

## Awake intubation fiberoptic bronchoscope on pregnancy patient undergo decompression laminectomy and cervical fusion stabilization



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### ABSTRACT

The traumatic and ankylosing cervical spine being rare in pregnancy can cause serious problems continuing a pregnancy. To minimise the risk of spinal cord injury, airway management providers must understand the anatomic and functional relationship between the airway, cervical column, and spinal cord. Extensive neurological involvement, which is rapidly progressive due to compression, should be considered for immediate decompression. To provide safe and efficient, practitioners must identify high-risk patients, be comfortable with available methods of airway adjuncts, and know-how airway manoeuvres, neck stabilisation, and positioning affect the cervical spine. For many anesthesiologists, awake fiberoptic bronchoscope

intubation is the preferred method of intubation when treating patients with symptoms or signs of cervical spinal cord compression. The advantage of this method is to minimise the movement of the cervical spine, which can contribute to neurological disorders. We present a case of a patient in the 19th weeks with diagnosis C5 compression fracture and paracervical abscess C5 et causa suspect TB spondylosis, complaints with paralysis in all four limbs. Surgical intervention was deemed necessary and was performed in the prone position. The early operative treatment and appropriate anaesthetic procedure resulted in better clinical outcome with the improvement of neurological recovery.

**Keywords:** Pregnancy; cervical spine ankylosing; prone position, awake fiberoptic bronchoscope intubation

**Cite This Article:** Saputra, D.J., Senapathi, T.G.A., Aribawa, I.G.N.M., Ryalino, C. 2019. Awake intubation fiberoptic bronchoscope on pregnancy patient undergo decompression laminectomy and cervical fusion stabilization. *Bali Journal of Anesthesiology* 3(2): 140-142. DOI:10.15562/bjoa.v3i2.185

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### INTRODUCTION

The existence of certain diseases can result in changes in the body's organ systems, especially in pregnancy. This is a priority in dealing with the disease but depends on the urgency and severity of the condition. Some rare cases of pathology in pregnancy have been reported previously and indeed need to be reported, management of the case also requires different treatment and anaesthetic treatment.<sup>1</sup> A traumatic and ankylosing cervical spine is rare in pregnancy, and this can cause serious problems during pregnancy. Increasing compression or oedema, related to gaining weight due to pregnancy hormones can worsen the symptoms. Progressive neurological deficits in the spine require immediate surgery in pregnant patients.<sup>2</sup>

Although the advanced trauma life support guidelines emphasise spinal immobilisation after trauma, all airway interventions can cause movement of the cervical spine. Securing the airway without the movement of the cervical spine to avoid neurological disorder is always an anaesthetic challenge. The use of flexible fiberoptic bronchoscopes in awake endotracheal intubation after cervical spinal cord injury is always preferred since it minimises cervical movement and allows an appropriate

post-intubation neurological assessment. Different airway devices have been compared with fiberoptic bronchoscopes, none of which guarantees cervical spine immobility over fiberoptic bronchoscopes.<sup>3</sup>

### CASE REPORT

A 25-year-old primiparous pregnant woman at 19 weeks gestation was admitted with tetraparesis to spine division of neurosurgeon department at Sanglah General Hospital. Her history revealed that she has experienced weakness in both arms movement and walking for the last one and half months. No history of injury before, no history of losing weight. The weakness was progressive over the period. MRI study showed a straight cervical vertebral curve with C6 posterior spondylitis, in addition to spondylitis, and C5 compression fracture with foraminal stenosis along the C5-6 cervical vertebral column without accompanied disc protrusion to intraspinal C5 and C6 which shows constricted calibre and intramedullary intensity, there was no visible HNP, SOL, and syringomyelia. Due to the increased risk of morbidity, the neurosurgical intervention was not delayed.

Pre-operative examination revealed a 50 kg female with a heart rate of 66 bpm, BP of 120/70 mmHg and

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respiratory rate of 16 times per minutes. Her cardiovascular and respiratory systems with spirometry were within normal limits. Abdominal examination revealed a uterus size corresponding to her period of gestation. Mallampatti was not evaluated due to patient's bedrest position. Adequate mouth opening is difficult to assess due to uses of collar brace (less than 15 mm), intact dentition and limited of neck movement.

The patient was given 10 mg metoclopramide, 50 mg ranitidine, 20 mg diphenhydramine, and 0.5 mg atropine as premedications. She was nebulised with 4% lidocaine 1.5 mL for 10 minutes. Monitoring consisted of continuous ECG, invasive arterial blood pressure, pulse oximetry, capnography and analysis of arterial blood gases. For the suppression of uterine hypermotility, intravenous infusion of isoxsuprine was initiated before the surgery, and it was continued in the postoperative period for 24 hours. Attention to head positioning and stabilisation during the initial evaluation and airway management is critical in the care of these patients to minimise the risk of secondary neurologic disorders.

Manual cervical in-line with collar brace and awake fiberoptic nasotracheal intubation was performed, medication fentanyl 1 mcg/kg of intravenous, xylocaine spray in the laryngeal area. The patient was spontaneously breathing, as we inserted the fiberoptic bronchoscope-guided and placed a 6.5-size, cuffed, flexo-metallic endotracheal tube, followed by propofol 2 mg/kg and 0.6 mg/kg rocuronium. Anaesthesia was maintained with fentanyl and isoflurane with approximately 50% O<sub>2</sub>-air mixture during the operation. An arterial line was established, and the patient's position was changed to a prone position. Care was taken to pad all pressure points, and the abdomen was allowed to hang freely.

Partial C4-6 laminectomy surgery was performed less than 4 hours duration. The patient received 2300 ml of crystalloids with estimated blood loss around 200 ml, and urine output was 600 ml during the operation. Once the operation concluded, the patient was returned to the supine position, and sevoflurane was ceased. Tracheal extubation was performed after adequate spontaneous ventilation returned, and the patient opened his eyes to voice with no agitation or delirium. The last recorded end-tidal CO<sub>2</sub> reading before extubation was 37 mmHg, and the patient was sent to the intensive care unit for a day. The patient's neurology had recovered gradually from the first postoperative day, and a fetal ultrasound on the first postoperative day showed a viable fetus.

## DISCUSSION

Complications in traumatic spinal and ankylosing cervical in pregnancy are rare and very high risk for

surgery. The anaesthetic action requires not only to pay attention to the welfare of the mother, but also the fetus. Some important factors must also be considered in a surgical intervention during pregnancy including the type of anaesthesia, patient position, monitoring of fetal heart rate, maternal blood pressure monitoring, tocolysis to prevent preterm labour, and postoperative intensive room.<sup>2</sup>

Awake intubation may be indicated when there are known or suspected difficulties associated with impaired mask ventilation or tracheal intubation and the need to assess neurology after intubation is complete (in cases such as an unstable cervical spine). In some instances where ventilation is still possible, a hypnotised technique may be more appropriate.

Video laryngoscopy is increasingly popular in managing difficult airways. Awake intubation using video laryngoscopy has several benefits compared to fiberoptic bronchoscopes. They are quite easy to use, quick to set up and give clear, and the time needed for intubation is faster than fiberoptic bronchoscope for less experienced operators. Owing to circumstances where awake video laryngoscopy will not be possible, such as limited mouth opening, the fiberoptic bronchoscopes replaces video laryngoscopy as the technique of choice for difficult direct laryngoscopy. Video laryngoscopy does not have flexibility advantages such as fiberoptic bronchoscopes. When mouth opening is restricted, nasotracheal intubation can only be done using fiberoptic bronchoscopes because at least 25 mm opening of the mouth is needed for video laryngoscopy insertion and manipulation. Moreover, another advantage is the minimal cervical movements during tracheal intubation with fiberoptic bronchoscopes, none of which guarantees cervical spine immobility over fiberoptic bronchoscopes, therefore many anesthesiologists choose this procedure.<sup>3</sup>

Anaesthetic management should focus on preventing hypotension, hypoxemia, hypercarbia, and hyperventilation.<sup>4</sup> In our case, the arterial line was placed to observe and treat with hemodynamic changes quickly. Low maternal blood pressure will result in uterine blood flow and can cause the fetus to lack oxygen. Changes in maternal blood pressure must be considered to maintain adequate blood flow in the uterus. Besides, hourly urine output monitoring and IV fluid administration during surgery must be isotonic and glucose-free to reduce the risk of cerebral oedema and hyperglycemia. During surgery, in the prone position, placental perfusion is increased in pregnant patients and causes difficulties in fetal monitoring. The prone position is safe for the operation during the first and early second trimester.<sup>5</sup> The important care for the position of pregnant women during surgery is

the pressure on the excessive abdominal area can cause preterm delivery, make sure the abdomen is free, no matter what position or operating table is chosen.<sup>6</sup>

Postoperative mechanical ventilation needs are advised by the patient and surgical factors. Patient factors include the presence of pre-existing neuromuscular abnormalities, severe restrictive pulmonary dysfunction with a preoperative vital capacity of less than 35% of predicted, congenital heart abnormalities, right ventricular failure, and obesity. Surgical factors include prolonged procedures (more than 4 hours), surgical invasion of the thoracic cavity, and blood loss of more than 30 ml per kilograms. Based on these criteria, extubation can be performed in this case.<sup>7</sup>

The purpose of the anaesthetic management during emergence and extubation of patients with confirmed or suspected cervical spine injuries is having a calm, cooperative patient in whom cervical spine can be protected, no complications as agitation or delirium, which can be seen from awake patients. This can be due to numerous causes including the pain, respiratory failure, cardiovascular instability, electrolyte imbalance, hypoxia, hypercapnia, cerebral ischemia, or withdrawal from substance abuse. These can result in the inability to maintain the immobilisation of the neck or the need for an emergency reintubation of a potentially difficult airway, with all the associated risks.<sup>8</sup>

It is essential to anticipate the possibility of agitation or delirium and take all possible steps to prevent it. These include avoidance of premedication with benzodiazepines, adequate pain control, avoidance of a full bladder and unnecessary urinary catheters, and giving glasses and hearing aids to patients as soon as possible. If agitation or delirium occurs on emergence, an attempt to remind the patient of the situation must be made. In cases where pharmacological intervention is needed, low-dose benzodiazepines IV or haloperidol can be used. If extubation is planned in the ICU setting, dexmedetomidine should be considered as part of the sedation regimen.<sup>8</sup>

The management of surgery and anaesthesia in pregnant women who undergo non-obstetric surgery has an unequal clinical situation, where maternal and fetal health is very important. So that the handling must involve a multidisciplinary team including surgeons, anesthesiologists, obstetricians, perinatologists and intensivists in the decision on proceeding with surgery. If the fetus is certain not be able to live during the first and second trimesters, neurosurgical intervention should be done as soon as possible to improve neurological outcomes with particular consideration for surgery in pregnancy patients. During the late second and third

trimesters the consideration must be given to early cesarean procedure.<sup>9,10</sup>

## CONCLUSION

The successful of anaesthesia management in laminectomy decompression and stabilisation of fusion in the cervical with pregnancy patient is not solely rely on the expertise of the anaesthetist alone but depends on multidisciplinary collaboration, comprehensive patient assessment in the preoperative, through knowledge of maternal and fetus physiology-pharmacology, and postoperative supportive care. For the safety of the mother and fetus, it is imperative to maintain optimal haemodynamic of the mother during surgery, and selection of drugs and appropriate anaesthetic techniques.

## ACKNOWLEDGEMENT

The authors declare no conflict of interests in writing this case report.

## REFERENCES

- Shetti AN, Dhulkhed VK, Gujarati A, Swetha GS. Anesthetic management of a pregnant patient with pseudo-pancreatic cyst for cysto-gastrostomy. *Anesth Essays Res.* 2014;8(1):89-92. doi:10.4103/0259-1162.128920
- Uzun S, Kara D, Akbay A. Anaesthetic Management of a Pregnant Woman With a Cervical Intramedullary Ependymoma. *Acta Medica.* 2014;3:86-8.
- Kajekar P, Mendonca C. Awake Intubation - Videolaryngoscope or Fiberoptic Scope? *J Anesth Clinic Res.* 2011;2:102e. doi:10.4172/2155-6148.1000102e
- Suyasa IK, Ryalino C, Pradnyani NPN. Dexmedetomidine provides better hemodynamic stability compared to clonidine in spine surgery. *Bali Journal of Anesthesiology.* 2(3):90-4. DOI:10.15562/bjoa.v2i3.100.
- Nakai Y, Mine M, Nishio J, Maeda T, Imanaka M, Ogita S. Effects of maternal prone position on the umbilical arterial blood flow. *Acta Obstet Gynecol Scand.* 1998;77(10):967-9.
- Abou-Shameh MA, Dosani D, Gopal S, McLaren AG.. Lumbar discectomy in pregnancy. *Int J Gynaecol Obstet.* 2006;92(2):167-9.
- Raw DA, Beattie JK, Hunter JM, Anaesthesia for spinal surgery in adults. *British Journal of Anaesthesia.* 2003;91(6):886-904. doi:10.1093/bja/aeg253
- Popat M, Mitchell V, Dravid R, Patel A, Swamipillai C, Higgs A. Difficult airway society guidelines for the management of tracheal extubation. *Anaesthesia.* 2012; 67(3):318-40. doi: 10.1111/j.1365-2044.2012.07075.x
- Speirs E, Wiles M, Bacon A, Radley S. Positioning a prone patient with cauda equina syndrome who presents at 15 weeks gestation: a case report. *F1000Res.* 2014;3:117. doi:10.12688/f1000research.3310.1
- Laidler JA, Jackson IJ, Redfern N (1989) The management of Caesarean section a patient with an intracranial arteriovenous malformation. *Anaesthesia.* 1989;44(6):490-1. doi: 10.1111/j.1365-2044.1989.tb11377.x



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