

Anesthetic Management for Patient with a History of Post-Dural Puncture Headache: A Case Report

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Abstract- A 32-year-old woman underwent her third cesarean section one week earlier. Following an initial assessment, the patient revealed a history of PDPH following the previous cesarean surgery under spinal anesthesia. Most obstetric procedures were performed under spinal anesthesia. However, due to the history of PDPH and the potential risk of aspiration in pregnant women, the anesthetic plan was changed to general anesthesia with rapid sequence induction. The patient underwent a one-hour emergency cesarean section under general anesthesia with uncomplicated tracheal intubation. The anesthesiologist decided to convert the anesthetic plan after carefully examining the severity and history of post-spinal headaches. Awareness of the history of complications associated with the anesthetic strategy helped to prevent unnecessary distress and problems for the patient and the clinicians.

Index Terms- General anesthesia, Post-dural puncture headache, Rapid sequence induction, Spinal anesthesia.

I. INTRODUCTION

The majority of the obstetric procedures (91.3%) were performed under spinal anesthesia. The remaining procedures were conducted using epidural anesthesia (2.2%), general anesthesia (4.9%), or a combination anesthetic approach (1.3%) [1]. Spinal anesthesia is widely used for cesarean sections, although there is an increased risk of post-dural puncture headache (PDPH), which alters the anesthesia protocol. The decision-making process is purely based on a patient's assessment and history of spinal anesthesia complications. This case report details a cesarean section performed under general anesthesia using rapid sequence induction.

II. CASE PRESENTATION

A 32-year-old woman gravida 3, para 2 weighs 75 kg and body mass index of 31.58 Kg/m² presented to the emergency department showing signs of labor a week ago. There was no history of major systemic illness except previous history of migraine for the past four years and sinusitis for the past fifteen years. She had her first cesarean section under spinal anesthesia which was uneventful and her second cesarean section under

spinal anesthesia but had a history of PDPH for two days after the surgery.

However, the plan of anesthesia has been changed to general anesthesia with rapid sequence induction by considering the history of PDPH and the risk of aspiration in pregnant women. During the pre-induction assessment, the patient was stable and awake. The patient was positioned supine and all vital signs were monitored.

Upon arriving in the operating room, the patient was administered intravenous (IV) Glycopyrrolate 0.2 mg and Ondansetron 4 mg. Even though the patient was nil per oral, rapid sequence induction was used to avoid the risks of aspiration.

Propofol with succinylcholine was used for rapid-sequence intravenous induction. Cricoid pressure was applied to secure a 7 mm ID endotracheal tube. Fentanyl and Dexamethasone were administered as part of the multimodal anesthesia protocol. Anaesthesia was maintained with the administration of oxygen, air, sevoflurane 0.5%, and IV Atracurium 40 mg.

Carbetocin and Tranexamic acid were administered intraoperatively to control postpartum hemorrhage. IV Paracetamol and Ketanserin were administered to relieve pain and lower the risk of eclampsia. For reversing nondepolarizing muscle relaxants IV Neostigmine 2.5 mg was given. The patient underwent an emergency cesarean section under general anesthesia that lasted for one hour and was uneventful. No intrapartum eclampsia or preeclampsia was observed.

The patient was stable in the postoperative care unit (PACU), and all blood tests were normal. She got supportive care in the PACU and was discharged on the fourth day following surgery. Although most cesarean sections were conducted under spinal anesthesia, in this case, the decision to use general anesthesia rather than spinal anesthesia for women with a history of PDPH improved patient outcomes and quality of care.

III. DISCUSSION

The majority of cesarean births are performed under spinal anesthesia due to its convenience of management, rapid onset of action, avoidance of the maternal and fetal risks associated with general anesthesia, and promotion of early recovery. Previous studies related to post-dural puncture headache (PDPH) showed that PDPH caused by CSF fluid leakage, is a severe complication that can occur during the postoperative period.

The reported incidence of PDPH during spinal anesthesia ranges from 0.3% to 40%, depending on the procedure and non-procedure-related risk factors such as age, sex, needle size, type, number of spinal attempts, and previous history of PDPH [2]. The size and type of spinal needle used for spinal anesthesia are the two most important parameters influencing the likelihood of PDPH. Quincke needles were specifically designed to cut through dural fibers. In contrast, the Whitacre and Sprotte needles were blunt and designed to separate the dural fibers.

Shaikh et al. found that the incidence of PDPH after utilizing 25G Quincke, 27G Quincke, and 27G Whitacre spinal needles was 8.3%, 3.8%, and 2.0%, respectively [3]. Usage of a 25-gauge or smaller "atraumatic" needle reduces the risk of PDPH to less than one percent [4,5].

Anesthesia for patients undergoing emergency Caesarean section must be carefully planned. Although the prevalence of difficult intubation and ventilation is comparable across pregnant and non-pregnant women, the severity and degree of problems in pregnant patients would be significantly larger than in non-pregnant patients.

In the case of difficult tracheal intubation due to increased risk of pulmonary aspiration, hypoxia, airway obstruction due to laryngeal edema, and the extraction of a "sleeping baby". Rapid-sequence anesthesia induction is typically recommended for a patient undergoing an emergency Caesarean section under general anesthesia [6].

Parrott N et al. reported that the decision-making process for anesthesia has shifted from spinal anesthesia to general anesthesia by performing rapid sequence induction via the intravenous route of drug administration to allow for rapid tracheal intubation. This is because obstetric patients are considered to have a 'full stomach' due to the effects of pregnancy and labor on gastric emptying, as well as an increased risk of aspiration, which can lead to maternal and fetal complications [7].

The rate of chronic wound pain is higher when only general anesthesia is used during a cesarean section than when regional anesthesia is employed, therefore adequate postoperative analgesia with nonsteroidal inflammatory medications and acetaminophen is required [8].

The greatest risks of general anesthesia in obstetric patients are difficulty in intubation, aspiration of acid stomach content in non-fasting patients, narcotic-induced fetal depression, and awareness of the mother [2]. For many years, the standard for cesarean section under general anesthesia has been rapid-sequence induction and intubation with cricoid pressure utilizing thiopental-succinylcholine. Recently, with the introduction of new medications (propofol, rocuronium, and sugammadex) and equipment (video-laryngoscopy and supraglottic airways), anesthesia methods have also evolved [9]. Thus, anesthetic management of a patient with a history of PDPH can be general anesthesia with rapid sequence induction considering the risk of aspiration and this is consistent with the results in this case.

IV. CONCLUSION

By carefully considering the assessment of patients presenting with illness and a history of complications associated with the anesthetic plan, clinicians can adopt general anesthesia with rapid sequence induction in obstetric patients. This decision-making process will resolve the inadvertent complications of spinal anesthesia, such as PDPH thereby enhancing patient satisfaction with the anesthetic management.

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Human ethics: Consent was obtained from the patient in this study.

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