

Accumulation of Urine in the Peritoneal Cavity after Bladder Rupture Following Vaginal Delivery: A Case Report

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Authors' contributions

This work was carried out in collaboration among all authors. Author RSH designed the study, performed the statistical analysis, wrote the protocol and wrote the first draft of the manuscript. Authors MF and SH managed the analyses of the study. Author FSH managed the literature searches. All authors read and approved the final manuscript.

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Case Study

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ABSTRACT

Spontaneous bladder rupture following vaginal delivery is very rare. Herein, we present a case report with the accumulation of urine in the peritoneal cavity after normal vaginal delivery. An 18-year-old primigravid woman referred to the almanHosein Hospital hospital, Mashhad, Iran, with the accumulation of urine in the peritoneal cavity. The computed tomography scan and ultrasound were normal for structure of bladder. Probably, the bladder rupture led to making a small hole in the bladder and accumulation of urine in the abdominal cavity. The laboratory symptoms and clinical and radiological findings would help emergency physicians to appropriately manage these patients.

Keywords: Bladder rupture; urinary retention; vaginal delivery.

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1. INTRODUCTION

Vaginal delivery can be associated with side effects, such as postpartum urinary retention (PUR), bladder rupture, and acute tubular necrosis (ATN) [1]. The PUR, a common condition occurring after vaginal delivery, affects up to 7% of patients and contribute to any associated risk factors [2]. The pathophysiology of PUR is unknown; however, PUR can be induced following primiparity, instrumental delivery, epidural analgesia, and during long labor at the first and second stages [3].

The PUR can be divided into clinically overt and symptomatic form with the inability to bladder evacuation and covert and asymptomatic form with the inability to incomplete bladder evacuation [4]. In the covert PUR, urine volumes remain about ≥ 50 to ≥ 200 ml and then lead to some problems in these patients [5].

Bladder rupture after vaginal delivery is a rare urological emergency; however, the urinary tract and bladder are the most frequently injured sites during vaginal delivery due to the anatomy of the trigone of the bladder placed on anterior vaginal fornix and base placed on lower uterine segment and cervix [6]. We report a case study accumulation of urine in the peritoneal cavity after bladder rupture following normal vaginal delivery.

2. CASE REPORT

An 18-years old woman referred to the almamHosein Hospital hospital, Mashhad, Iran, complaining of abdominal pain and feeling abdominal lump. Her general condition was good, without the fever, but with the observation of abdominal distention during an abdominal examination. The reports of the patient showed that she had primigravida 14 days ago. She received normal care during pregnancy and was hospitalized due to past date pregnancy. She was induced for post term pregnancy using oxytocin and had a normal delivery without any problems.

She had normal urination after childbirth and hospital discharge with a good general condition. She did not urinate well and urinated hard and in small amounts during the first 10 days after delivery; however, she was not referred to hospital. She referred to the hospital with a feeling of the abdominal lump after 14 days. The patient was hospitalized with a diagnosis of bladder rupture and ATN.

Firstly, the catheter was placed for her, and about 2,800 cc of urine was removed. The results of the pelvic ultrasonography showed about 2 L of fluid in the abdomen, the structure of liver, spleen, intestinal loops, and the kidneys were normal and was not observe the hydronephrosis (Fig. 1). A foley catheter was placed for her, and about 2,500 cc of urine was passed as hematuria. Liver enzyme tests were normal. In the initial tests, there was a 150 mmol/L of serum sodium, 7.5 mmol/L of potassium, 7.5 mg/dl of creatinine, and 165 mg/dl of urea, she was being fed and hydrated.

When she was hospitalized, she underwent antibiotic therapy with metronidazole and ceftriaxone due to the symptoms of urinary tract infection. Urine was constantly flowing (about 3 l) during the first night of hospitalization. In the subsequent tests, there was a 165 mg/dl of urea, 2.5 mg/dl of creatinine, 140 mmol/L of serum sodium, and 4.5 mmol/L of potassium, then continue the hydrated of her.

Urine tests were normal with no presence of bacteria and white blood cells in the morning tests. Again, the ultrasound showed a minor fluid between the intestinal loops and posterior cul-de-sac. Urea and creatinine gradually decreased, and the patient was discharged with a foley catheter. Her condition was improved 10 days following discharge, and she was able to naturally urinate.

3. DISCUSSION

The main cause of the accumulation of urine in the peritoneal cavity is bladder rupture and ATN [7]. Intraperitoneal urinary bladder rupture is usually viewed in relation to uterine rupture; however, isolated intraperitoneal bladder rupture after vaginal delivery is very rare [6]. The delivery process and poor emptying of the urinary bladder lead to the development of urinary retention; accordingly, bladder rupture can occur due to the incomplete evacuation of the bladder. Therefore, appropriate bladder evacuation is vital for the prevention of this problem [8].

The sustained pressure by the fetal head on the bladder during labor may cause the pressure necrosis of the bladder dome leading to bladder rupture. However, patients usually undergo episiotomy or perineal repair after vaginal delivery [9]. These subjects frequently pass little quantity of urine due to experience of nerve stimulation which can lead to urinary retention,

and the bladder is poor in the postpartum period. If the urinary retention is unnoticed, the bladder dilation and spontaneous rupture may occur [7].

Png et al. reported two cases of 32 and 34 years of age, with abdominal distension after vaginal delivery resulting in bladder rupture [7]. Baheti et al. reported a case of 22 years of age with spontaneous intraperitoneal urinary bladder rupture following vaginal delivery; however, the woman had gestational diabetes mellitus and fetal macrosomia [6].

Ekuma-Nkama et al. presented a 30-year-old woman 84 h after delivery with sudden onset of severe abdominal pain, oliguria, and hematuria 3 h prior to admission. The results of the ultrasound showed a 5-cm laceration in the dome

of the bladder [10]. Peyvandi et al. reported a 27-year-old woman 4 days after delivery with cavity and laceration of 3 cm in the dome of the bladder due to intraperitoneal bladder rupture [8].

Kibel et al. presented a 28-year-old woman 3 days after delivery with renal failure and ascites [11]. To date, all the reported cases have firstly had urinary retention following vaginal delivery leading to bladder rupture or renal failure; however, there was no history of pelvic surgery.

In previous study, the bladder was repaired in two layers after diagnosis bladder rupture of and drained via suprapubic and urethral catheters. A cystogram after about ten days showed no urinary leak and the suprapubic catheter was

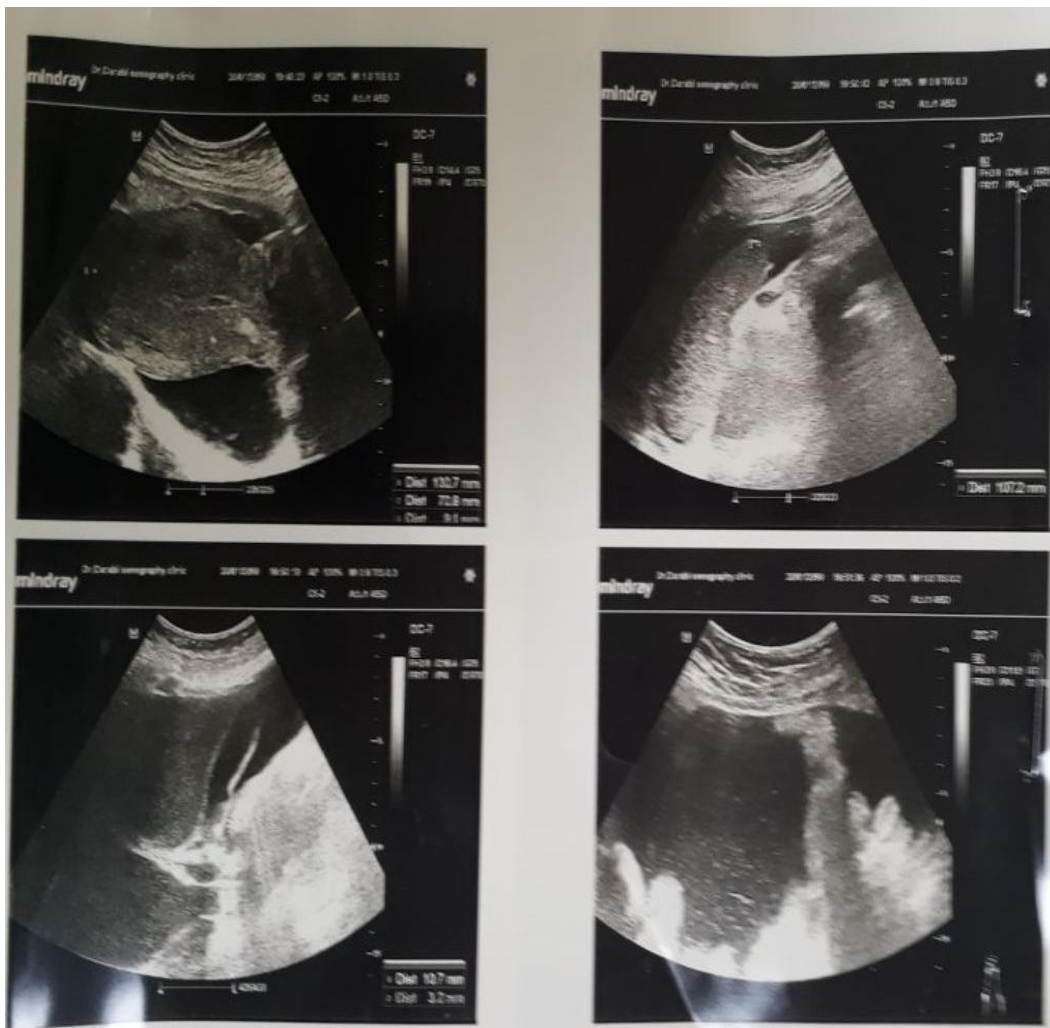


Fig. 1. Illustration of fluid in the abdominal cavity

removed [6-11]. But in the present case the evidence showed that the patient suffered from urinary retention for 10 days after delivery; nevertheless, she was not referred to hospital. Since her computed tomography and ultrasound were normal, we guess the aggregation of urine due to bladder rupture led to making a small hole in the bladder and accumulating urine into the abdominal cavity, then she was not require the surgery. The evacuation of urine from the abdominal cavity, also used of a foley catheter for 10 days were the causes of her recovery her.

4. CONCLUSION

After normal delivery, patients may have unnoticed urinary retention because of under pressured bladder during delivery, no attention to which lead to spontaneous rupture of the urinary bladder. The laboratory symptoms and clinical and radiological findings would help emergency physicians to appropriately manage these patients.

CONSENT

As per international standard or university standard, patient's written consent has been collected and preserved by the author(s).

ETHICAL APPROVAL

It is not applicable.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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