



CONSERVATIVE MANAGEMENT OF UROPERITONEUM AFTER REPAIR OF BLADDER RUPTURE

Gynecology

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ABSTRACT

We present a case of 30 year old third gravida with full term pregnancy and previous lower segment caesarean section (LSCS) with uterine scar rupture along with bladder rupture. A live baby was delivered and the uterus and bladder were repaired. In the early postoperative period, patient developed uroperitoneum which was promptly identified and confirmed by cystogram. Conservative management including intravenous antibiotics and input output charting was done with strict watch for signs of peritonitis. The bladder successfully healed with conservative management (confirmed by cystogram) and the patient was discharged in stable condition.

KEYWORDS

Rupture uterus, bladder rupture, uroperitoneum, bladder repair

INTRODUCTION:

Lower segment Caesarean section (LSCS) is one of the most common surgical procedures performed worldwide. With an increasing number of caesarean sections, surgeons often encounter themselves in situations where they have to face complications associated with the caesarean section. Rupture uterus with bladder rupture is an infrequent complication, which requires a team approach. Very rarely do we get to see a rare postoperative complication such as bladder leak and uroperitoneum after a complex bladder repair. We present such a case and how it was managed conservatively and relaparotomy was prevented.

Case: Mrs X, 30 year old, G3P2L2, was referred to our hospital at 39 week pregnancy, with previous 1 LSCS and scar tenderness in early labor. Her first pregnancy was normal vaginal delivery 7 years ago, and second pregnancy was full term LSCS at a government hospital, for cord prolapse one year back. On Examination, there was no pallor, pulse rate was 100/min and BP was 120/80 mmHg. It was a single live fetus in cephalic presentation and fetal tachycardia (170/min). Uterine scar tenderness was present although uterine contour was maintained. On per vaginal examination, cervix was 3cm, 50% effaced, membranes absent with thick meconium and presenting part at -3. Emergency LSCS was performed. Intraoperatively, adhesions were present on anterior surface of uterus, uterine scar rupture along with bladder rupture were present. A 3.25 kg female baby was delivered with APGAR of 4/6/9. Uterine scar was repaired in 2 layers after copper-T insertion. A 8x4 cm rent was seen on the dome of the bladder, which was repaired in layers by the surgeon and had no leak on retrograde filling with 300 cc methylene blue stained saline. Intraperitoneal drain was left in situ.

On postoperative day 1, the patient had 1300 cc urine output and 550 cc drain output. On postoperative day 2, the patient had no urine output for 12 hours, and 900 cc urine like fluid in intraperitoneal drain. On per abdomen examination, uterine fundus corresponded to 24 week size of gravid uterus, it was well retracted, and tenderness present in the lower abdomen on deep palpation. Urinary catheter was flushed and a 1x1 cm clot was expelled. Her complete blood count, liver and kidney function test, serum electrolytes were normal. The fluid in the intraperitoneal drain had ammoniacal smell with drain urea/ creatinine was 147/6.1 mg/dL respectively. An abdominal scan revealed bilateral normal kidneys and no free fluid in abdomen. Cystography revealed increased radiopacity in left hemipelvis with obscuration of sacroiliac joint, suggestive of bladder leak (fig. 1). (CT cystogram could not be performed due to nonfunctioning of CT machine)

Conservative management was planned and an hourly urine output charting was done with intermittent flushing of urethral foley catheter. In the next 12 hrs, she had 500 cc urine output through catheter and 500 cc drain output. Her drain output gradually decreased to less than 50 cc after 5 days and she maintained her urine output. She maintained her vitals and remained afebrile throughout. She was kept on conservative management and a repeat cystogram done on postoperative day 22, which showed well maintained contour of bladder with no leakage of dye from bladder. (fig. 2), following which foley's catheter was removed. The patient was able to pass urine normally with no peritoneal collection. Peritoneal drain was removed the next day and the patient was discharged on day 25 in stable condition with a diagnosis of uterine and bladder rupture repair with post operative uroperitoneum managed conservatively.

DISCUSSION

Uterine rupture in pregnancy is a rare and potentially life-threatening complication. The overall incidence of rupture uterus in women with previous LSCS is 0.2-1.6%. (1) Cases of bladder rupture along with uterine scar rupture have been rarely reported and it is estimated that bladder rupture occurs in 8-15% cases of uterine rupture. (2)

Most of the bladder ruptures in gynecological practice occur at the dome of the bladder and can be easily repaired during LSCS. The first step is to delineate the site and extent of injury to the bladder, especially in relation to ureteric openings. Absorbable synthetic suture such as polyglactin or poliglecaprone are often used for bladder repair as the bladder tissue regains its tensile strength approximately 3 weeks after cystotomy repair. Permanent suture such as silk should never be used in cystotomy repair, as it precipitates stone formation. (4,5) Repair of cystotomy is typically done in 2 layers. The first layer is closed with simple running 3-0 delayed absorbable suture (such as vicryl), incorporating the mucosa and muscularis. The second layer may consist of running or interrupted 3-0 or 2-0 suture; bladder serosa should be incorporated in an imbricating fashion to add integrity. Larger or more complicated injuries may require additional layers of repair or coverage with an omental flap. Integrity of the bladder is checked by retrograde filling of the bladder with methylene blue/sterile milk/ indigo carmine dye. If leakage occurs through suture lines, additional layers of imbricating suture or figure of eight sutures can be taken. (4-7) In the present case bladder rent was very big and additional imbricating stitches or an omental flap could have averted the postoperative urine leakage in the peritoneum.

After a complex bladder injury has been repaired, intraperitoneal drains may be placed to monitor for extravasation of urine into the

peritoneal cavity and for drainage of such fluid if it accumulates. This is very evident in the present case that intraperitoneal drain saved her laparotomy as there was no fluid collection in peritoneal cavity and patient never developed peritonitis.

The bladder should be drained continuously by Foley catheter for approximately 7-14 days, depending on complexity of repair, to prevent elevated intravesical pressure and to allow the bladder to heal. Daily cleaning of catheter-meatal junction is advised with saline. Antimicrobial agent use is associated with colonisation with pathogens such as pseudomonas and therefore, not recommended. (5,6)

It is important to identify any postoperative complications such as clot retention or urine leak into the abdominal cavity (uroperitoneum). Clot retention usually occurs with complex or large bladder repairs or in patients with carcinoma bladder and can be removed by intermittent flushing of urethral catheter or by intermittent or continuous irrigation with three way foley catheter. Use of a large french catheter could have prevented clot retention in our case.

Urine leak after bladder repair is a rare complication and can result in uroperitoneum. Drain fluid or Peritoneal fluid: serum creatinine ratio >1 indicates presence of urine in peritoneal cavity. Peritoneal fluid electrolyte measurement in urine leak will resemble that of urine, and hence has low sodium and chloride level and high potassium. (7-9) Uraemia and elevated serum creatinine levels are seen in uroperitoneum due to absorption of urea nitrogen and creatinine, and oliguria due to intra-abdominal leak of urine. This may mimic acute kidney injury, another possible complication in a postoperative patient, especially with excessive preoperative/ intraoperative blood loss. (7) The presence of intraperitoneal drain in our patient did not allow intra abdominal retention of urine and hence serum urea and creatinine remained within normal range.

Clinical signs of urinary peritonitis include abdominal distention due to ascites, or collection in intraperitoneal drain (as in this case), urine leakage from wound and decreased urinary output. Classical signs of peritonitis, Ileus, fever, leukocytosis and septicemia may take days to develop or develop in case urinary infection is present. (8)

Ultrasound may show presence of fluid in pelvis/ abdomen, but is non specific. Retrograde cystography is a simple and reliable method for diagnosis of bladder leaks. 300–500 mL of contrast material is administered retrograde to fill the urinary bladder. Anteroposterior, bilateral oblique, and post voiding views of the pelvis are then obtained. Leakage of dye from bladder is suggestive of bladder leak. CT cystography is the study of choice as it is more sensitive in determining the true extent of bladder injury. Drainage films are not required with CT as uterovesical space is visualised on axial images. Both plain and CT cystography have a sensitivity of 90-95% and specificity of almost 100%. (5,8-10)

Routine use of suprapubic catheter (SPC) in every case of cystostomy repair is not supported by current literature. The presence of SPC however provides an alternate drainage channel and can be a key to successful healing in patients with large or complex bladder repairs or in patients where poor healing or clot formation is anticipated. (11)

Persistent urinary leakage from repair site typically resolves with an additional two to four weeks of bladder drainage. (12) Conservative management is also an option after operations in which the bladder injury was missed during surgery if there are no signs of ileus or peritonitis. This may require placement of intraperitoneal drain under radiological guidance, if not previously placed. Use of intraperitoneal drain in large bladder repairs is recommended not only for diagnosis of uroperitoneum, but also in conservative management of bladder rent/ bladder leak. (8)

To the best of our knowledge, this is the first case in literature of uroperitoneum developing after bladder repair of bladder rupture associated with uterine scar rupture in caesarean section which was conservatively managed.

CONCLUSION AND LEARNING POINTS:

Bladder is the most commonly injured organ in a caesarean section. Complex bladder repairs require a multispecialty approach.

Larger french foley should be used after complex bladder repair to prevent clot retention.

Dual drainage of the bladder by urethral foley's and SPC can prevent postoperative complications by ensuring continuous drainage and may prove to be a major factor in reducing morbidity and hospital stay of patients.

Intraperitoneal drain acts as "an eye in abdomen" for the surgeon and helps in prompt identification of peritoneal collection, prevent development of peritonitis and in some cases such as ours, can also help in management of uroperitoneum, and ultimately saving patient another surgery for bladder repair.

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Conflict of interest: None

Figures:

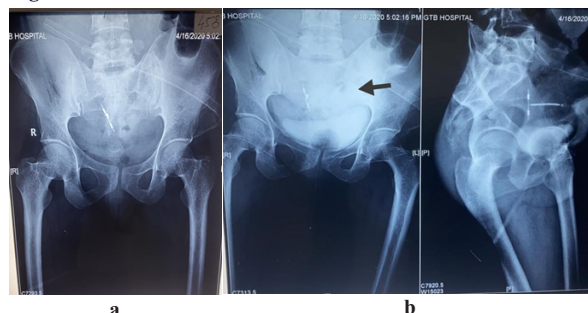


Fig 1: Cystogram on postoperative day 2, a: before contrast, b: showing increased radiopacity in left hemipelvis with obscuration of left sacroiliac joint (marked by black arrow), suggestive of bladder leak

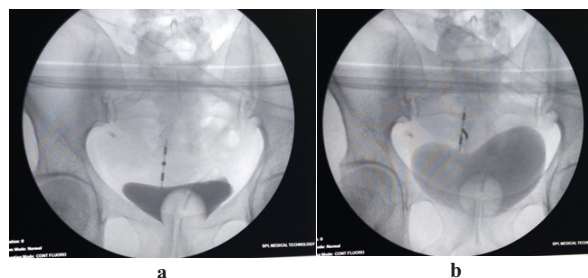


Fig 2: Cystogram on post operative day 22 with partial (a) and full bladder (b) showing no leakage of contrast

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