

Case Report

Failed Spinal Anesthesia with Difficult Tracheal Intubation in an Obstetric Case - An Anesthetic Challenge

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ABSTRACT

Twenty nine year-old full term primigravida with gestational hypertension had been planned for elective lower segment caesarean section (LSCS). She had a history of osteoarthritis of the hip joint. Intraoperatively she was managed with general anaesthesia after failed spinal anaesthesia. We encountered unanticipated difficulties with airway management while providing general anaesthesia. The case was particularly challenging from an anaesthesia point of view due to difficulty in managing the airway, however, she was successfully managed perioperatively & discharged home after a short duration of ICU stay.

KEYWORDS: Failed spinal anaesthesia, Osteoarthritis, Unanticipated difficult intubation.

INTRODUCTION

Neuraxial anaesthesia is the commonest, safest, and most logical choice for cesarean section. Spinal anaesthesia, epidural anaesthesia or combined spinal-epidural anaesthesia are the various options for neuraxial anaesthesia. Single-shot spinal is the preferred & most widely practiced mode of anaesthesia in both elective as well as emergency among all these options¹. The needle insertion technique is relatively straightforward. The cerebrospinal fluid (CSF) through the needle provides a clear indication of successful needle placement and a medium through which local anaesthetic solution usually spreads readily & provides satisfactory anaesthesia for surgeries below the umbilicus². In general terms, block failure is usually due to one of these three causes: clinical technique, inexperience and failure to appreciate the need for a meticulous approach³.

CASE REPORT

Twenty nine year old primigravida with gestational hypertension (HTN) which are detected and treated from last 7 days was planned at 38 weeks of gestation for an elective lower segment caesarean section (LSCS). The patient had a history of osteoarthritis of the both bilateral hip joints for 2 years for which she was taking treatment which was stopped by treating consultant when she conceived. She was taking the tablet Labetalol 100 mg twice a day for the last 7 days for her gestational HTN.

She was averagely built, with a weight of 60 kg and was 160 cm tall (BMI 23.4). She developed pitting type of pedal oedema and pigmentation over both sides of her cheeks (Chloasma gravidarum) during the pregnancy.

On airway examination, she had 3 cm of wide mouth opening with a Mallampati grade of II. She had an adequate

thyromental distance, and the neck movements were adequate. She had good oral hygiene and no loose, missing or artificial teeth. On spine examination, spinous processes were well palpable in the lumbar region and the spinal curves were normal and, in the midline (no kyphosis, no scoliosis).

After 8 hours of the nothing-by-mouth period, she was taken into the operation theatre. With the patient sitting, the skin over the L₄-L₅ intervertebral space was cleaned twice using a weak Iodine solution containing Iodine tincture I.P. 5.0 % and Alcohol 65-48 % (V/V). Iodine was wiped up with Spirit after 2 minutes of painting. The first few attempts were taken by the resident for the subarachnoid block by using a 25 Gauge spinal needle, but it was unsuccessful. Afterwards, the consultant anaesthesiologist took some more attempts and different approaches were also tried, but it was unsuccessful too.

Failed spinal anaesthesia was declared and the patient then prepared for general anaesthesia. She was given a supine position and counselled for general anaesthesia. She was pre-oxygenated with 100 % oxygen at 8 to 10 L/minutes for 3 – 5 minutes. Afterwards, she was then induced with an Injection of Propofol 100 mg intravenously slowly. Simultaneously patient was mask ventilated adequately with 8-10 L/min. of oxygen with a single-handed technique. And so, a muscle relaxant – Injection Succinylcholine 100 mg was given intravenously and she was ventilated till the fasciculations disappeared (about 45 seconds). In the sniffing position, the resident doctor did a gentle laryngoscopy with a Macintosh blade of appropriate size. There was Cormack and Lehane's class 3B (only epiglottis was visualized, but was not liftable with the blade). The patient was ventilated with 100% oxygen necessitating two-handed techniques for adequate ventilation. The patient was hemodynamically stable. Then laryngoscopy with an appropriately sized McCoy blade was done by the consultant anaesthesiologist. He also found the same laryngoscopic view and tried to intubate twice but was unable to negotiate the endotracheal tube through the trachea and by that time, saturation started to fall gradually. So that we declared failed intubation and called for help and kept on mask ventilating with a two-handed technique, but the saturation was not improving.

In line with the All-India Difficult Airway Association (AIDAA) guidelines, we introduced the 2nd generation supraglottic airway device of the appropriate size to maintain oxygenation. Now saturation started to improve gradually but there was leaking through the supraglottic airway device. So, it was removed and Guedel's oropharyngeal airway of appropriate size was introduced. Oxygenation was maintained by mask ventilating through Guedel's airway and found out saturation started to improve gradually. In-between, induction agent and muscle relaxant of adequate dose were repeated. Meanwhile, help arrived and laryngoscopy with an appropriate-size McCoy blade was done by another anaesthesiologist and endotracheal tube (ETT) of the appropriate size was tried with the help of stylet but not succeeded; in absence of clear end-tidal carbon dioxide (EtCO₂) tracings & absent chest rise, it was removed and patient was again put on mask ventilation.

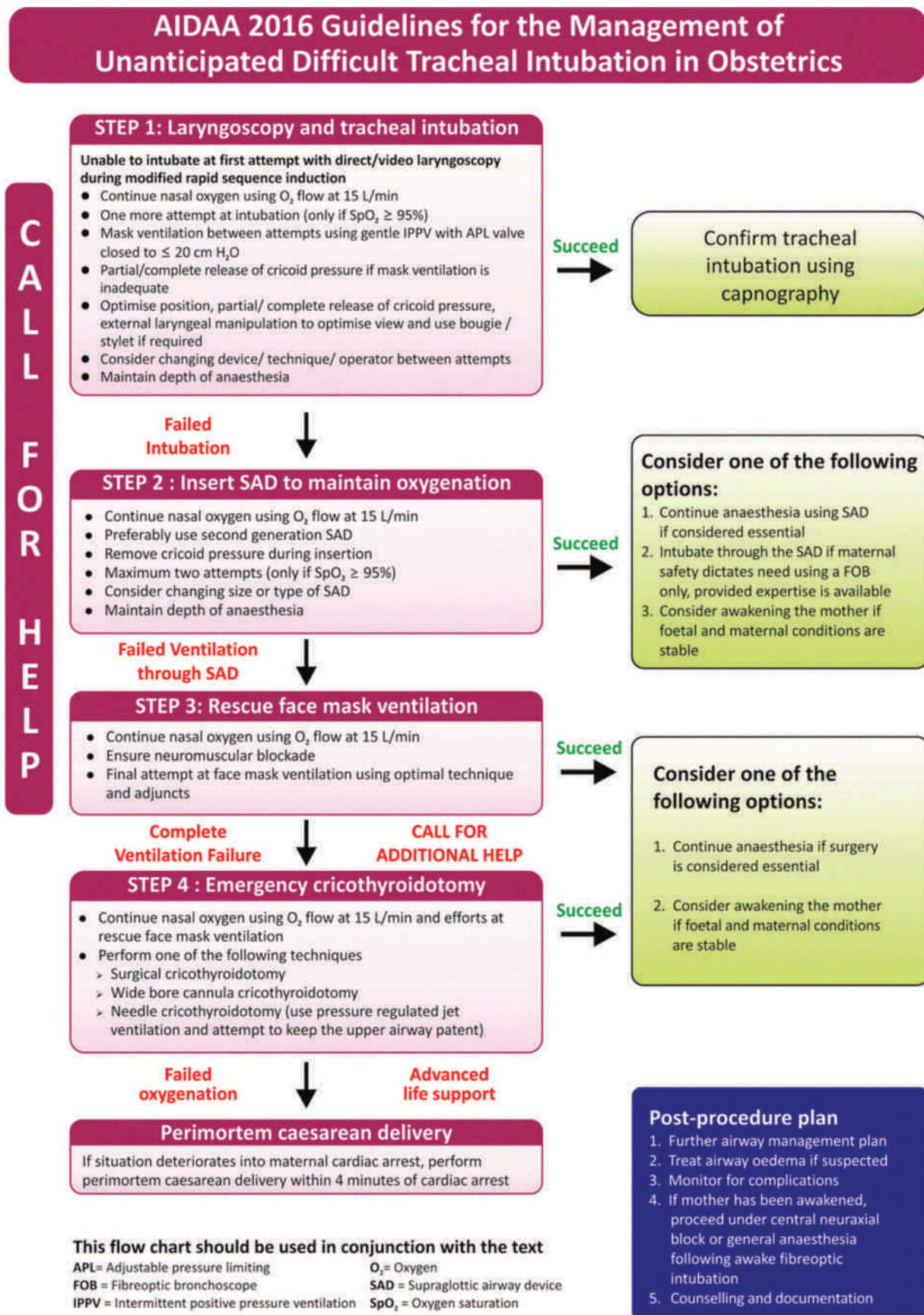
The best attempt was taken with smaller-sized ETT & successfully placed as confirmed by chest rise, bilateral chest auscultation & EtCO₂ tracings. After confirmation, the ETT tube was fixed at the appropriate length. Saturation started improving gradually. But there were continuously increased peak airway pressures throughout the surgery. Because delivering the baby as early as possible was the priority in such a scenario, the surgery was done with that increased peak airway pressures.

After completion of the cesarean section, an ETT tube of adequate size was introduced with the help of an airway exchange catheter. The patient shifted to the surgical intensive care unit with ETT in situ on Bain's circuit. Afterwards, while counselling the relatives, they told that the patient had bronchial asthma during pregnancy and was using the inhaler for that. The prognosis was explained to the relatives.

DISCUSSION

Gaston Labat in 1922 made a statement: "Puncture of the dura mater and Subarachnoid injection of an anesthetic agent – these two conditions are necessary to produce spinal anaesthesia"². If any one of these two goals is not achieved due to any cause, it will lead to failure of spinal anaesthesia. The immediate cause of failure is only the inability to obtain CSF, sometimes referred to as a "dry tap"³. Obesity, anatomical abnormalities and an anxious patient will often add to the causes¹. Anatomical abnormality that leads to spreading problems can be overt and covert. Any obvious abnormality like kyphosis or scoliosis may interfere with the process of spinal anaesthesia.

The recourse to general anaesthesia should be done after an assessment of the parturient risk-benefit ratio. Converting to general anaesthesia in a parturient is full of complications like aspiration risk, potentially difficult airways and hemodynamic changes like hypotension on induction, especially under unfavourable environments when dealing with fetal distress¹. The unexpected difficulty is more likely in emergencies, obstetric cases, and inexperienced hands. Obesity, increased fatty tissue, pharyngeal/ laryngeal oedema, large tongue, large breasts, incorrect cricoid pressure, complete dentition, and the experience and training of anaesthetic staff, all are the causes of failed intubation in the parturient⁵. Unrevealed reactive airway history may cause further deterioration of the situation. The All India Difficult Airway Association (AIDAA) has given guidelines for the management of the unanticipated difficult airway in obstetrics. AIDAA is a professional forum of physicians, who are involved in the management of airways, namely, anaesthesiologists, intensivists, physicians and emergency medicine specialists. These guidelines should help anaesthesia providers consider the available options, not intended to provide a comprehensive guideline that addresses every contingency. The guidelines should guide the anaesthesiologists in decision-making⁶.

Figure 1: AIDAA 2016 Guidelines for the Management of Unanticipated Difficult Tracheal Intubation in Obstetrics⁷

Osteoarthritis (OA) is the most common joint disease in the world; and OA of the hip joint is the 2nd most common joint affected after the knee joint. Females are affected more than males. In the pathogenesis of osteoarthritis, the subchondral bone plate is involved. It causes an increase in wear and tear, instability, malignant microtrauma and structural damage to the hip joint. OA is a degenerative joint disease that causes progressive damage to the articular cartilage and surrounding structures⁸.

The interaction between the lumbopelvic complex and the hip joint is defined by the concept of spine-hip relation; changes in one joint can potentially affect the other joint⁹. Osteoarthritis of the hip joint affects hip mobility and flexibility, and so the lumbopelvic complex compensates for this hip stiffness by increasing lumbar lordosis of the spine. This lumbopelvic compensation causes degeneration of the spine¹⁰. Joint deformities caused by bone and cartilage destruction, affect patient positioning. Axial joint deformities can cause the cervical spine unstable, which makes intubation difficult. Patients with axial joint disorders are often asymptomatic, so careful assessment is necessary before anaesthesia¹¹.

CONCLUSION

Osteoarthritis is a degenerative disease resulting in joint stiffness, which leads to difficulty in a spinal puncture. In the present case, general anaesthesia was given for cesarean section after a failed spinal approach by trained anesthesiologists. The patient had been intubated with a smaller-sized ETT tube to avoid laryngospasm due to an unrevealed reactive airway. After the delivery of the baby and stabilizing the patient, the smaller-sized tube had been replaced with an appropriate size ETT tube with the help of an airway exchange catheter.

Early diagnosis and implication of knowledge are of utmost importance as they could help in proper management and may help in reducing unwanted complications. The management goal also includes proper education and counselling of the patient as this can improve their quality of life and reduce mortality and morbidity of the mother and fetus.

CONFLICTS OF INTEREST: None

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