indication for oral care under general anaesthesia is a therapeutic decision that must be well thought-out and considered as a last resort after the failure of all other management modalities. It is a solution that aims to improve the long-term oral health of our patients, rather than an easy and comfortable solution for the practitioner.

Reinforcement of oral hygiene and the delivery of dietary instructions is necessary to reduce the occurrence of recurrences.

A follow-up schedule is mandatory after dental treatment under general anesthesia, where instructions have to be repeated at each follow-up visit [13].

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