

CASE REPORT

OBSTETRIC ANESTHESIA

Anesthetic management of a parturient with myositis ossificans undergoing emergency surgery for postpartum hemorrhage

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ABSTRACT

Myositis ossificans (MO) is a rare disease which involve calcification of the pterygoid muscles leading to severe trismus and limited mouth opening, that is considered as difficult airway when proceeding with general anesthesia (GA). We report a case of 26-year-old parturient with an underlying MO of the pterygoid muscles, who developed postpartum hemorrhage due to retained placenta, and needed emergency manual removal of the placenta in the operating room. Providing anesthesia for these patients can present a significant challenge. Difficulty arises related to combination of airway management for GA, resuscitation and a narrow time window to commence to the surgery. Awake fiberoptic intubation is a safe method to secure the airway for such patient while multidisciplinary team effort of focused planning and resuscitation is crucial to avoid maternal morbidity and airway catastrophe.

Abbreviations: MO - Myositis Ossificans; GA - General Anesthesia; PPH - Postpartum Hemorrhage; TCI – Target Controlled Infusion

Key words: Airway management; Awake fiberoptic intubation; Intubation; Myositis ossificans; Parturient; Postpartum hemorrhage

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1. INTRODUCTION

Myositis ossificans (MO) involving the pterygoid muscles of the face is a rare disease. The disease involves calcification of the pterygoid muscles. This causes the patient to suffer from trismus, limited jaw movement and difficulty to open the mouth.¹ Traditional approach to intubation may lead to catastrophic airway complication. Thus, awake fiberoptic intubation (AFOI) is a safe method where known difficult airway is expected including for obstetric populations. Postpartum hemorrhage (PPH) is a serious life-threatening condition. Patient may deteriorate rapidly from hypovolemic shock. In a patient who is bleeding significantly, where medical intervention has failed and

the condition necessitates urgent surgery, time is crucial and any delays may lead to morbidity or even mortality.² Setting up AFOI for urgent surgery requires multidisciplinary involvement especially in a bleeding maternal patient to ensure good outcome.

2. CASE REPORT

We present a case of a 26-year-old female, who was a known case of MO of the pterygoid muscles. Patient had a spontaneous vaginal delivery of a healthy baby boy, but it was complicated with PPH due to retained placenta in the labor room. Code red was initiated by the obstetric



Figure 1: Limited mouth opening due to myositis ossificans

team as patient progressed into hypovolemic shock and urgent help was required from the anesthetic team urgent help was required from the anesthetic team for resuscitation. Massive transfusion protocol was activated during the resuscitation and she was transfused with 2 units of safe-O packed cells while planned for manual removal of placenta (MROP) in the operating room.

On assessment of this patient in the labor room, she was in hypovolemic shock; pale, cold peripheries, prolonged capillary refill time, hypotensive with blood pressure of 80/40 mmHg and heart rate of 130 beats/min. During this assessment, features of difficult airway were recognized. Patient had severe limitation to her mouth opening with inter-incisor gap limited to only one centimeter, a receding chin and stiff mandible. However, her neck movement was not impaired and her cervical joints allowed full range of motion for her neck. Further information was obtained and patient mentioned that she had a history of undergoing GA via AFOI 3 years ago for an elective procedure. She informed that she was previously diagnosed with pterygoid muscle ossification. As the patient continued to bleed, obstetric team was asked to hasten the arrangement for the patient to undergo emergency operation.

Due to her condition and hemodynamic instability, the option for regional anesthesia was deemed unsuitable for this patient and GA was planned as the method for her anesthesia. However, due to the complexity of her airway and the nature of her condition, we decided for AFOI technique as the means to provide GA. The plan was discussed with the obstetric team regarding the potential risk of airway compromise particularly in this patient combined with the risk of worsening hypovolemic shock due to delay in securing the source of bleeding. In the operating room, patient was initially given nebulization with 5 mL of lignocaine 2% followed by 4% cocaine soaked nasal packing for 5 min. Her vital signs; blood pressure, heart rate, SpO₂, respiratory rate, electrocardiogram and hydration status, were constantly monitored. Prior to commencement, patient had already

received 2 units of packed cells, 1.5 L of crystalloid solution and 500 mL of colloid. Her blood pressure was 105/67 mmHg, heart rate of 105–115 beats/min, SpO₂ 98% and respiratory rate of 20–24 breaths per min. Target controlled infusion (TCI) of remifentanyl 1–2 ng/mL was started as an adjunct for smooth AFOI, while allowing the patient to maintain consciousness and spontaneous breathing. Transient drop in blood pressure noted at the commencement of the infusion but was controlled with boluses of intravenous (IV) phenylephrine and fluids. Glycopyrrolate 200 µg given IV to reduce secretions. AFOI approach via nasal preceded and spray-as-you-go technique employed during the procedure. Lignocaine 2% 3 mL was sprayed at the epiglottis, vocal cords and trachea. Size 6.5 mm nasal endotracheal tube was inserted without any difficulty. Once the airway was secured, rocuronium 0.6 mg/kg was given IV. The surgery proceeded and hemostasis was able to be secured.

At the end of the operation, patient was extubated fully awake without any complication. She was then admitted to high dependency unit (HDU) post-operatively for observation and was able to be discharged well from the hospital after 3 days.

3. DISCUSSION

The exact pathogenesis of MO is still not well understood but the disease has been attributed to injury to the pterygoid muscles and thus leading to its calcification, manifested as severe trismus being the main symptom. All these features point towards difficult airway and intubation for GA. The patient had been previously diagnosed with this disease and was aware of her condition. She also gave history of previous AFOI for anesthesia many years ago. This crucial information along with bedside assessment of her airway alerted us about the severe limitation to her airway and a difficult airway scenario was plausible. In obstetric patient, the upper airway becomes more vascularized and edematous. The glottic and subglottic structures also swell.

As the pregnancy progresses, the pre-pregnancy and up until labor and post-delivery, the Mallampati score will also be increased, thus predicting higher risk of difficult airway.³ This condition is exacerbated further if the patient has pre-eclampsia, has been infused with oxytocin or given IV fluids. In our case, the patient's airway difficulty was further compounded by the fact that not only she had MO that severely limited her mouth opening, but she also had all the physiological changes associated with pregnancy. She had escalated risk about successfully securing the airway.

Adequate preparation, mobilizing resources and staff as well as organized multidisciplinary approach is

paramount to ensure good outcome in managing PPH. Early recognition and timely resuscitation are crucial to avoid the condition from rapidly deteriorating. In the case of PPH due to retained placenta, MROP is required where time to wait for spontaneous expulsion of the retained placenta is not permissible. There is discrepancy when it comes to optimal time for MROP.⁴ Evidence suggests MROP to be done within 30 min to prevent PPH and recent studies even shortened it to be within 10–20 min.⁵ However, no safe time window has been fully established regarding optimal time for MROP, but delayed intervention does compound further blood loss and emergency surgery is required regardless of set cut-offs.⁶

In our case, the patient was suffering from hypovolemic shock that conservative observational management was out of question. Massive transfusion protocol and code red were enacted. Obstetric team deemed that MROP in the operating room is necessary and to be done as soon as possible. However, despite the dire need to undergo operation, proceeding with GA without proper planning in securing the airway would likely result in disastrous outcome. Through multidisciplinary discussion, all the teams agree that securing the airway for GA takes precedence before proceeding with the surgery while continuous resuscitation and assessment are as crucial and done simultaneously. Inadequate resuscitation risks further hemodynamic instability at induction or during the procedure. AFOI technique is used where traditional approach to intubation may be difficult especially in cases of anatomical distortion involving the airway.⁷

Anesthesiologist would opt for AFOI in cases when the anesthetic history involving difficult airway or intubation is known. Ideally, performing AFOI should be planned in advance and as elective procedures where the staffing and personnel trained to perform or assist are available and all the equipment are ready. However, delays and difficulty may arise especially at out-of-office hours and involving emergency procedures. The patient in our case not only was a parturient with underlying MO, but in a condition that warranted emergency surgery. Despite this predicament, a well-planned multidisciplinary team effort managed to avoid airway catastrophe as well as morbidity due to PPH.

4. CONCLUSION

We conclude that awake fiberoptic intubation is a safe and preferred technique for general anesthesia in parturients with known difficult airway or a rare disease such as myositis ossificans even for an emergency

surgery provided it is accompanied with continuous resuscitation and constant assessment. A multidisciplinary management and securing the airway for anesthesia prior to commencement of the surgery is extremely important. These are the keys to avoid morbidity and mortality when such a case is encountered.

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6. Conflict of interest

None declared by the authors

7. Authors' contributions

MAA: Preparation and editing of the manuscript, literature review

MFMY: Provision of anesthetic care, preparation of manuscript

5. REFERENCES

1. Torres AM, Nardis AC, Da Silva RA, Savioli C. Myositis ossificans traumatica of the medial pterygoid muscle following a third molar extraction. *Int J Oral Maxillofac Surg.* 2015;44(4):488–90. [PubMed] DOI: [10.1016/j.ijom.2014.11.003](https://doi.org/10.1016/j.ijom.2014.11.003)
2. Gilmandyar D, Thornburg LL. Surgical management of postpartum hemorrhage. *Semin Perinatol.* 2019;43(1):27–34. [PubMed] DOI: [10.1053/j.semperi.2018.11.006](https://doi.org/10.1053/j.semperi.2018.11.006)
3. Mushambi MC, Kinsella SM, Popat M, Swales H, Ramaswamy KK, Winton AL, et al. Obstetric Anaesthetists' Association and Difficult Airway Society guidelines for the management of difficult and failed tracheal intubation in obstetrics. *Anaesthesia.* 2015;70(11):1286–306. [PubMed] DOI: [10.1111/anae.13260](https://doi.org/10.1111/anae.13260)
4. Deneux-Tharoux C, Macfarlane A, Winter C, Zhang WH, Alexander S, Bouvier-Colle MH, et al. Policies for manual removal of placenta at vaginal delivery: variations in timing within Europe. *BJOG.* 2009;116(1):119–24. [PubMed] DOI: [10.1111/j.1471-0528.2008.01996.x](https://doi.org/10.1111/j.1471-0528.2008.01996.x)
5. Cummings K, Doherty DA, Magann EF, Wendel PJ, Morrison JC. Timing of manual placenta removal to prevent postpartum hemorrhage: is it time to act? 2016;29(24):3930–3. [PubMed] DOI: [10.3109/14767058.2016.1154941](https://doi.org/10.3109/14767058.2016.1154941)
6. Franke D, Zepf J, Burkhardt T, Stein P, Zimmermann R, Haslinger C. Retained placenta and postpartum hemorrhage: time is not everything. *Arch Gynecol Obstet.* 2021 Oct;304(4):903–911. [PubMed] DOI: [10.1007/s00404-021-06027-5](https://doi.org/10.1007/s00404-021-06027-5)
7. Broomhead CJ, Davies W, Higgins D. Awake oral fiberoptic intubation for caesarean section. *Int J Obstet Anesth.* 1995;4(3):172–4. [PubMed] DOI: [10.1016/0959-289x\(95\)82975-g](https://doi.org/10.1016/0959-289x(95)82975-g)