

Cholecystectomy under segmental thoracic epidural block in a patient with twin gestation

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ABSTRACT

Cholecystectomy represents the second most common surgery during pregnancy. Both general and regional anesthetic techniques have been successfully used for cholecystectomy in pregnant patients. Authors present here a case of a pregnant patient carrying twin gestation who underwent cholecystectomy, which is not frequently encountered by the anesthesiologists. This report enumerates the perioperative issues relating to anesthesia given to a pregnant patient in addition to emphasizing the importance of multidisciplinary approach when such a case is encountered.

Key words: *Biliary pancreatitis, open cholecystectomy, thoracic epidural, twin pregnancy*

INTRODUCTION

Biliary tract disease presenting as pancreatitis is rare during pregnancy but when it occurs, it adds further to maternal and fetal morbidity and mortality.^[1] Acute pancreatitis is more commonly seen in the third trimester than in other trimesters. Cholecystectomy when indicated has been found to improve fetal and maternal outcome.^[2] Literatures on cholecystectomy in twin gravida are limited. Hereby, we report a case of a young female with twin pregnancy, developed biliary pancreatitis- and thus underwent cholecystectomy which has not been reported earlier.

CASE REPORT

A 24-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 an oral temperature of 102°F. Her pulse rate was 122 beats/min, blood pressure 118/60 mmHg (right arm, supine) with a respiratory rate of 22/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 164 beats/min and 152 beats/min. Laboratory workup was unremarkable except for a high total leukocyte count of $15.4 \times 10^9/L$ and elevated serum amylase and lipase levels of 782 IU/L and 428 IU/L, respectively. Abdominal ultrasonography revealed a thickened gall bladder wall with multiple calculi, enlarged pancreas, and minimal ascites. Twin live gestation was confirmed with twin A and twin B corresponding to 28 and 30 weeks, respectively. Thus she was diagnosed to be a case of acute cholecystitis with gall stone pancreatitis and started on conservative therapy.

Open cholecystectomy was planned under thoracic epidural anesthesia once her acute manifestations subsided. The obstetrician and neonatologist 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 was followed. Inj. isoxsuprine 10 mg intramuscular was also 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

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attached. She was preloaded with 10 mL/kg of lactated Ringer's lactate 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" 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 metoprolol were kept ready to treat any episode of hemodynamic instability. Surgery lasted for 2 h and blood loss was minimal. She required 3 doses of inj. ephedrine 5 mg each and there was no harmful 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). An infusion of isoxsuprine 60 mg in 500 mL 5% dextrose (120 µg/mL) started at a rate of 0.5 mL/h (60 µg/h) intraoperatively and continued for 6 h postoperatively.

At the end of the surgery, she was shifted to high dependency unit for observation and monitoring for hemodynamic and respiratory parameters in addition to continued perioperative blood sugar and electrolytes (Na⁺, K⁺) 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. No rescue analgesic was required and the patient got shifted to the general ward on the third postoperative day after retrieval of the epidural catheter. Injection isoxsuprine continued for 2 more days (10 mg intramuscular every 8 h) followed by oral formulations for a week. She was discharged home and at term delivered healthy twins in a nearby hospital.

DISCUSSION

Nonobstetric abdominal surgery in a patient with twin pregnancy is not only rare but also presents a major concern for all the treating team, especially to anesthesiologist when dealing with 3 lives altogether.

Gall bladder disease ranks second to appendix as the most frequent nonobstetric surgical emergency in pregnancy.^[3] Although most patients with acute cholecystitis respond to conservative therapy (75%), surgery is indicated whenever there are persistent symptoms despite conservative therapy and/or some complicated form, such as acute biliary

pancreatitis.^[3,4] Additionally, studies have shown that a delayed surgical approach during pregnancy leads to an increase in both short- and long-term morbidity.^[5] 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.^[6]

Laparoscopy has become the standard of care in the management of symptomatic cholelithiasis during pregnancy,^[3] but evidence base lacks prospective trials and long-term studies.^[7] In addition, possible conversion from laparoscopic to open cholecystectomy and documented higher rate of fetal loss with laparoscopic technique, we considered open cholecystectomy.^[8]

Although, both general and regional anesthetic techniques have been successfully used for nonobstetric surgery in pregnant patients, till date there is no definitive answer to the superiority of one over the other.^[6] 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.^[6,9] In addition, regional anesthetic techniques reduce the incidence of thromboembolic complications secondary to vasodilatation and reduction of surgical stress response.^[6]

With due consideration to all the above facts, we chose for regional anesthesia over general anesthesia.^[6]

Numerous studies have found both spinal and epidural anesthesia suitable for patients posted for cholecystectomy.^[10,11] Although hypotension can be seen with both the techniques, the rapidity of fall and requirement of vasopressor support is more with spinal anesthesia,^[12,13] 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.^[14]

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.^[11,12] 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,^[11,12] which can be well explained by the multiple factors that come into play to reduce the drug requirement in pregnancy.^[6,9,15] 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 nonpregnant 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.^[16] 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.

Although recent findings support the use of phenylephrine over ephedrine as the former maintains better fetal acid-base profile,^[17] we opted for ephedrine so as to keep a balance between isoxsuprine- and ephedrine-induced tachycardia and high thoracic block-induced possible bradycardia. Since our level of block spared cardiac sympathetic fibers and block restricted to T₁₀ level we did not encounter much hemodynamic disturbances during surgery.

Concurrently, we monitored FHR perioperatively, which is considered to be a very good indicator of adequacy of uteroplacental perfusion. Thus, even though there is no conclusive evidence to support intraoperative FHR monitoring, it is advised to do so as there is no harm associated.^[6,16]

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.^[16] 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.^[15]

CONCLUSION

When anesthetizing a patient with twin pregnancy for nonobstetric surgery, it is not the type of anesthetic

technique chosen rather skillful and logical disposition of anesthesia with careful consideration for all the 3 lives together takes precedence.

REFERENCES

1. Ramin KD, Ramin SM, Richey SD, Cunningham FG. Acute pancreatitis in pregnancy. *Am J Obstet Gynecol* 1995;173:187-91.
2. Barone JE, Bears S, Chen S, Tsai J, Russell JC. Outcome study of cholecystectomy during pregnancy. *Am J Surg* 1999;177:232-6.
3. Date RS, Kaushal M, Ramesh A. A review of the management of gallstone disease and its complications in pregnancy. *Am J Surg* 2008;196:599-608.
4. Grigoriu M, Palade R, Basile D, Grigoriu C. Laparoscopic cholecystectomy during pregnancy. *Chirurgia (Bucur)* 2003;98:453-7.
5. Dhupar R, Smaldone GM, Hamad GG. Is there a benefit to delaying cholecystectomy for symptomatic gallbladder disease during pregnancy? *Surg Endosc* 2010;24:108-12.
6. Walton NK, Melachuri VK. Anaesthesia for non-obstetric surgery during pregnancy. *Continuing Education in Anaesthesia. Crit Care Pain* 2006;6:83-5.
7. Shen T. Approach to the acute abdomen during pregnancy. *Aust Med Student J* 2011;2:19-22.
8. Walsh CA, Tang T, Walsh SR. Laparoscopic versus open appendectomy in pregnancy: A systematic review. *Int J Surg* 2008;6:339-44.
9. Mhuireachtaigh RN, O'Gorman DA. Anesthesia in pregnant patients for nonobstetric surgery. *Review Article. J Clin Anesth* 2006;18:60-6.
10. Liu X, Wei C, Wang Z, Wang H. Different anesthesia methods for laparoscopic cholecystectomy. *Anaesthesist* 2011;60:723-8.
11. Lee JH, Huh J, Kim DK, Gil JR, Min SW, Han SS. Laparoscopic cholecystectomy under epidural anesthesia: A clinical feasibility study. *Korean J Anesthesiol* 2010;59:383-8.
12. Mallampati SR. Low thoracic epidural anaesthesia for elective cholecystectomy in a patient with congenital heart disease and pulmonary hypertension. *Can Anaesth Soc J* 1983;30:72-6.
13. Ng K, Parsons J, Cyna AM, Middleton P. Spinal versus epidural anaesthesia for caesarean section. *Cochrane Database Syst Rev* 2004;2: CD003765.
14. Sanson BJ, Lensing AW, Prins MH. Safety of low molecular weight heparin in pregnancy: A systematic review. *Thromb Haemost* 1999;81:668-72.
15. Fanzago E. Anaesthesia for non obstetric surgery in pregnant patients. *Minerva Anesthesiol* 2003;69:416-27.
16. Van De Velde M, De Buck F. Anesthesia for non-obstetric surgery in the pregnant patient. *Minerva Anesthesiol* 2007;73:235-40.
17. Ngan Kee WD, Khaw KS. Vasopressors in obstetrics: What should we be using?. *Curr Opin in Anaesthesiol* 2006;19:238-43.

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