Post-Supravaginal Hysterectomy for Bladder Flap Hematoma in P3A0 Preterm Delivery by Cesarean Section due to Fetal Distress

Andi Kurniadi*, Rose Dita Prasetyawati, Heti Prasekti
Department of Obstetric and Gynecology, Padjadjaran University/Hasan Sadikin Hospital, Bandung, Indonesia

INTRODUCTION

Cesarean section (CS) is a surgical procedure to deliver a baby through an incision in the mother's abdominal wall (laparotomy) and uterus (hysterectomy). Cesarean section is performed with indications depending on the clinical situation, resources available for patient care, and individual physician management techniques. This action is done to reduce complications of pregnancy and childbirth and reduce maternal and infant mortality. CS can be done in an emergency or planned way [1]. The indications for CS surgery can be divided into two classifications: absolute and relative, where the choice of delivery method exists, but cesarean section provides the best chance of safety for the mother and her child. CS should be performed if several indications are found in the mother and her baby, including obstructive lesions in the lower genital tract, maternal infection, previous history of CS delivery, shoulder dystocia, breech presentation, and other malpresentation, or fetal distress [2,3].

Bladder flap hematoma (BFH) is a rare complication of CS. The same incident is unknown. The formation of the bladder flap is an essential step in the CS standard. CS can be performed by suturing or not suturing the visceral peritoneal. In CS without visceral peritoneal suturing, the vesicouterine space (VUS) is associated with the peritoneal cavity, so fluid from the incision site will accumulate in the peritoneal cavity before the peritoneal recovers spontaneously in the early puerperium (Figure 1) [4]. Otherwise, when the visceral peritoneal is sutured, the retroperitoneal fluid does not flow into the peritoneal cavity and can cause hematoma or abscess [5]. Bladder-flap hematoma (BFH) occurs when the visceral peritoneal is closed during traditional CS techniques so that bleeding occurs at the laparotomy incision site and the hematoma appears between the bladder and the lower uterine segment (LUS). BFH is the collection of blood in a potential ‘pocket’ located between the bladder and LUS, and it does not drain into the peritoneal cavity before the peritoneal recovers spontaneously in the early puerperium. BFH significantly increased postoperative fever, need for postoperative analgesia, postoperative febrile morbidity, required antibiotics, and prolonged hospitalization. In addition, patients with BFH usually present with mass lesions, signs of hypovolemia (tachycardia, decreased hemoglobin levels, decreased...
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Post-CS BFH surgical treatment, reported in the scientific literature, includes percutaneous febrile BFH drainage, surgical transvaginal evacuation, laparotomy BFH evacuation, and laparoscopic drainage [7].

In this case report, we present a case of cesarean delivery resulting in a bladder flap hematoma. This case report aims to study the management and complications of peritoneal closure in cesarean delivery and the decrease in uterine contractions that cause BFH.

CASE PRESENTATION

A 35-year-old (8 months pregnant) G3P2A0 came to the emergency installation in Hasan Sadikin General Hospital with a chief complaint of profuse discharge from the birth canal 12 hours before admission to the hospital. The discharge was clear, odorless, and not accompanied by fever. The mother could still detect fetal movement. Three hours later, the patient said the fetal movement had decreased, and she had regular contractions of 3–4 times in 10 minutes, of 20° duration. The fetal heart rate was 136-80-128 bpm. Cardiotocography (CTG) test was done for the second time with category III impression. Vaginal touch examination revealed normal vulva/vaginal, thick and soft portion, cervical dilatation of 4–5 cm, and meconium in the amniotic fluid. Intrauterine resuscitation was performed with the termination of pregnancy being planned by cesarean section due to fetal distress. The CS was performed with the Misgav Ladach method, and the visceral peritoneal was sutured as in the traditional technique. The newborn’s weight was 2.270 g with an Apgar score of 6 at 1 minute and 8 at 5 minutes.

Six hours after CS, the patient found a reddish diuresis, and the abdominal circumference increased from time to time, reaching 89 cm, with muscle defense (+), side and deafness moving (+), and tenderness (+). Contractions were difficult to assess, and there were vaginal bleeding (-), hypotension (blood pressure 108/70 mmHg), tachycardia (HR 130 x/minute), anemia (hemoglobin 6.7 mg/dL), and leukocytosis (leukocytes 20,810/ul). Transvaginal ultrasonography of bladder flap hematoma post caesarean section is shown in Figure 2. Fluid resuscitation and transfusion were performed with two red blood cells (PRC) and one fresh frozen plasma (FFP).

With the patient’s consent, a repeat laparotomy was performed. Standard methods were performed in all laparotomy treatments. When the abdomen was opened, there was blood between the bladder and the lower uterine segment (LUS). Blood was successfully evacuated, and no uterine contractions were found. Supravaginal hysterectomy was considered with the removal of the uterus without removal of the cervix due to secondary uterine atony (Figure 3).

After the surgery, the patient was given isotonic transfusions with PRC and FFP. The postoperative course was uneventful without muscular defense, tenderness, side deafness, displacement, or vaginal bleeding. For seven days, the patient immediately recovered and was treated with antibiotic therapy (ceftriaxone 2x1 g intravenously) and metronidazole (3x500 mg intravenously). Transvaginal ultrasonography performed on postoperative day-7 is shown in Figure 4. The patient was discharged from the hospital on her eighth day.

DISCUSSION

Cesarean section (CS) is the most common major surgical operation performed on women. It is crucial to use the most effective and safe surgical technique. Standard and evidence-based techniques are essential to minimize surgical complications [8]. Misgav Ladach was chosen for the cesarean section in this case. The Misgav-Ladach method for cesarean section was described by Michael Stark based on the Joel-Cohen incision [9]. Hofmeyr et al. [10] compared CS using different techniques. Misgav-Ladach, compared with traditional methods. It was associated with reduced blood loss, operative time, time to mobilization, and postoperative length of stay for the mother. The procedure was performed with the visceral and parietal layers of the peritoneal exposed. For this patient, the visceral peritoneal was sutured. According to Bambigboye et al. [11], there are several reasons why the peritoneal must be closed, including anatomical restoration and tissue re-approach, minimizing infection by restoring the anatomic barrier, minimizing wound dehiscence, minimizing bleeding, minimizing adhesion, and continuation of what is considered standard. Otherwise, when the visceral peritoneal is sutured, the retroperitoneal fluid does not flow into the peritoneal cavity and can cause hematoma or abscess [5]. The bleeding occurs at the laparotomy incision site and collects in a potential ‘pocket’ located between the bladder and LUS because it does not drain into the peritoneal [6].

Bladder flap formation is a standard procedure in CS. A bladder flap results from cutting the visceral peritoneal to isolate the bladder from the lower uterine segment. The formation of this bladder flap is to provide access to the lower uterine segment while minimizing the risk of bladder damage during CS [12,13]. Some complications that can occur due to bladder flaps in CS are fluid accumulation in the intraperitoneal space, bladder flap hematoma or bladder flap abscess, urinary retention due to nerve damage, and adhesions in the lower uterine segment [7,14]. Bladder Flap Hematoma (BFH) is formed due to bleeding at the incision site between the bladder and the lower uterine segment. The source of bleeding is an injury to the uterine blood vessels [6]. The exact incidence of this complication is unknown. The diagnosis of bladder flap hematoma is based on clinical signs and symptoms such as the...
presence of fluid between the bladder and uterus in postoperative patients with ultrasound evaluation showing a well-circled complex collection that causes posterior shadows [15]. Patients with bladder flap hematoma will present clinical signs such as a mass lesion, signs of hypovolemia (tachycardia, decreased hemoglobin level, decreased urine output), and/or infection (fever, leukocytosis) [16]. In our case, the initial signs and symptoms of the patient were reddish diuresis, an increase in abdominal circumference with muscle defense and tenderness, hypotension, tachycardia, anemia, and leukocytosis. The transvaginal
ultrasonography shows a well-circumferenced complex collection between the bladder and uterus, causing posterior shading [17]. During the following hours, the fusion of blood through the bladder is the reason for the hematuria [8]. The scientific literature does not have a clear protocol regarding BFH management or its surgical treatment. Surgical treatment after symptomatic cesarean section includes laparoscopic-laparotomic drainage, percutaneous ultrasound or CT-guided aspiration, transvaginal surgical evacuation, and obliteratorive additive therapy (injection of a sealant such as a doxycycline antibiotic into the hematoma) [17]. In 1985, Baker et al. [16] reported seven patients with bladder flap hematoma. After a cesarean section, all sonography showed mass lesions in the characteristic localization, and there was a decrease in hemoglobin ranging from 1.3 to 6 mg/dL. The hematoma was treated with hysterectomy in one patient, and another underwent exploratory laparotomy. Five of the patients were treated conservatively in this case series. In our study, we performed a laparotomy for evacuation and supravaginal hysterectomy due to secondary uterine atony. Uterine atony is the most common cause and the leading cause of maternal mortality worldwide [18]. According to Ilhan et al. [8], the decrease in uterine contractions has caused bleeding at the laparotomy incision site and resulted in a bladder flap hematoma. Carvalho et al. [19] reported that, of 13 emergency hysterectomies performed (< 24 hours after delivery), 8 were performed after cesarean section and 5 after vaginal delivery. The most common indication for hysterectomy was uterine atony (10/13), followed by placenta previa (2/13). During follow-up, she had no fever, muscular defense, vaginal bleeding, or leukocytosis. There was an improvement in the patient’s symptoms due to a marked reduction in the hematoma.

CONCLUSIONS

BFH is a rare complication of standard CS procedures. BFH can be caused by peritoneal closure in cesarean delivery and the decrease in uterine contractions or uterine atony. Patients with BFH usually present with mass lesions, signs of hypovolemia, and/or signs of infection. BFH management does not yet have a clear and definite protocol, which can be treated with conservative therapy in stable patients or surgery in cases of infection or bleeding. In comparison, hysterectomy is required in cases of uterine atony to reduce more severe complications.

DECLARATIONS

Competing of Interest
The authors declare no competing interest in this study.

Acknowledgment
AK conceived the study and recruited the patient for this report, RDP and HP literature search, and wrote the manuscript. All authors approved the definitive version of the manuscript.

REFERENCES