



# Airway Management of a Rare Case of Enormous Obstructive Macroglossia during Magnetic Imaging under Deep Sedation: A Pediatric Case Report

Anouar Jarraya<sup>1\*</sup>, Manel Kammoun<sup>1</sup>, Kamel Kolsi<sup>1</sup>, Yosr Hentati<sup>2</sup>, Manar Hbaieb<sup>3</sup>, Manel Belhadj Mansour<sup>3</sup>

<sup>1</sup>Department of Pediatric Anesthesiology and Critical Care, University of Sfax, Sfax, Tunisia

<sup>2</sup>Department of Radiology, University of Sfax, Sfax, Tunisia

<sup>3</sup>Department of Pediatric Surgery, University of Sfax, Sfax, Tunisia

## ABSTRACT

The airway management of pediatric patients with facial dysmorphia can be difficult and can be associated with high anesthesia-related morbidity. In this case report, we describe the management of a rare case of enormous macroglossia causing nasopharyngeal obstruction among a 3-year-old girl with no comorbidities scheduled for Magnetic Resonance Imaging (MRI) of the face, requiring deep sedation to maintain the child immobile during the MRI procedure. This case study demonstrates how sedation in lateral position enabled the anesthesia challenge to be won. It allowed improved anesthetic outcomes by reducing the risk of difficult airway and aspiration.

**Keywords:** Airway; Deep sedation; Magnetic imaging; Macroglossia; Lateral position

## INTRODUCTION

It was predicted that macroglossia might cause difficult perioperative airway management [1]. Preparations for difficult airways should always be considered. Magnetic imaging is often needed before surgery. In pediatric patients, deep sedation to maintain the child immobile during the MRI procedure is always required [2]. However, anesthesia outside the operating room for patients with difficult airways is highly risky. We report an original airway management that allowed the success of the procedure without any anesthesia-related morbidity [3].

## CASE PRESENTATION

### Patient Information

A 3-year-old girl presented to the pediatric anesthesiology department with congenital enlargement of the tongue (**Figure 1**). The patient had progressive difficulty ingesting solid food and suffered from obstructive sleep apnea and snoring. The mother reported recurrent upper respiratory tract infections the last year. However, the patient had normal physical, functional and motor development. The patient had no past history of anesthesia or surgery and we had no available genetic screening for this patient [4].

<b>Received:</b>	28-October-2022	<b>Manuscript No:</b>	IPJICC-23-14607
<b>Editor assigned:</b>	02-November-2022	<b>PreQC No:</b>	IPJICC-23-14607 (PQ)
<b>Reviewed:</b>	16-November-2022	<b>QC No:</b>	IPJICC-23-14607
<b>Revised:</b>	22-May-2023	<b>Manuscript No:</b>	IPJICC-23-14607 (R)
<b>Published:</b>	20-June-2023	<b>DOI:</b>	10.35248/2471-8505.9.3.021

**Correspondence to:** Anouar Jarraya, Department of Pediatric Anesthesiology and Critical Care, University of Sfax, Sfax, Tunisia; E-mail: jarraya\_anouar@medecinesfax.org

**Citation:** Jarraya A, Kammoun M, Hentati Y, Hbaieb M, Mansour MB, et al. (2023) Airway Management of a Rare Case of Enormous Obstructive Macroglossia during Magnetic Imaging under Deep Sedation: A Pediatric Case Report. J Intensive Crit Care. 9:021.

**Copyright:** © 2023 Jarraya A, et al. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.



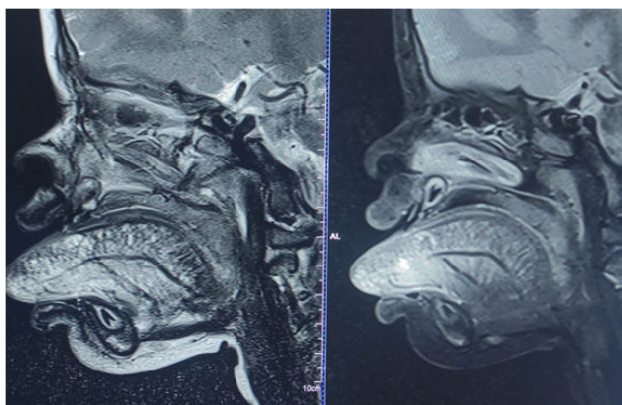
**Figure 1:** Macroglossia with nasopharyngeal obstruction.

### Clinical Findings

In the anesthesia preoperative assessment, the patient had correct general conditions. She had also no abnormal cardiac or breathing sounds. The risk of difficult intubation was identified as she presents with macroglossia, limited mouth opening and facial dysmorphism. The use of a laryngeal mask or I-Gel seems to be impossible. Moreover, the risk of aspiration during anesthesia was evoked as the patient had drooling and difficulty in swallowing [5].

**Timeline of current episode:** Since childbirth, the patient's tongue had enlarged gradually. Swallowing and breathing have become more difficult in the last three months. The patient was referred from the maxillofacial department to have a preoperative MRI under general anesthesia. She will be scheduled for surgical tongue reduction.

**Diagnostic assessment:** A cystic lymphangioma of the tongue was suspected in front of this macroglossia. The MRI of the face showed a capillary lymphatic venous malformation of the right tongue that extended towards the floor of the mouth (**Figure 2**) [6].



**Figure 2:** Magnetic imaging showing the airway obstruction.

**Therapeutic interventions:** Oral midazolam 0.5 mg/kg was given to the patient 20 minutes before the MRI. All the preparations for the anticipated difficult intubation/ventilation and tracheostomy were kept ready. The anesthesia induction was done with a 6% sevoflurane induction after correct pre-oxygenation. Monitoring was initiated with continuous ECG, oxygen saturation, temperature and non-invasive blood pressure monitoring. Then, we inserted a 20 G peripheral venous cannula. After anesthesia induction in a supine position, the patient presented with oxygen desaturation of 92% treated by mouth suctioning, high oxygen flow and left lateral positioning. Anesthesia was maintained by 1 MAC sevoflurane administered with a nasal cannula with 2 L/min, 100% oxygen gas flow in lateral positioning, well tolerated by the patient. The MRI procedure lasted 24 min with no adverse effects. The patient was breathing spontaneously and we noted no need for advanced oxygen support or intubation. At the end of the procedure, sevoflurane was stopped and the patient was maintained in a lateral position with the administration of a nasal 2 L/min 100% O<sub>2</sub> flow [7].

**Follow-up and outcome of interventions:** After the anesthesia procedure, the patient was awoken in lateral position and stayed for 2 hours in the post anesthesia care unit. The evolution was favorable with no hemodynamic or respiratory adverse events. The ambulatory procedure was successful and the patient left the hospital the same day.

**Patient perspective:** the parents of the child were very satisfied with the quality of healthcare.

**Informed consent:** Informed consent to publication was obtained from the mother [8].

## RESULTS AND DISCUSSION

In this case report, we showed the interest and safety of lateral position in children with difficult airways undergoing deep sedation for a MRI procedure. This position has been used previously for upper gastrointestinal endoscopy in children to reduce the risk of aspiration. In our case report, lateral positioning allowed the management of the risk of difficult ventilation and reduced the risk of aspiration [9]. It was reported that the upper airway of a sedated, spontaneously breathing child widens in the lateral position. The region between the tip of the epiglottis and the vocal cords demonstrates the greatest relative percent increase in size. For this reason we opted for lateral position in our patient suffering from airway obstruction. However, in the literature, lateral positioning was never used to manage enormous macroglossia, leading to nasopharyngeal obstruction and this was the originality of our case report [10]. The most common form of respiratory obstruction during pediatric deep sedation is the falling back of the tongue into the pharynx, owing to the relaxation of the muscular support. In our case, the risk of the fall of the tongue when sedated in a supine position can be favored by the increased weight of the tongue. In fact, there are several instruments to overcome this difficulty, like the Guedel

cannula, LMA Airways or I-Gel. Unfortunately, it was impossible to insert these instruments into the mouth of our patient as the macroglossia was obstructive. Furthermore, in deeply sedated children, laryngeal devices did not protect the airways from aspiration, particularly in our patient who had drooling. Moreover, brutal insertion of these devices can lead to ischemia of the oral and pharyngeal mucosa. In sedated children, there is always a risk of apnea requiring ventilation initially or intubation in the case of difficult ventilation [11].

## CONCLUSION

In our case, the intubation will be difficult and require particular skills and special devices. Nevertheless, difficult intubation can have serious adverse effects. This case report shows the utility of lateral positioning in deeply sedated children with obstructive macroglossia. It allows better anesthetic outcomes by reducing the risk of aspiration and widening the upper airway, which may help in avoiding difficult ventilation and intubation.

## COMPETING INTEREST

The authors declare no competing interest.

## AUTHORS' CONTRIBUTION

Manel Kammoun: Article writing

Anouar Jarraya: Article revision

Yosr Hentati: Provided figures

Manar Hbaieb and Manel Belhadj Mansour: Data collection

Kamel Kolsi: Supervising

## REFERENCES

1. Tsukamoto M, Hitosugi T, Yokoyama T (2016) Perioperative airway management of a patient with Beckwith-Wiedemann syndrome. *J Dent Anesth Pain Med.* 16(4):313-316.
2. Tewari A, Munjal M, Kamakshi, Garg S, Sood D, et al. (2007) Anaesthetic consideration in macroglossia due to lymphangioma of tongue: A case report. *Indian J Anaesth.* 53(1):79-83.
3. Bouchut JC, Godard J, Lachaux A, Diot N (2001) Deep sedation for upper gastrointestinal endoscopy in children. *J Pediatr Gastroenterol Nutr.* 32(1):108.
4. Oh SH (2018) sedation in pediatric esophagogastroduodenoscopy. *Clin Endosc.* 51(2): 120-128.
5. Litman RS, Wake N, Chan LM, McDonough JM, Sin S, et al. (2005) Effect of lateral positioning on upper airway size and morphology in sedated children. *Anesthesiology.* 103(3):484-488.
6. Sheta SA (2010) Procedural sedation analgesia. *Saudi J Anaesth.* 4(1):11-16.
7. Ayedi M, Zouari J, Smaoui M, Jarraya A, Bouaziz I, et al. (2011) The performance of the i-gel® in comparison with the laryngeal mask airway classic: 19AP4-4. *Eur J Anaesthesiol.* 28:233.
8. Jarraya A, Elleuch S, Zouari J, Smaoui M, Laabidi S, et al. (2016) Postoperative analgesia in children when using clonidine in addition to fentanyl with bupivacaine given caudally. *Pan Afr Med J.* 24:182.
9. Kim YH (2012) Pulmonary aspiration associated with supraglottic airways: Proseal laryngeal mask airway and I-Gel™. *Korean J Anesthesiol.* 63(6):489-490.
10. Beylacq L, Bordes M, Semjen F, Cros AM (2009) The I-gel®, a single-use supraglottic airway device with a non-inflatable cuff and an esophageal vent: An observational study in children. *Acta Anaesthesiol Scand.* 53(3): 376-379.
11. Sequera-Ramos L, Duffy KA, Fiadjoe JE, Garcia-Marcinkiewicz AG, Zhang B, et al. (2021) The prevalence of difficult airway in children with Beckwith-Wiedemann syndrome: A retrospective cohort study. *Anesth Analg.* 133(6):1559-1567.