

## Anaesthetic management of primigravida with ovarian cyst for emergency laprotomy- A case report

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### Abstract

To avoid fetal exposure to polypharmacy and protection of maternal airway, regional anesthesia is usually preferred in pregnancy. Here, we report a case of 20 year old primigravida with 13±2weeks of gestation, diagnosed as a case of left ovarian cyst posted for emergency laprotomy done under combined spinal epidural anaesthesia.

**Keywords:** Pregnancy, Emergency laprotomy, Combined spinal epidural anaesthesia

### Introduction

Normally, nonobstetric surgeries during pregnancy are carried out when there is a definitive indication considering well-being of the mother, fetus or both. The incidence of non-obstetric surgeries during pregnancy ranges between 0.75% -2%. Ovarian torsion is one of the commonest non-obstetric surgery among them.<sup>(1,2)</sup> Torsion of ovary is the total or partial rotation of the adnexa around its vascular axis or pedicle. Torsion of ovary occurs when it is moderate to large in size with long pedicle and mobile. Incidence of ovarian torsion is being more in pregnant (22.7%) than in non-pregnant (6.1%) women.<sup>(3)</sup> The risk of any surgery like abortions, intrauterine growth retardation and low birth weight will depend on the gestational age. In the first trimester, risk of fetal loss is smallest with modern anaesthetic techniques.<sup>(4)</sup> Continuous fetal monitoring is very essential during surgical procedure which should be ideally done with Doppler ultrasound. Considering the risks of teratogenicity in first trimester and complications associated with general anesthesia especially difficult airway and high risk of aspiration, regional anaesthesia should be the first choice wherever possible.<sup>(5,6)</sup> So each case should be managed in multidisciplinary approach avoiding hypotension, hypoxemia, hypovolemia and hypothermia for better outcome.

### Case Report

A 20 year old primigravida with three months of amenorrhoea presented to our hospital with the chief complaints of pain in abdomen on left side since 15days which was increased in intensity since morning with two episode of vomiting. She reported no vaginal bleeding or discharge, nausea, fever, diarrhea or constipation. Her general and gynecologic history was noncontributory. On physical examination, her blood pressure and pulse were 104/60 mm Hg and 96 beats/min respectively. Abdominal examination revealed a palpable left lower quadrant mass with voluntary guarding. Her transabdominal sonography

revealed a normal fetus in utero with a gestational age of 13±2 weeks. In the left adnexa, a large 11cm x 8cm x 5cm cyst was seen arising from the left ovary. The right ovary appeared normal and minimal free fluid was seen in the cul-de-sac with suspicion of short segment bowel in bowel appearance in left infraumbilical region suggestive of intussusception. Hence she was posted for emergency exploratory laprotomy. Patient was shifted in operation theatre with all routine investigations which were within normal limits. Nil by mouth status and consent were noted. Blood kept reserved as she was posted for major surgery. In ward, she received injection hydroxyprogesterone (depot prolonon) 500mg intramuscularly for uterine relaxation. All monitors were attached. Her baseline heart rate (HR), blood pressure (BP), respiratory rate (RR) and saturation (SpO<sub>2</sub>) were 96/min, 104/60mmhg, 16/min and 98% respectively. We planned combined spinal epidural anaesthesia to avoid sudden hypotension and to increase duration of anaesthesia if needed. Surgeons were also present along with gynecologist as her ultrasonography was suggestive of intussusception. She was preloaded with ringer lactate solution @ 15ml/kg so that her blood pressure and heart rate improved to 120/70mmhg and 86/min respectively. She was premedicated with injection ranitidine 50mg, injection metoclopramide 10mg intravenously. Under all aseptic precautions in sitting position epidural catheterization was done in T11-T12 interspace with 18G epidural needle with loss of resistance to air technique. Test dose was given epidurally with 2% injection Lignocaine with adrenaline 3ml. Under all aseptic precaution spinal anaesthesia was given in L3-L4 interspace with 0.5% injection bupivacaine heavy 2.8ml. T8 Level achieved with heart rate and blood pressure being 80/min and 104/58mmhg respectively. After 20min 0.5% injection bupivacaine 3ml was given epidurally by titrating the dose to achieve T5 level and surgery was started. Throughout the surgery oxygen supplementation was given through ventimask with flow rate @ 4 L/min. During surgery twisted left ovarian cyst with 100ml of

hemoperitonium was noted, but bowel loops were normal. Hence left salpingo-oophorectomy was done and specimen was sent for histopathological examination. Throughout the surgery HR, BP and SpO<sub>2</sub> were maintained as 70-80/min, 104/60-120/70mmhg and 99-100% respectively with one episode of hypotension as 94/55mmhg which was treated by fast infusion of normal saline along with 6mg dose of injection ephedrine intravenously. Input and output was monitored and fluid was given accordingly. Surgery finished after one and half hour and she was shifted to surgical intensive care unit. For post-operative pain relief she received 6ml of 0.125% of injection bupivacaine 8 hourly through epidural catheter and catheter was removed after 48hrs. There was no hemodynamic instability in the post-operative period. Post-operative USG revealed single live fetus with average gestation of 13±2 weeks as previously. Her histopathological report revealed simple follicular cyst. She was discharged after 7 days without any complication to fetus and herself with regular follow up in the antenatal department.



**Fig. 1: Specimen of left ovarian cyst after salpingo-oophorectomy**

## Discussion

Ovarian torsion is the total or partial rotation of the adnexa around its vascular axis. Sometime massive enlargement of ovary can happen due to continuous arterial inflow to it without venous outflow because of venous or lymphatic blockade and eventually may lead to hemorrhagic infarction and necrosis of the ovarian stroma if not diagnosed. Similar thing occurred in our case as there was 100ml of hemoperitoneum. The incidence of ovarian torsion rises 5-fold during pregnancy to approximately 5 per 10,000 pregnancies.<sup>(7)</sup> Torsion commonly occurs when the ovary gets enlarged secondary to cyst or neoplasm. In pregnancy most common cyst is a corpus luteum cyst, which usually regresses spontaneously by the second trimester.<sup>(8)</sup> Ovarian torsion, therefore, occurs frequently in the first trimester, occasionally in the second, and rarely in the third.<sup>(9)</sup>

Sometimes ovarian torsion may be difficult to diagnose and may present as severe, colicky, unilateral

abdominal pain which is not remitting as in our patient who complained of pain since 15 days on left side which was variable in intensity. It may be associated with fall in blood pressure with increase in heart rate because of visceral and deep somatic nociception as happened in our case.<sup>(10)</sup>

The surgery can be performed by laparoscopy or by laprotomy. During the first trimester of pregnancy, ovarian torsion can be managed laparoscopically.<sup>(11)</sup> But ovarian cystectomy requires more advanced laparoscopic skills. In the second or third trimester, laprotomy is preferred as there is gravid uterus with large ovary though it may increase postoperative pain and wound complications. In our case size of the cyst was large with suspicion of intussusception so surgeons planned laprotomy.

While delivering anaesthesia to pregnant patient for non obstetric surgery following precautions to be taken:-

- maintain stable hemodynamics
- avoid drugs having teratogenicity
- maintain good utero-placental blood flow
- prevent intra-operative fetal hypoxia and acidosis
- achieve good perioperative analgesia

In our case we followed the same precautions.

Always consider pregnant patient as full stomach and follow the guidelines for aspiration prophylaxis.<sup>(12-14)</sup> In our case, we gave injection ranitidine and injection metoclopramide intravenously prior to surgery as an aspiration prophylaxis.

Anaesthetic drugs affect cell signalling, mitosis, and DNA synthesis, which are involved in cellular differentiation and organogenesis.<sup>(15-17)</sup> During pregnancy any drug could adversely affect the development of the fetus depending on the dose administered, the timing of exposure with respect to development. A retrospective study of exposure to surgery and anaesthesia in pregnancy was done by Mazze and Källén which showed an increased incidence of low birth weight (<1500 g), as a result of prematurity and intrauterine growth retardation in the surgical group and an increased rate of neural tube defects with exposure in the first trimester.<sup>(18)</sup>

Regional anaesthesia is preferable whenever possible because of complications normally associated with general anaesthesia in pregnancy like difficult airway, high risk of aspiration and teratogenicity to the fetus. Regional anaesthesia also decrease postoperative pain and the subsequent release of catecholamines, which can stimulate uterine contractility.<sup>(19)</sup>

Combined spinal epidural anaesthesia (CSE) has the advantages of rapid onset with prolonged duration of action with adequate relaxation and stable hemodynamics. It also helps to provide post operative pain relief through epidural catheter which allows early recovery and mobilization. Another advantage of CSE is the ability to use low dose of local anaesthetic intrathecally and epidural catheter may be used to extend the block height with reduction in side

effects.<sup>(20)</sup> Hence we used combined spinal epidural anaesthesia in our case with 0.5% injection bupivacaine heavy 2.8ml intrathecally and 0.5% injection bupivacaine 3ml epidurally. Low dose of bupivacaine heavy intrathecally avoids hypotension and at the same time 0.5% bupivacaine epidurally achieve adequate T5 level and we used 6 ml of 0.125% injection bupivacaine 8 hourly for post operative analgesia.

For the years, the treatment of choice for ovarian torsion was salpingo-oophorectomy, taking special care to avoid untwisting of the ovarian pedicle to prevent emboli and toxic substances entering the peripheral circulation. In this case gynecologist did left salpingo-oophorectomy.

According to the latest guidelines by "The American College of Obstetricians and Gynecologist," pre- and post-surgical procedure confirmation of fetal heart rate by Doppler is generally sufficient if the fetus is pre-viable. Intra-operative electronic fetal monitoring should be done if the fetus is viable, physically possible to perform and also patient has given informed consent for emergency cesarean delivery if it is necessary for the well-being of the fetus and mother.<sup>(21)</sup> Since in our case the fetus was pre-viable and the surgery was laprotomy, we assessed the condition of the fetus before and after the procedure by ultrasonography.

In conclusion, one should keep in mind that, any emergency surgery can be performed in any trimester depending on the case. Whenever possible surgeries should be considered in the second trimester as spontaneous abortion is less likely. General anesthesia is not an absolute contraindication but the regional anaesthesia technique is the choice of anaesthesia whenever possible to avoid fetal exposure to drugs and protection of maternal airway.

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