



Broad Ligament Hernia after Cesarean Section

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Abstract

Background: Small bowel obstruction is rare after cesarean section but can become a surgical emergency. As the rate of cesarean deliveries increases, the frequency of complications will likely increase.

Case: A 26-year-old woman, gravida 3 para 2002, underwent emergent cesarean section at term for non-reassuring fetal status. The procedure was complicated by difficulty returning the uterus to the abdomen after exteriorization for hysterorrhaphy. She was readmitted and brought to surgery on postoperative day five for a small bowel obstruction; operative findings revealed herniation of the small intestine into a broad ligament defect.

Conclusion: The rising cesarean section rate will inevitably lead to an increase in perioperative/postoperative complications. We must continue to review and critique the various operative techniques of cesarean delivery to reduce these complications.

Introduction

More than one third of pregnancies in the United States are delivered via cesarean section, and there is concern that this number will continue to rise. This may lead to a concomitant increase in the incidence of complications as has already been seen with the rise in the incidence of placenta accreta/percreta and need for cesarean hysterectomy [1]. Small bowel obstruction after cesarean section is rare with an incidence of 0.1% [2]. The most common cause is postsurgical adhesions, while a rare source comes from internal hernia accounting for 0.2% to 0.9% of all small bowel obstructions [3]. Herniation of the bowel through a defect in the broad ligament, which can be acquired or congenital, occurs in 4% to 7% of internal hernias [4].

We present a case of a female who developed a small bowel obstruction immediately after cesarean section from herniation in the broad ligament. We hypothesize that the trauma returning the uterus to the abdomen after exteriorization may have led to an acquired defect into the broad ligament as inspection prior to replacement of the uterus

revealed no broad ligament defects. Until the rising cesarean delivery rate is successfully lowered, it is incumbent on obstetricians to continue to review the evidence and reconsider the various techniques of cesarean delivery in order to limit maternal morbidity.

Case

A 26-year-old woman, gravida 3 para 2002, with a singleton pregnancy and a history of a previous laparoscopic cholecystectomy underwent emergent cesarean section at term for non-reassuring fetal status. Bandage scissors were utilized to extend the hysterotomy after blunt separation of the initial incision to facilitate easy delivery of the fetal head through the hysterotomy. Based on surgeon preference, the uterus was exteriorized to repair the hysterotomy in a two layer fashion with absorbable stitches. Operative findings at this time revealed a normal uterus, fallopian tubes, broad ligaments, and ovaries. There was difficulty returning the uterus to the abdomen with gentle pressure after closure of the hysterotomy secondary to constraints of the fascial incision. The surgeon partially rotated the uterus and applied pressure over the uterine fundus and right adnexa in order to return the uterus to the abdomen. Final inspection of the hysterotomy within the abdomen revealed excellent hemostasis; the adnexa and broad ligament were not reinspected. The patient otherwise did well intraoperatively and had a routine postoperative course. She was discharged on postoperative day two.

The patient returned to the emergency department on postoperative day four complaining of two days of nausea, bilious emesis, and abdominal pain. Physical exam and acute abdominal series were suggestive of a postoperative ileus versus small bowel obstruction. The patient was admitted to the gynecologic service for nasogastric decompression and bowel rest. Despite conservative management, there was no improvement in the patient's symptoms, therefore computed tomography (CT) of the abdomen and pelvis (Figure 1) was obtained on hospital day one. CT demonstrated a small bowel obstruction with a transition point in the right lower quadrant. General surgery consultation was obtained and the patient underwent an exploratory laparotomy demonstrating a portion of the small bowel had herniated through a 3 cm × 3 cm defect in

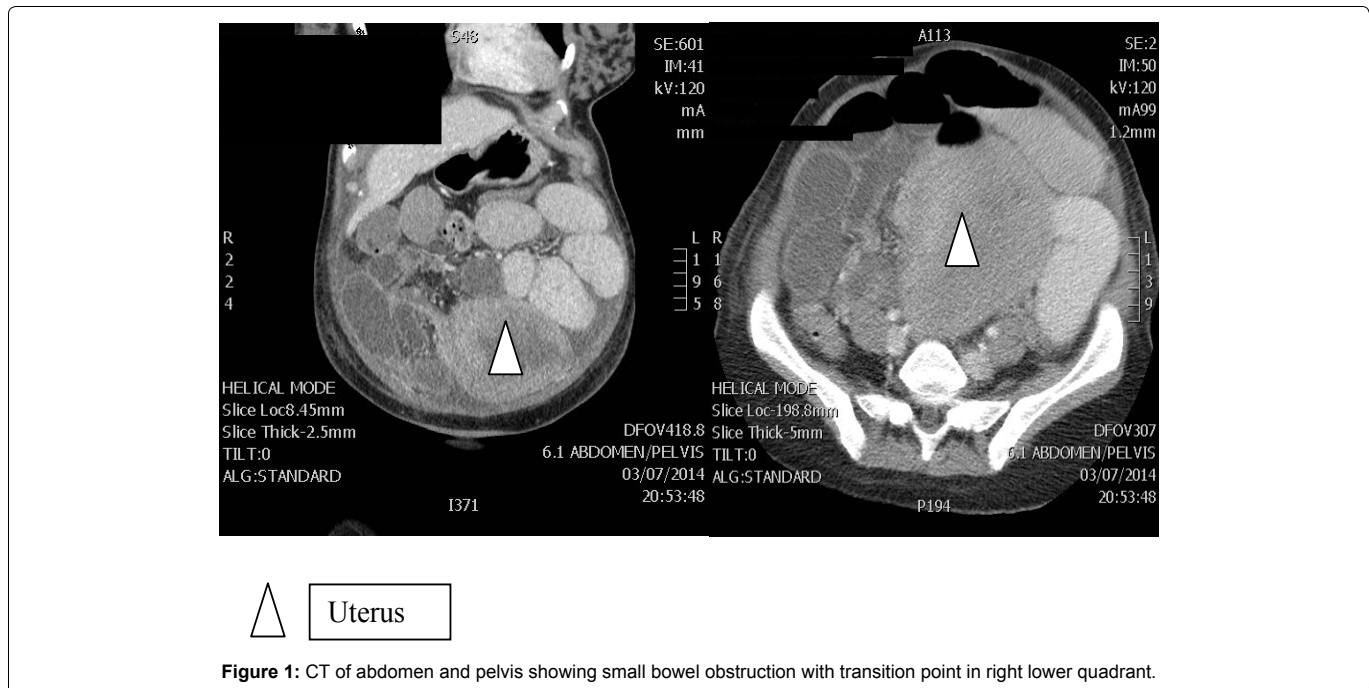


Figure 1: CT of abdomen and pelvis showing small bowel obstruction with transition point in right lower quadrant.

the right broad ligament located in the mesovarium. The hernia was surgically reduced and a thorough bowel inspection demonstrated normal, viable bowel. The defect was closed with absorbable stitches. The patient had an uncomplicated postoperative course and was discharged on postoperative day four. There were no further postoperative complications at the time of the eight week follow-up.

Comment

Small bowel obstruction after cesarean section is uncommon but can lead to severe complications [5]. Small bowel obstruction secondary to internal hernias are rare with one of the most uncommon forms being herniation through broad ligament defects [3]. Hunt classified two types of broad ligament hernias: fenestrated and pouch. Fenestrated refers to herniation through defects in the entire broad ligament versus pouch which is a herniation into an anterior or posterior opening [6]. These defects can be acquired or congenital. The latter occur from spontaneous rupture of cystic structures in the broad ligament which may be remnants of the mesonephric ducts. Acquired causes include abdominal surgery or pelvic inflammatory disease [7].

We hypothesize that our patient had a fenestrated herniation of the small intestine into an acquired defect in the broad ligament secondary to possible trauma from replacing the uterus into the abdomen after exteriorization as prior to this point surgical inspection revealed no abnormalities of the broad ligament. Although cesarean delivery is the most common surgery performed in the United States, there has been limited evidence-based medicine that supports many of the surgical techniques used during surgery. Very commonly, the uterus is exteriorized to close the hysterotomy. A systematic review of randomized trials examining surgical aspects of cesarean delivery suggested that uterine exteriorization was associated with only a decrease in postpartum fever [8]. However, a recent update to this review demonstrated no differences between exteriorization versus in situ repair of the hysterotomy. Expert opinion has recommended the decision to exteriorize the uterus should be guided by provider preference [9]. Our case illustrates exteriorization of the uterus may lead to trauma to the broad ligament which can lead to postoperative complications; therefore, if providers decide to exteriorize the uterus, careful attention should be directed towards handling the uterus and returning it to the abdomen to avoid iatrogenic injury.

In short, we can anticipate an increasing number of postoperative complications given the cesarean section epidemic. This case illustrates one significant complication. Defects in the broad ligament can lead to herniation of the small bowel, ileum, ureter, sigmoid colon, appendix,

and ovary. Surgical emergencies can result from complications such as strangulation of the ovary, bowel ischemia, ileo-vaginal fistula, and maternal death [7]. CT can suggest the presence of an internal hernia but rarely can identify the broad ligament as the source [10]. High clinical index of suspicion, early diagnosis and intervention via surgical re-exploration can prevent bowel resection and decrease mortality. In order to reduce the anticipated increased complication rate associated with the increasing cesarean section rate, we must continue to review and revisit the various operative techniques and strategies of performing this common surgical procedure.

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Disclaimer

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References

1. Committee on Obstetric Practice (2012) Committee opinion no. 529: placenta accreta. *Obstet Gynecol* 120: 207-211.
2. Barmparas G, Branco BC, Schnüriger B, Lam L, Inaba K, et al. (2010) The incidence and risk factors of post-laparotomy adhesive small bowel obstruction. *J Gastrointest Surg* 14: 1619-1628.
3. Varela GG, López-Loredo A, García León JF (2007) Broad ligament hernia-associated bowel obstruction. *JLS* 11: 127-130.
4. Baron A (1948) Defect in the broad ligament and its association with intestinal strangulation. *Br J Surg* 36: 91-94.
5. Al-Took S, Platt R, Tulandi T (1999) Adhesion-related small-bowel obstruction after gynecologic operations. *Am J Obstet Gynecol* 180: 313-315.
6. Hiraiwa K, Morozumi K, Miyazaki H, Sotome K, Furukawa A, et al. (2006) Strangulated hernia through a defect of the broad ligament and mobile cecum: a case report. *World J Gastroenterol* 12: 1479-1480.
7. Cilley R, Poterack K, Lemmer J, Dafoe D (1986) Defects of the broad ligament of the uterus. *Am J Gastroenterol* 81: 389-391.
8. Berghella V, Baxter JK, Chauhan SP (2005) Evidence-based surgery for cesarean delivery. *Am J Obstet Gynecol* 193: 1607-1617.
9. Dahlke JD, Mendez-Figueroa H, Rouse DJ, Berghella V, Baxter JK, et al. (2013) Evidence-based surgery for cesarean delivery: an updated systematic review. *Am J Obstet Gynecol* 209: 294-306.
10. Blachar A, Federle MP, Dodson SF (2001) Internal hernia: clinical and imaging findings in 17 patients with emphasis on CT criteria. *Radiology* 218: 68-74.