http://dx.doi.org/10.1590/1981-86372023000520210074

Treatment under general anesthesia after dental trauma in a patient with autism spectrum disorder: a case report

Tratamento odontológico em paciente com transtorno do espectro autista, sob anestesia geral, após traumatismo dentário: relato de caso

Mariamelya **CAMPOS**[1] 0000-0002-1076-3349

Saulo Vinicius da **ROSA**[2] 0000-0002-7107-9575

Marina Luísa Garbarino **NOGUEIRA**[3] 0000-0002-8116-8539

Margareth Eliana Dias **CONSULIN**[1] 0000-0003-1760-9093

Luiz Gabriel **SIGNORELLI**[4] 0000-0001-5788-9742

Tatiane **MAREGA**[1] 0000-0002-0647-945X

Alcides Ricardo **GONÇALVES**[1] 0000-0001-5708-2981

ABSTRACT

The objective of this study was to present a clinical case of a pediatric patient with ASD who had experienced dental trauma and underwent dental treatment in a hospital environment under general anesthesia. A 10-year-old male patient who was Brazilian and had leukoderma was diagnosed with ASD at three years of age, he experienced trauma to the upper teeth, with avulsion of tooth 12 and extrusive displacement of tooth 11, after being run over by a car in February 2017. He was immediately taken to the emergency room, where he was seen by a dentist and he was immediately transferred to Hospital. In the out-patient clinic of this hospital, with the aid of protective stabilization and infiltrative anesthesia, tooth 12 was reimplanted 40 minutes after trauma and restrained with composite resin. He continued treatment in another city and Endodontic and paraendodontic treatment of teeth 11 and 12 was performed under general anesthesia. Follow-ups with the patient are continuing, with the last control periapical radiograph taken in January 2020. In this case, the proposed dental treatment was successful and did not lead to any complications.

Indexing terms: Autism spectrum disorder. Dental care for the disabled. Tooth injuries.

[1] Faculdade São Leopoldo Mandic, Campinas, São Paulo, Brasil. Rua José Rocha Junqueira, 13, Swift, 13045-755, Campinas, SP, Brasil. Correspondenco to: M Campos. E-mail: <melfbdc@gmail.com>.
[2] Pontifícia Universidade Católica do Paraná, Escola de Medicina e Ciências da Vida. Curitiba, PR, Brasil.
[3] Centro Ann Sullivan Brasil, Ribeirão Preto, SP, Brasil.
[4] Hospital Santa Casa de Misericórdia de Itatiba, Itatiba, SP, Brasil.

How to cite this article

Ximenes IS, Malta CEN, Martins JOL, Lemos JVM, Barros LO, Gomes CEA, et al. Oral rehabilitation after partial maxilectomy for removal of pleomorphic adenoma: case report RGO, Rev Gaúch Odontol. 2023;71:e20230005. http://dx.doi.org/10.1590/1981-86372023000520210074

RESUMO

O objetivo deste trabalho foi apresentar um caso clínico de um paciente pediátrico com TEA que sofreu traumatismo dentário e foi submetido a tratamento odontológico em ambiente hospitalar, sob anestesia geral. Paciente do sexo masculino, 10 anos, brasileiro, leucoderma, foi diagnosticado com TEA aos três anos de idade, apresentou trauma nos dentes superiores, com avulsão do dente 12 e deslocamento extrusivo do dente 11, após ser atropelado por um carro em fevereiro de 2017. Ele foi imediatamente levado para o pronto socorro, onde foi atendido por um dentista e imediatamente transferido para o Hospital. No ambulatório deste hospital, com auxílio de estabilização protetora e anestesia infiltrativa, o dente 12 foi reimplantado 40 minutos após o trauma e contido com resina composta. Ele continuou o tratamento em outra cidade, o tratamento endodôntico e paraendodôntico dos dentes 11 e 12 foi realizado sob anestesia geral. Os acompanhamentos com o paciente continuam, com a última radiografia periapical de controle realizada em janeiro de 2020. Neste caso, o tratamento odontológico proposto foi bem-sucedido e não levou a nenhuma complicação.

Termos de indexação: *Transtorno do espectro autista. Assistência odontológica para pessoas com deficiências. Traumatismos dentários.*

INTRODUCTION

Autism spectrum disorder (ASD) is a neurological and developmental condition that is characterized by features often identified in early childhood, and it can cause personal, social, academic, and professional impairments [1,2]. The global prevalence of ASD is approximately 1% [3], estimated at 62/10,000 births [4], with patients having a long-life span and good quality of life [5].

This condition is generally identified during the second year of life (12 to 24 months), although there are cases that can be diagnosed before 12 months of age [1].

Diagnosis is four times more frequent in men than in women. However, women are more likely to have intellectual disabilities [6], suggesting that women without intellectual impairment or language delay may not have the condition identified due to its subtler manifestations [1]. Due to its prevalence, early on set, life-long symptoms, and associated impairment, ASD is considered a public health problem [7].

The cause of ASD has not yet been identified, but it is believed to be of multifactorial origin, influenced by environmental, biological, and genetic factors, which interact during vulnerable periods of neurodevelopment [3]. ASD occurs most frequently in people with certain genetic conditions, such as fragile X syndrome and tuberous sclerosis [7].

Children with special needs are at greater risk of dental trauma than children without such conditions due to their cognitive–developmental delay, poor motor coordination, and behavioral disorder [8]. Dental trauma can be related to ASD due to the conditions cited above, with a 56% incidence of trauma to the upper incisors and 33% incidence of enamel fracture [9], but there is still little evidence to qualify ASD as a risk factor for dental trauma [10].

Due to the behavioral condition of some ASD patients, out-patient dental treatment cannot be performed, and thus, treatment under general anesthesia is needed to provide a safe and controlled environment for comprehensive care [11]. The use of general anesthesia for dental care in some patients with ASD is a necessity [12].

According to the American Academy of Pediatric Dentistry, the indications for the use of general anesthesia for dental procedures include serious behavioral or psychiatric disorders; severe physical and mental impairments; the need for treatment in patients with systemic diseases; surgical procedures in very young children who need extensive treatment; allergies to local anesthetics; lack of cooperation during outpatient treatment even under sedatives and local anesthesia; and requirement for immediate dental care [13].

Therefore, this case report is extremely important to inform general practitioners and specialists about establishing a treatment protocol for dental trauma under general anesthesia in patients with ASD in a hospital environment.

CASE REPORT

A 10-year-old male patient who was Brazilian and had leukoderma was diagnosed with ASD at three years of age. Hew asunder continuous treatment with thioridazine hydrochloride 25mg (1 tablet at night) and did not present

with any other pathology. In February 2017, he experienced trauma to the upper teeth, with avulsion of tooth 12 and extrusive displacement of tooth 11, after being run over by a car. He was immediately taken to the emergency room, where he was seen by a dentist. However, due to his behavioral condition, the required procedures could not be carried out. Therefore, he was immediately transferred to Santa Casa Hospital in Ribeirão Preto, São Paulo, Brazil.

In the out-patient clinic of this hospital, with the aid of protective stabilization and infiltrative anesthesia using lidocaine with adrenaline 1:100,000 (DFL, RJ, Brazil), tooth 12 was reimplanted 40 minutes after trauma and restrained with composite resin (figure 1). Skull and face radiographs were obtained to rule out other fractures. The patient was prescribed 7 ml of an amoxicillin 250 mg suspension taken orally every 8 hours for 7 days. The child's caregivers were advised on dental hygiene care, complemented by the use of gauze moistened in 0.12% chlorhexidine gluconate after brushing for 7 days and a liquid-fat diet for 15 days.

Figure 1. Photo immediately after emergency care with composite restraint.

Eight days after the trauma, the patient was reassessed at the Centro Ann Sullivan do Brazil of Ribeirão Preto in the State of São Paulo, Brazil, under oral sedation with clonazepam 2.5 mg/ml (3 drops) to make the child more cooperative. Periapical radiographs of the upper incisor teeth were obtained, and apexes that were not completely closed were observed (figure 2). Clinically, bone fragments were observed in the region between teeth 11 and 12. In the same session, infiltrative anesthesia using lidocaine with adrenaline 1:100,000 (DFL, RJ, Brazil) was administered. Pulpectomy of teeth 11 and 12, intracanal medication with calcium hydroxide PA (Biodynamics, São Paulo, SP, Brazil), and temporary restoration with glass ionomer cement (chemically activated) were performed and the bone fragments were removed. Antimicrobial treatment was maintained for another 2 days.

The patient was referred to the specialized Dentistry for Patients with Special Needs department at the São Leopoldo Mandic College, Campinas unit, State of São Paulo, Brazil. Due to the patient's resistance to outpatient treatment and the number of procedures that were to be performed, dental treatment under general anesthesia in a hospital environment, specifically at the Santa Casa de Itatiba Hospital, State of São Paulo, Brazil, was recommended to the patient's caregivers (figure 3).

The treatment was planned as follows: endodontic treatment and paraendodontic surgery of teeth 11 and 12, followed by bone grafting in the apical region of tooth 12. The dental procedures were performed under general anesthesia and the patient was intubated through the nasotracheal route, with infiltrative anesthesia using lidocaine with adrenaline 1:100,000 (DFL, RJ, Brazil) to control painful stimulation and hemostasis.

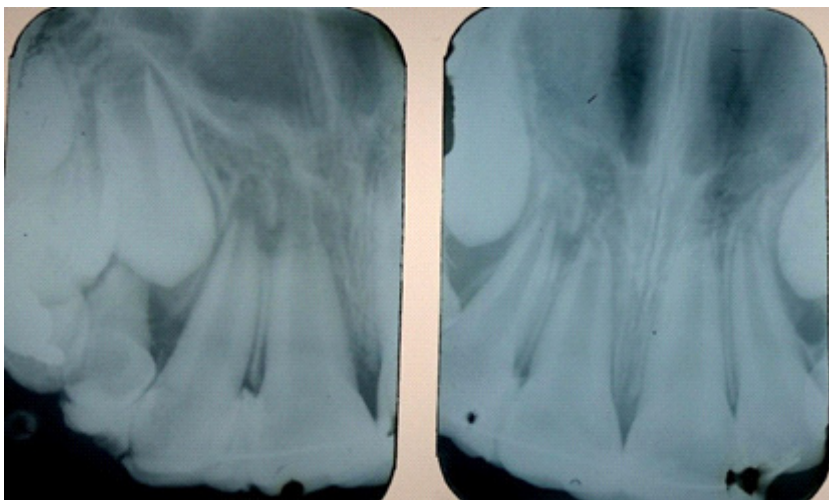

Figure 2. Radiograph of teeth 11 and 12.

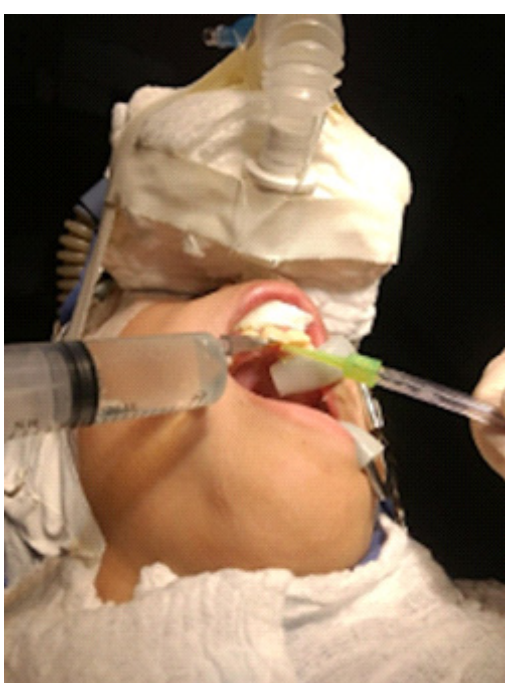

Figure 3. Endodontic treatment in a hospital environment under general anesthesia.

Endodontic treatment was performed with the help of an apex locator (Raypex, CVDW, Munich, Germany) and the working length (CT) was set to "0.0". The procedure was performed using type K manual stainless-steel files (Dentsply - Switzerland) until hand file number 70 reached the CT of the two treated teeth. The canals were dried with Cell Pack absorbent paper cones (Dentsply, Rio de Janeiro, Brazil) and filled using Endofill cement (Dentsply, Petrópolis, RJ, Brazil) and main gutta-percha cones and accessories. The cutting of the obturator material was performed with the aid of thermoplasticizing material (Odous of God).

Paraendodontic surgery of teeth 11 and 12 was performed after incision with scalpel no. 15 and mucoperiosteal detachment with a Molt elevator. Ostectomy was performed using a truncated cone surgical drill with a high rotation

motor, with irrigation using physiological serum, to gain access to the periapical region. On teeth 11 and 12, bevel resection was performed on the root apices, with approximately 2 mm being removed. The cavity for back filling was prepared with ultrasound (Sonic Borden 2000N, Kavo) under irrigation n with saline solution and then filled with white MTA repair cement (Angelus, Londrina, PR, Brazil) (figure 3). Gen-Mix compound bovine bone graft (Baumer, São Paulo, SP, Brazil) was used to fill the bone cavity, and the procedure concluded with the placement of the Gen-Derm membrane (Baumer, São Paulo, SP, Brazil) and suturing with a 910 absorbable polyglactin thread. A panoramic control radiograph was obtained 28 days after the dental procedure at the hospital.

The patient was discharged from the hospital on the day after the procedure with a prescription of amoxicillin 500 mg with potassium clavulanate 125 mg 5 ml every 8 hours for 7 days and ibuprofen 30 drops every six hours for three days.

Follow-ups with the patient are continuing in the specialized Dentistry for Patients with Special Needs department at the São Leopoldo Mandic College, in the Campinas unit, State of São Paulo, Brazil, with the last control periapical radiograph taken in January 2020 (figure 4). Radiographic findings indicate that the endodontic treatment is satisfactory, there is no change at the apex, and bone remodeling took place after the paraendodontic surgery and placement of the bone graft.

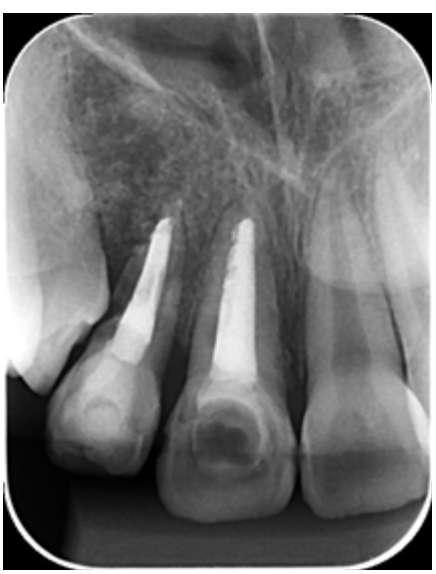

Figure 4. Final radiograph of teeth 11 and 12.

DISCUSSION

To compare the risk factors of dental trauma in children and adolescents with and without ASD, a study evaluated 122 participants, and patients with ASD presented a higher probability of experiencing dental trauma in routine situations, such as a fall while walking. Although ASD is more frequently diagnosed in males, female patient shaves a higher incidence of dental trauma, likely because ASD manifests more severely in women [8].

Children with ASD may also have attention-deficit/hyperactivity disorder (ADHD), which can lead to a greater chance of dental trauma. A study of children aged 7-15 years showed that children with ADHD had a higher incidence of trauma to the anterior teeth than the control group [14].

In our case, the patient was 10 years old and male, and the dental trauma resulted from being run over by a car.

When communication with the patient during dental care is hampered, either owing to psychological problems or disability, dental treatment under general anesthesia is indicated, with satisfactory results [15,16]. Moreover, general and behavioral needs should also be considered [17], as corroborated by the reported case.

For dental treatment of pediatric patients with special needs under general anesthesia in a hospital environment, as reported in this article, the dental surgeons' knowledge of the protocol to be followed is of extreme importance. Moreover, establishing a treatment plan that meets the long-term needs of the patient is also vital. General anesthesia is an alternative resource that brings comfort and safety to dental treatment [18].

A study conducted in Brazil evaluated the dental care of patients with special needs under general anesthesia, and the disabilities cited in the study were mainly brain paralysis, mental disability, and syndromes. Autism was the fourth most common disability [16].

During dental care of a child with ASD, some behavioral characteristics, including lack of eye contact, delay in speech, stereotyped behavior, hypersensitivity to sounds, and problems associated with physical contact, can act as barriers at the time of interaction and communication [19]. Therefore, the use of drug sedation, nitrous oxide conscious sedation, and general anesthesia are good options in the face of the non-collaborative behavior of the patient [20]. In the present case, general anesthesia was the option selected after considering the non-collaborative characteristics of the patient and the complexity of the dental treatment to be performed. Our approach led to positive results: radiographically, the endodontic treatment appeared satisfactory, there was no change in the apex, and bone remodeling occurred after the paraendodontic surgery and placement of bone graft.

In the case of patients with ASD, support and family support for the maintenance of traumatized teeth is essential, both for hygiene and for returning to follow-up appointments. According to the Guidelines of the International Association of Dental Traumatology, patient adherence to follow-up appointments and family support is extremely important for the success of post-traumatic treatment [21]. The traumatized tooth (avulsion) should be radiographed even if there are no signs and symptoms after treatment. Radiographic examinations should occur in the sequence of time after the trauma: second, fourth and sixth weeks, three, four and six months. After this period, the tooth must be radiographed after one year, and in the next five years it must be evaluated annually [21]. This periodic monitoring of this being to observe if there is no development of internal external resorption or even ankylosis in the traumatized tooth. The parents or guardians of the patient should be informed about these possible future conditions, and there may be a need for this tooth to be extracted in the future [22].

CONCLUSION

It is of utmost importance that dental surgeons have knowledge regarding dental treatment under general anesthesia in a hospital environment for patients with special needs, and especially for patients with ASD who cannot undergo outpatient treatment or in cases where the procedures to be performed exceed the tolerance time.

Collaborators

MCS Campos, responsible for carrying out the treatment of the reported case and involved in drafting the manuscript. SV Rosa, involved in drafting the manuscript. MLG Nogueira, responsible for emergency care of the reported case and critical review of the manuscript. MED Consulin, responsible for endodontic treatment. LG Singnorelli, responsible for reviewing the manuscript. T Marega, responsible for planning the case and reviewing the manuscript. AR Gonçalves, responsible for the surgical treatment of the reported case and involved in drafting the manuscript.

REFERENCES

1. Psychiatric Association A. Manual diagnóstico e estatístico de transtornos mentais: DSM-5. 5a ed. São Paulo: Artmed; 2014.
2. Assumpção Jr FB, Pimentel ACM. Autismo infantil. Rev Bras Psiquiatr. 2000;22(suppl 2):37-9. https://doi.org/10.1590/S1516-44462000000600010

3. Vlassakova BG, Emmanouil DE. Perioperative considerations in children with autism spectrum disorder. Curr Opin Anaesthesiol. 2016 Jun;29(3):359-66. https://doi.org/10.1097/ACO.0000000000000325
4. Elsabbagh M, Divan G, Koh YJ, Kim YS, Kauchali S, Marcín C, et al. Global prevalence of autism and other pervasive developmental disorders. Autism Res. 2012;5(3):160-79. https://doi.org/10.1002/aur.239
5. Ruggieri V, Gómez JLC, Martínez MM, Arberas C. Aging and autism: understanding, intervention, and proposals to improve quality of life. Curr Pharm Des. 2019;25(41):4454-4461. https://doi.org/10.2174/1381612825666191204165117
6. Weigelt S, Koldewyn K, Kanwisher N. Face identity recognition in autism spectrum disorders: A review of behavioral studies. Vol. 36, Neurosc Biobehavioral Rev. 2012;36(3):1060-84. https://doi.org/10.1016/j.neubiorev.2011.12.008
7. Marega T, Gonçalves AR, Romagnolo F. Odontologia especial. São Paulo: Quintessence; 2018.
8. Habibe RCH, Ortega AOL, Guaré RO, Diniz MB, Santos MTBR. Risk factors for anterior traumatic dental injury in children and adolescents with autism spectrum disorders: a case-control study. Eur Arch Paediatr Dent. 2016;17(2):75-80. https://doi.org/ 10.1007/s40368-015-0207-7
9. Altun C, Guven G, Yorbik O, Acikel C. Dental injuries in autistic patients. Pediatr Dent. 2010;32(4):343-6.
10. Andrade NS, Dutra TTB, Fernandes RF, Moita Neto JM, Mendes RF, Prado Júnior RR. Retrospective study of dental trauma in children with autism spectrum disorders: a paired study. Spec Care Dent. 2016;36(5):260-4. https://doi.org/10.1111/scd.12180
11. Matton S, Romeo GP. Behavioral regression in 2 patients with autism spectrum disorder and attention-deficit/hyperactivity disorder after oral surgery performed with a general anesthetic. J Am Dent Assoc. 2017;148(7):519-24. https://doi.org/10.1016/j.adaj.2017.05.006
12. Taghizadeh N, Davidson A, Williams K, Story D. Autism spectrum disorder (ASD) and its perioperative management. Paediatr Anaesth. 2015;25(11):1076-84. https://doi.org/10.1111/pan.12732
13. American Academy of Pediatric Dentistry. Behavior guidance for the pediatric dental patient. Pediatr Dent. 2018;40(6):254-67.
14. Altun C, Guven G, Akgun OM, Acikel C. Dental injuries and attention-deficit/hyperactivity disorder in children. Spec Care Dent. 2012;32(5):184-9. https://doi.org/10.1111/j.1754-4505.2012.00270.x
15. Modesto L. Anestesia geral em odontopediatria. In: Guedes Pinto AC. Odontopediatria. São Paulo: Santos; 1991. p. 1017-31.
16. Castro AM, Marchesot MGN, Oliveira FS, Novaes MSP. Avaliação do tratamento odontológico de pacientes com necessidades especiais sob anestesia geral. Rev Odontol UNESP. 2010;39(3):137-42.
17. Haddad A. Anestesia geral no tratamento odontológico de pacientes com necessidades especiais. São Paulo: Santos; 2005.
18. Bengtson CRG, Bengtson NG, Bengtson AL, Pinheiro SL, Mendes FM. O uso da anestesia geral em Odontopediatria TT - The use of general anesthesia in pedodontics. J Heal Sci Inst. 2006;24(4):319-25.
19. Amaral COF, Malacrida VH, Videira FCH, Parizi AGS, Oliveirda A, Straioto FGS. Paciente autista: métodos e estratégias de condicionamento eadaptação para o atendimento odontológico. Arch oral res. 2012;8(2):143-51. DOI: https://doi.org/10.7213/aor.v8i2.23056
20. Mangione F, Bdeoui F, Monnier-Da Costa A, Dursun E. Autistic patients: a retrospective study on their dental needs and the behavioural approach. Clin Oral Investig. 2019. https://doi.org/10.1007/s00784-019-03023-7
21. Levin L, Day PF, Hicks L, O'Connell A, Fouad AF, Bourguignon C, et al. International Association of Dental Traumatology guidelines for the management of traumatic dental injuries: General introduction. Dent Traumatol. 2020 Aug;36(4):309-313. https://doi.org/10.1111/edt.12574
22. Kenny DJ, Barrett EJ, Casas MJ. Avulsions and intrusions: the controversial displacement injuries. J Can Dent Assoc. 2003 May;69(5):308-13

Received on: 21/6/2021
Final version resubmitted on: 28/1/2022
Approved on: 16/3/2022

Assistant editor: Luciana Butini Oliveira