

Research Journal of Pharmaceutical, Biological and Chemical Sciences

Cholecystectomy under Segmental Thoracic Epidural Block in a Parturient.

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ABSTRACT

The second most common surgery during pregnancy is found to be cholecystectomy. The anesthetic techniques that have been routinely used for cholecystectomy in pregnant patients are general and regional techniques. We present here a case of a pregnant patient carrying single gestation that underwent cholecystectomy, which is not frequently encountered by the anesthesiologists.

Keywords: Open cholecystectomy, thoracic epidural, pregnancy, difficult intubation.

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INTRODUCTION

Acute cholecystitis is rare during pregnancy and adds further to maternal and fetal morbidity and mortality. It is more commonly seen in the third trimester than in other trimesters. Cholecystectomy when done during pregnancy has improved maternal and fetal outcome.

Hereby, we report a case of a young female with 8 months amenorrhoea, who developed severe abdominal pain and was diagnosed as acute cholecystitis and was scheduled for open cholecystectomy.

Case Report

A 29 year-old pregnant lady presented to our casualty with a history of fever, vomiting, and pain abdomen for previous 2 days. On examination, she was conscious, oriented but restless with a temperature of 101.4°F. Her pulse rate was 131 beats/min, blood pressure 128/60 mmHg (right arm, supine) with a respiratory rate of 24/min. On abdominal examination, it was distended with an uterofundal height corresponding to 32 weeks of gestation along with mild tenderness in right hypochondriac region and fetal heart rate (FHR) of 162 beats/min and Laboratory workup was normal except for a high total leukocyte count of $16.4 \times 10^9/L$ and elevated serum amylase and lipase levels of 682 IU/L and 438 IU/L, respectively. Abdominal ultrasonography revealed a thickened gall bladder wall with multiple calculi and minimal ascites. Single live gestation corresponding to 30 weeks. Thus she was diagnosed to be a case of acute calculous cholecystitis and started on conservative therapy.

Open cholecystectomy was planned under thoracic epidural anesthesia once her acute manifestations subsided. The obstetrician and paediatrician were consulted and the patient and her relatives were explained about the possibility of adverse fetal outcomes.

To ensure fetal lung maturation, two doses of injection betamethasone 12 mg, intramuscular at an interval of 24 h were given preoperatively. Aspiration prophylaxis with Inj. ranitidine 50 mg iv followed by Inj. ondansetron 8mg i.v was given on the morning of surgery.

The patient was shifted to the operation theater with oxygen mask and in supine position with 15° left lateral tilt. In the operating room, monitors for electrocardiograph, heart rate, noninvasive blood pressure, and oxygen saturation were attached. She was preloaded with 10 mL/kg of lactated Ringer's solution over 10 min followed by another 10 mL/kg in the next 30 min. The patient was placed in the right lateral position and the epidural space was identified by the "loss of resistance for air" technique in the T₇₋₈ intervertebral space. An 18-gauge epidural catheter was inserted and advanced 4 cm cephalad. A test dose of 3 mL of 2% lidocaine with adrenaline (1:200000) was administered. After excluding any inadvertent intrathecal or intravascular migration of the catheter, 6 mL of 0.5% bupivacaine hydrochloride was injected. The height of block was tested by pin prick every 5 min. The surgery was started after confirmation of a block extension from T₄ to T₁₀ dermatomes. Injection atropine, ephedrine, and isoxsuprine were kept ready to treat any episode of hemodynamic instability and uterine irritability. Surgery lasted for 2 h and blood loss was minimal and there was no alteration in the heart rate. Intraoperative hydration was maintained with Ringer's lactate solution 100 mL/h with titration according to hourly urine output and repeated chest auscultation. Intraoperative FHR was monitored by external ultrasound transducer (transabdominal/transpelvic).

At the end of the surgery, she was shifted to surgical ICU unit for observation and monitoring for hemodynamic and respiratory parameters in addition to continued perioperative blood sugar and electrolytes (Na⁺, K⁺) and fetal monitoring. Ultrasonography was repeated to ensure fetal wellbeing. Postoperative analgesia was achieved with an epidural infusion of 0.125% bupivacaine with a target VAS score of ≤ 3 all the time. Injection isoxsuprine (10 mg intramuscular every 8 h) followed by oral formulations for a week. She was given regular antenatal check up and had safe delivery at term at our hospital.

DISCUSSION

Non-obstetric abdominal surgery in a patient with pregnancy is not only rare but also presents a major concern for all the treating team, especially to anesthesiologist when dealing with 2 lives altogether. Gall bladder disease ranks second to appendix as the most frequent non-obstetric surgical emergency in

pregnancy. Although most patients with acute cholecystitis respond to conservative therapy (75%) [3], surgery is indicated whenever there are persistent symptoms despite conservative therapy and/or some complicated form, such as acute biliary pancreatitis.

Additionally, studies have shown that a delayed surgical approach during pregnancy leads to an increase in both short-and long-term morbidity. In our case, we preferred an early approach and decision for open cholecystectomy was taken.

Although the ideal time for surgery in pregnancy is second trimester, emergency procedures have to be carried out regardless of the gestational age. Our patient presented in the third trimester and we waited till she recovered from acute symptoms. In the mean time, we tried to enhance fetal lung maturity by preoperative corticosteroid therapy.

Laparoscopy has become the standard of care in the management of symptomatic cholelithiasis during pregnancy⁴but evidence base lacks prospective trials and long-term studies. Although, both general and regional anesthetic techniques have been successfully used for non-obstetric surgery in pregnant patients, till date there is no definitive answer to the superiority of one over the other.

But of course, one avoids the potential risk of failed intubation and aspiration in addition to reducing the fetal drug exposure, degree of blood loss when opting for regional anesthesia techniques. In addition, regional anesthetic techniques reduce the incidence of thromboembolic complications secondary to vasodilatation and reduction of surgical stress response.

With due consideration to all the above facts, we chose for regional anesthesia over general anesthesia. Numerous studies have found both spinal and epidural anesthesia suitable for patients posted for cholecystectomy [10]. Although hypotension can be seen with both the techniques, the rapidity of fall and requirement of vasopressor support is more with spinal anesthesia, which may pose a major risk to fetus.

We opted for epidural anesthesia by which we can titrate the level of blockade easily in addition to ensuring adequate analgesia in the postoperative period as pain itself, can enhance the perioperative risk of premature labor.

Many studies have used T₁₀₋₁₁ and T₁₁₋₁₂ interspace for epidural needle placement, whereas we chose for an interspace little higher (T₇₋₈) with an intention to reduce on the total volume of local anesthetic as much as possible. As the duration of surgery was expected to last for about 2 h, we chose bupivacaine over lignocaine for epidural injection because of its longer duration of action.

The volume of local anesthetic required to achieve satisfactory anesthesia in our case was quite less than that observed by other researchers, which can be well explained by the multiple factors that come into play to reduce the drug requirement in pregnancy. Because the incision in open cholecystectomy is subcostal, we preferred to use segmental epidural anesthetic technique aimed at blocking T₄ to T₁₀ dermatome level with a dose of bupivacaine 1 mL/segment instead of 1.5 mL/segment in non-pregnant patients.

During maternal surgery, the most important aspect of fetal monitoring and care is to avoid intrauterine fetal asphyxia. The role of an anesthetist here is to maintain normal maternal blood pressure, oxygenation, carbon dioxide levels, and uterine tone.

Thus to avoid any possible jeopardy, we opted for perioperative intensive monitoring of maternal blood pressure, oxygen saturation, clinical signs of altered sensorium in addition to blood sugar, serum electrolytes, hourly fluid intake, and output to detect any possible complications secondary to isoxsuprine.

Concurrently, we monitored FHR perioperatively, which is considered to be a very good indicator of adequacy of uteroplacental perfusion. The postoperative period in a pregnant patient is not without risk. There is always an increased chance for preterm labor, especially if surgery involves intra-abdominal procedures [1-17].

Although we used isoxsuprine, prophylactic use of tocolytic agents is controversial and when required it is suggested to use more selective beta-2 mimetic drugs, such as terbutaline and ritodrine.

CONCLUSION

Since two lives are to be considered, the choice of the anaesthetic technique and the skill of the anaesthesiologist are vital for a safe conduct of non obstetric surgery in a parturient patient.

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