

## Case Report

### Spontaneous Rupture of Urinary Bladder in Puerperium: A Case Report

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#### Abstract:

**Background:** Spontaneous bladder rupture during childbirth and postpartum period is potentially life-threatening and a rare event.

**Case report:** Here, we are reporting a case of spontaneous urinary bladder rupture on 5<sup>th</sup> day of puerperium after vaginal delivery in a 20-year-old primi gravida woman who presented with huge urinary ascites, acute abdominal pain, anuria, renal failure. Emergency exploratory laparotomy with repair of ruptured urinary bladder was done to prevent further complications.

**Conclusion:** Spontaneous bladder rupture in puerperium might be preventable while emergency laparotomy is lifesaving in such case.

**Keywords:** Puerperium, Urinary bladder, Spontaneous rupture, Emergency laparotomy.

#### Introduction:

The first case of bladder rupture is reported in 1995 by Kibel AS et al.<sup>1</sup> The term 'spontaneous bladder rupture' describes an event that happens without prior bladder disease or trauma. Distended urinary bladder during the second stage of labor, weakening of the bladder, instrumental delivery, postpartum urinary retention, vaginal birth after cesarean section, obstructed labor, and catheterization during labor are some of the identified contributing factors.<sup>2</sup>

Spontaneous rupture of urinary bladder during labour or postpartum is a rare condition. Patient with bladder rupture clinically presents with the symptoms of abdominal distention, suprapubic pain, haematuria, and anuria; intraperitoneal rupture may lead to peritonitis or sepsis. A detailed history and meticulous examination of intrapartum and postpartum events are essential for diagnosis. A multidisciplinary team approach - including an obstetrician, surgeon, urologist, and anesthesiologist -

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is required for supportive management and emergency laparotomy, which can reduce maternal mortality and morbidity.<sup>3</sup>

### Case Report:

A 20-year-old lady, para-1, was referred to Faridpur Medical College Hospital with the history of vaginal delivery 4 days back, abdominal distention and pain in whole abdomen for last 2 days & scanty micturition for same duration.

Regarding antenatal history, her pregnancy was uneventful till 38 weeks. Then she developed labour pain and delivered a 3.2kg male asphyxiated baby at Upazila health complex after about 20 hours of labour pain. She was symptom-free for two days following delivery. For the last 2 days, she developed gradual distention of whole abdomen, which was associated with pain. The pain was severe, constant and not relieved by analgesics. She also complained of scanty micturition for same duration.

On admission patient was anxious and distressed with pain, mildly anaemic, dehydrated, pulse- 87 bpm, blood pressure- 100/70 mm(Hg), temperature- 98.6°F, respiratory rate- 27 breaths/ min, oedema-absent, urine output- 50 ml in about 3 hours after catheterization (hematuria), lungs- clear,  $\text{SpO}_2$ - 98%.

Abdomen was hugely distended, umbilicus was centrally placed and flanks were full. Stria albicans and linea nigra were present. On palpation, there was diffuse tenderness over the whole abdomen. Fluid thrill was present. On per vaginal examination, vulva looks normal. Lochia serosa present. Episiotomy wound was healthy.

**Her laboratory investigations show:** Hb- 9.2 g/dl, WBC- 8,600/cc, Neutrophil count- 73%, ESR- 23mm in 1<sup>st</sup> hour, Platelet count- 2,75,000/cc, SGPT- 36 U/L, S. bilirubin- 0.8 mg/dl, S. creatinine- 2.5 mg/dl, Urine R/M/E : Albumin, Sugar- Nil, Pus Cell- 3 to 4/HPF, S. electrolytes: Na= 136.5 mmol/L, K= 4.62 mmol/L, Cl= 107.5 mmol/L.

**USG of whole abdomen shows:** Marked free fluid in peritoneal cavity, normal HBS with bulky postpartum uterus. No endometrial collection.

We monitored the patient closely for next 4 hours. But patient's condition was deteriorating. Therefore,

decision was taken for laparotomy. After proper counselling to the patient and her guardian about her condition, management plan and the ultimate health benefits and probable complications, laparotomy was done following proper informed written consent. We informed and ensured the presence of general surgeon and urologist before laparotomy in case their assistance might be needed.

With all aseptic precautions after opening the peritoneum, there was huge free turbid fluid and about 2L fluid was sucked out. Contour of uterus was found normal. The whole intestine was matted and edematous. We suspected injury of intestine.

Then surgeon was involved and after extensive exploration no intestinal injury was found but an opening about 4cmx2cm was found on the upper portion of posterior wall of bladder, part of which was necrosed (Figure 1). Necrosed part of bladder was removed, margin was trimmed and closed by vicryl 3.0 in two layer by urologist. After proper toileting a supra-pubic catheter and a drain tube was kept in situ. Abdomen was closed in layers. Catheterization was done with tri-channel and irrigation maintained up to clear urinary flow. Patient was transfused two units of fresh blood per operatively.



**Figure 1:** Intraoperative image showing bladder rupture

Her post-operative period was uneventful, recovered without any complication. She was discharged 7<sup>th</sup> postoperative day with urinary catheter. Foley's catheter was removed after 21 days and her bladder function was normal thereafter.

## Discussion:

Spontaneous rupture of the urinary bladder in the puerperium is an exceptionally rare but potentially life-threatening complication following vaginal delivery. Its rarity, nonspecific presentation, and overlap with common postpartum conditions often result in delayed diagnosis, thereby increasing morbidity and mortality. The present case highlights the diagnostic challenge and successful multidisciplinary management of this unusual condition.

In the present case, the patient presented with progressive abdominal distension, severe abdominal pain, oliguria, hematuria, and biochemical evidence of renal dysfunction during puerperium. This clinical profile is consistent with previously reported cases. Previous study described spontaneous bladder rupture occurring in the postpartum phase with acute abdominal pain, ascites, oliguria, and rising serum creatinine, closely resembling our patient's presentation.<sup>3</sup> Similarly, a systematic review noted that most patients presented within 3-7 days postpartum, commonly with abdominal distension, pain, reduced urine output, and biochemical pseudo-renal failure due to urinary ascites.<sup>4</sup> Another study also reported abdominal pain and distension with urinary symptoms in the puerperium, though their case followed instrumental vaginal delivery, unlike our patient who had a spontaneous vaginal delivery.<sup>5</sup>

Several predisposing factors for spontaneous bladder rupture in the puerperium have been proposed, including prolonged labor, bladder over distension, postpartum urinary retention, ischemic necrosis of the bladder wall, and unrecognized intrapartum trauma. In our case, the patient experienced prolonged labor of approximately 20 hours, which is a recognized risk factor. Study emphasized that prolonged labor leads to sustained compression of the bladder between the fetal head and the pubic symphysis, resulting in ischemia and subsequent necrosis.<sup>4</sup> This mechanism likely explains the necrosed posterior bladder wall observed intraoperatively in our patient. Another study similarly attributed bladder rupture to ischemic necrosis following prolonged obstructed labor, even in the absence of overt trauma.<sup>3</sup> In contrast, a study reported bladder rupture following instrumental delivery, where direct mechanical trauma may have played a larger role.<sup>5</sup>

The posterior wall of the bladder was involved in our patient, with a defect measuring approximately 4cmx2cm and partial necrosis. This finding is consistent with previous reports. Study reported that the dome and posterior wall are the most common sites of spontaneous rupture due to their intraperitoneal location and vulnerability to ischemia.<sup>4</sup>

Diagnosis of spontaneous bladder rupture is difficult. Ultrasound often reveals only free intraperitoneal fluid, as was seen in our patient, without clear identification of the bladder defect. This nonspecific finding frequently leads to misdiagnosis as postpartum peritonitis, bowel injury, or uterine pathology. Previous study highlighted that CT cystography is the diagnostic modality of choice; however, in resource-limited settings, as in our case, this investigation may not be readily available.<sup>4</sup>

Surgical repair remains the definitive treatment for intraperitoneal bladder rupture. In our case, early decision for exploratory laparotomy proved lifesaving. Excision of necrotic tissue and two-layer bladder repair with prolonged bladder rest resulted in an excellent outcome. This approach is consistent with management strategies described by previous studies which reported successful outcomes following surgical repair and prolonged catheterization.<sup>3,5</sup> Previous study emphasized the importance of multidisciplinary involvement, particularly urologists, which was also ensured in our case.<sup>4</sup>

## Conclusion:

Spontaneous bladder rupture in vaginal delivery is a totally preventable condition. Importance of emptying the bladder in the second stage before active pushing should be taught to the doctors and midwives. It is important to have clinical suspicion for diagnosis. Emergency laparotomy is lifesaving and reduce maternal mortality and morbidity in this case.

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**Conflict of interest:** There is no conflict of interest.

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