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Spontaneous Bladder Rupture in the Immediate Postpartum Period: A Rare Consequence of Vaginal Delivery A Case Report and Literature Review

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Abstract **Case Report**

Spontaneous rupture of the bladder after a vaginal delivery is an extremely rare situation. We report the case of a 32-year-old female patient who, after a vaginal delivery, presented persistent abdominal pain associated with hematuria followed by an anuria. The exaggeration of abdominal pain associated with a gradual increase in the volume of the abdomen have motivated abdominopelvic ultrasound and an injected uroscan with acquisition at the late time confirmed the diagnosis of bladder rupture that was clinically presumed, showing a finely echogenic great abundance peritoneal effusion on ultrasound, an intact uterus and contrast product extravasation outside the bladder. Its etiology is multifactorial incriminating hyperpressure of the fetal head on the bladder not previously emptied during the second phase of labor in addition to the bladder wall weakening factors. Bladder evacuation is recommended during the second phase of labor to avoid any risk of rupture.

Keywords: Bladder rupture, spontaneous, postpartum, ultrasound, uroscanner.

INTRODUCTION

Spontaneous bladder rupture is a rare condition, especially after non-instrumental vaginal delivery. It is associated with increased morbidity and mortality. Therefore, its early detection is essential for its correct management.

We report a new radioclinical case of spontaneous postpartum bladder rupture following vaginal delivery.

CASE PRESENTATION

This is the case of a 32-year-old patient, complaining of diffuse abdominal pain predominantly in the hypogastrium with hematuria followed by an anuria, with progressive abdomen distension after a vaginal alive newborn delivery. This symptomatology prompted the request for an abdominopelvic ultrasound first to search for an etiology.

It revealed a finely echogenic bladder content, seat of a floating membrane (Fig 1), an uterus in place, globular, without any detectable anomaly and a finely echogenic great abundance peritoneal effusion (Fig 2). In second time, un uroscan was performed and objectified a bladder with spontaneously hyperdense content (Fig 3), not enhanced after injection of contrast product with at late time, visualization of extravasation of the contrast product in the free peritoneum through the bladder wall solution of continuity on left posterolateral side (Fig 4). According to These radiological results, the diagnosis of spontaneous postpartum bladder rupture was retained.

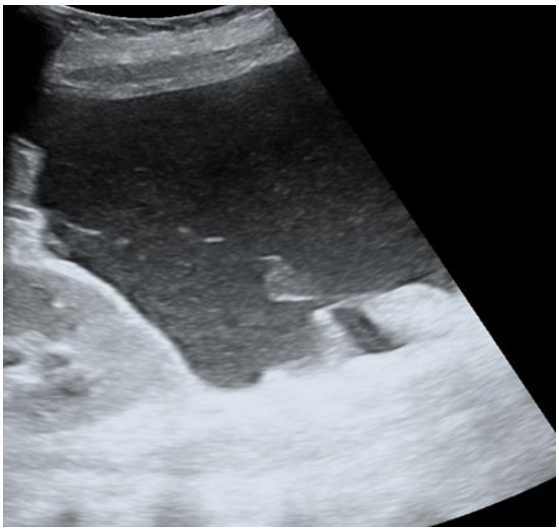

Figure 1: Abdominopelvic ultrasound: Bladder with finely echogenic content, site of a floating membrane

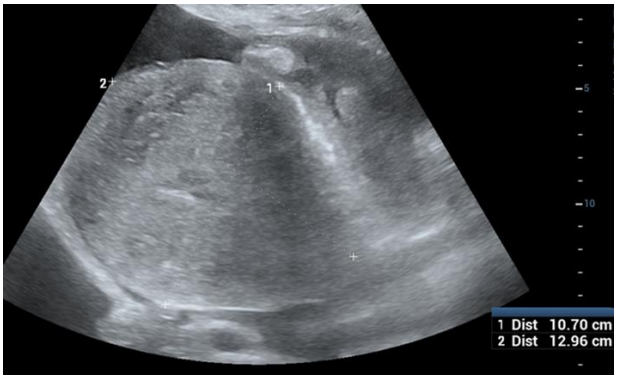

Figure 2: Abdominopelvic ultrasound: Finely echogenic great abundance peritoneal and pelvic effusion, with a globular uterus, without visualized myometrial defect

Figure 3: Uroscan, pelvic axial slices before injection of contrast product: Bladder spontaneously hyperdense content

Figure 4: Uroscan, pelvic axial slices after contrast product injection, at late time: Bladder with hyperdense content with extravasation of the contrast product at the left laterovesical side through a continuity solution of its wall

An emergency laparotomy was performed; it revealed a 2 cm solution of continuity of the posterior bladder wall which was sutured. An indwelling bladder catheter installation and peritoneal lavage were also done. The post-operative consequences were simple. An ultrasound postoperative check performed on D3, D7 and D15 did not show any peritoneal effusion, the wall bladder was regular. The bladder catheter was removed on D15 postoperative without significant incident.

DISCUSSION

Rupture of the bladder in the puerperium is generally associated with a concomitant uterine rupture in an obstetrical setting. Isolated intraperitoneal rupture of the bladder during vaginal delivery is extremely rare. Its incidence is 1 in 126,000 cases [1].

The etiology of this condition is multifactorial. Sustained pressure of the fetal head against the intraperitoneal part of the bladder during uterine contractions can cause pressure necrosis on the bladder dome and cause bladder rupture especially during the expulsive phase. This risk is increased if the bladder is not evacuated first. Other predisposing factors are reported such as prolongation of the second phase of labor and a newborn macrosome [2].

Another explained pathogenesis for spontaneous rupture of the bladder is that during pregnancy the muscle tone of the bladder is reduced, resulting in incomplete evacuation of the bladder, thereby causing the walls of the bladder to stretch and damage the detrusor muscle. Due to this pathogenesis, urine retention goes unnoticed, leading to severe distension of the bladder and subsequent spontaneous rupture [3].

Other etiologies are cited in the literature, alcoholism, radiation therapy, neurogenic bladder and obstructed labor have been reported as causes of spontaneous bladder rupture in postpartum. During labor, it is prudent to empty the bladder to prevent it from rupturing. Postpartum patients who have had an episiotomy or perineal repair frequently have difficulty urinating which can lead to urinary retention. Both situations can be related to spontaneous rupture of the bladder [4].

The clinical signs frequently found are sudden onset hypogastric pain associated with oliguria and hematuria, urinary ascites, intestinal ileus or even acute renal failure secondary to systemic reabsorption of urea and creatinine, hyperkalemia and metabolic acidosis requiring admission to intensive care before definitive diagnosis and laparotomy.

The diagnosis of spontaneous bladder rupture may go unnoticed with an insidious presentation. Retrograde cystography with contrast agent instilled via a Foley catheter was the test of choice to diagnose spontaneous bladder rupture when there is an extravasation of contrast agent [5].

Nowadays, the uroscan with an excretory phase is the ideal exam for a definitive diagnosis of bladder rupture. This examination offers the advantage of cross-sectional imaging in addition to its good sensitivity to detect even small perforations with extravasation of the contrast medium at the late time. It also allows to properly assess the excretory tract and anatomy of the abdomen and pelvis [6, 7].

The diagnosis can also be made by retrograde cystoscopy, analysis of urea and creatinine in ascites fluid by blood chemistry. Elevated serum urea and creatinine occur in 45% of patients presenting within 24 hours of rupture and in 100% within 24 hours of bladder rupture [8, 9].

Management will be through emergency laparotomy, which will allow peritoneal lavage, excision of devitalized bladder tissue and repair of the bladder perforation [7].

CONCLUSION

Spontaneous bladder rupture during the puerperium is an extremely rare condition. The Uroscan is the ideal imaging tool for the definitive diagnosis of an isolated postpartum bladder rupture. The demonstration of extravasation of the contrast product at the late time confirms the diagnosis. Emergency laparotomy will allow effective management.

Competing Interests: The authors declare no conflict of interest.

Contributions from authors

All the authors contributed to the conduct of this work. They also state that they have read and approved the final version of the manuscript.

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