Giant preperitoneal urinoma after cesarean section. A case report

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Case Report

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Background: A urinoma is an encapsulated, cystic-appearing collection of urine, most commonly located in the retroperitoneal space. It results from an injury to the urinary tract, whether due to ureteral obstruction, renal trauma, or perforation of the collecting system. Diagnosis is based on clinical manifestations and confirmed through imaging studies such as computed tomography. Treatment ranges from percutaneous drainage to surgical management, depending on the etiology, size, and clinical status of the patient.

Clinical case: A 32 year old female with a history of cesarean section, bilateral fimbriectomy, and pelvic adhesiolysis presented with acute urinary retention and abdominal pain. Contrast enhanced computed tomography identified a hypodense collection with a volume of 5,544 mL at the pelvic level, suggestive of a urinoma. Exploratory laparotomy was performed, revealing a 2 cm perforation with leakage on the left posterior and lateral bladder wall. Management with an 18 Fr transurethral Foley catheter was chosen, and a two layer cystorrhaphy was performed first with 2-0 chromic suture, followed by 2-0 Vicryl inverting sutures. The patient subsequently had an adequate clinical course and was discharged home.

Conclusions: Urinoma is an infrequent, potentially serious clinical condition identified through imaging studies and clinical suspicion. Treatment should be individualized and is based on percutaneous drainage or open surgery, depending on the cause, location, and size of the lesion. In this case, the bladder perforation resulted from a surgical event that required surgical management.

Keywords: Urinoma, Cesarean Section, Urinary Bladder, Urology, Cystorrhaphy

The first description of a urinoma is attributed to Barker in 1885, who called it pseudohydronephrosis. Later, in 1977, McInerney introduced the term urinoma, still used today[1]. A urinoma is an encapsulated, cyst like collection of urine in the retroperitoneal space resulting from urinary extravasation[2]. It is usually the consequence of urinary tract obstruction, renal or bladder trauma, a perforation of the renal collecting system, or a complication related to invasive procedures such as amniocentesis[2,3]. An iatrogenic etiology, particularly bladder injury during gynecologic-obstetric interventions, occurs infrequently. In the case of hysterectomy, the incidence of bladder injury among women undergoing cesarean section is 267/100,000[4], highlighting its rare but potentially serious presentation. Therefore, the aim of this article is to describe the clinical course, diagnosis, and treatment of a patient with a giant preperitoneal urinoma following cesarean section.

Case report

We present the case of a 32 year old female patient with no personal history of chronic degenerative diseases, with a surgical history of a cesarean section nine years earlier and a second cesarean section one month prior, during which bilateral fimbriectomy and adhesiolysis were also performed secondary to transverse fetal presentation. During the immediate postpartum period, the patient developed acute urinary retention and a sensation of abdominal fullness, to which abdominal pain, diaphoresis, and dyspnea were subsequently added.

Urinary retention worsened after hospital discharge, associated with a decrease in the frequency and volume of urination.

Laboratory studies reported leukocytosis (leukocytes 18.5 k/uL) with neutrophilia (neutrophils 82.3%), thrombocytosis (platelets 845 k/uL), and alterations in renal function such as increased nitrogenous compound concentrations (creatinine 2.1 mg/dl and urea 57.4 mg/dl). A computed tomography scan was performed, revealing a hypodense collection with a volume of 5,544 ml in the abdominopelvic cavity, with an apparent origin at the pelvic level (Fig. 1).

Surgical management via exploratory laparotomy was decided upon. The procedure began with a midline infraumbilical incision and layer by layer dissection down to the abdominal cavity, where 2 liters of citrine colored fluid were located and drained. A hydraulic test was performed using a transurethral catheter with saline solution and methylene blue (200 ml), which revealed a leak on the left posterior and lateral bladder wall, with a visualized 2 cm perforation. Cystorrhaphy was therefore performed using 2-0 chromic absorbable suture in a first continuous running layer and a second layer with 2-0 Vicryl using inverting (Lembert type) stitches. A second hydraulic test was performed with 300 ml of saline solution with no leakage observed. Finally, a Penrose drain was placed in the space of Retzius, the incision was closed in layers down to the skin, a transurethral Foley catheter was placed for diversion, and the procedure was concluded.

The patient showed a favorable course, with urine output via the transurethral Foley catheter and

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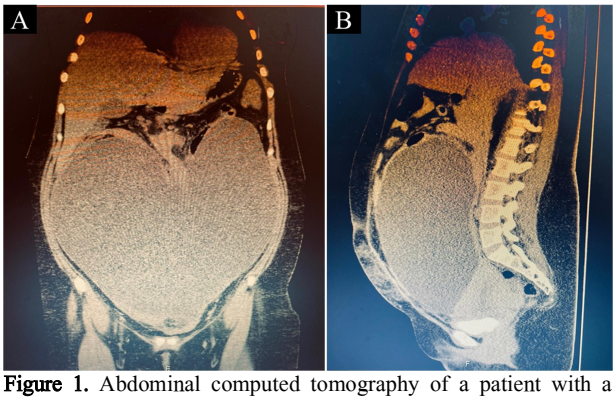


Figure 1. Abdominal computed tomography of a patient with a giant preperitoneal urinoma following cesarean section. **A:** Coronal view; an extensive hypodense collection of approximately 5,544 milliliters is observed, displacing adjacent structures. **B:** Sagittal view; an extensive collection is shown, originating at the pelvic level.

Penrose drain output less than 10 ml, so the drain was removed at 48 hours and the transurethral Foley catheter was subsequently removed 10 days postoperatively, following a voiding cystourethrogram (Fig. 2). On postoperative day 28, the patient attended an outpatient visit at the Department of Urology and reported being asymptomatic, with normal voiding present.

Discussion

Iatrogenic injuries of the urinary tract, including the bladder or ureter, are complications of abdominal, pelvic, or vaginal surgical procedures. Their consequences can be severe and include hemorrhage, sepsis, renal loss, and death. Most occur secondary to gynecologic obstetric procedures such as cesarean sections or hysterectomies[4]. The surgeon's inexperience has been identified as the main risk factor for urologic injury[5], so the strategies that have been promoted to reduce the risk of bladder and ureteral injury during cesarean section or hysterectomy include improved anatomical knowledge, strong uterine traction, careful dissection in general, prophylactic identification of the ureters, bladder distension to clarify surgical planes, avoiding electrocautery near the ureters, active separation of the bladder from the ureteral path, as well as the use of urethral catheterization at the start of the case and prophylactic ureteral catheters/stents[6,7,8].

A urinoma is defined as a collection of urine outside the urinary tract kidney, ureter, bladder, or urethra that can develop from the upper abdomen down to the lower pelvis, with thoracic location being exceptional[8,9]. Its origin can be spontaneous, due to obstructions such as urolithiasis, tumors, congenital malformations, or infections that increase intraluminal pressure and cause rupture of the collecting system, or it can also arise as a result of trauma whether blunt,



Figure 2. Voiding cystourethrogram in the filling phase showing no evidence of leakage.

penetrating, or iatrogenic as occurs in abdominal surgeries[10]. In both cases, urine accumulates in the retroperitoneal or perirenal space and typically presents with nonspecific symptoms, such as localized or diffuse abdominal pain, fever, nausea or vomiting, usually accompanied by decreased urine output. It is important to know the patient's clinical history, since on physical examination, signs of peritoneal irritation can mimic other acute abdominal conditions, such as appendicitis, diverticulitis, or cholecystitis[11].

In this case, we present a patient who underwent an emergency cesarean section without evidence of immediate intraoperative complications, but with subsequent onset of abdominal pain, vagal symptoms, and deterioration of renal function due to increased nitrogenous compound concentrations. Due to the clinical presentation, a computed tomography scan was performed, showing an abdominal collection at the preperitoneal level compatible with urinary extravasation or urinoma. The importance of this case lies mainly in the unusual location of the urinoma, since these collections rarely reach such significant volumes or occur in the preperitoneal space. Diagnosis is based on imaging studies such as ultrasound and computed tomography, which will show a fluid collection; in addition, CT also allows identification of the source of the leak during the excretory phase of image acquisition. Definitive diagnosis is made through guided aspiration of the collection with measurement of creatinine levels in the fluid. Treatment of urinoma should be individualized according to its characteristics, and is based on percutaneous drainage or open surgery, with the goal of reducing pain and pressure on adjacent structures[7], as well as decreasing the risk of infection or sepsis.

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Initial use of empiric antibiotics should be considered to prevent the formation of an infected urinoma. In cases of persistent urinary leakage, urinary tract diversion should be considered, with placement of a transurethral Foley catheter, a double J catheter, or a percutaneous nephrostomy to promote more effective drainage and relief of compressive symptoms[12].

Conclusion

A urinoma is an encapsulated, cyst like extravasation of urine, and its location at the pelvic level in the preperitoneal space is uncommon. Urinoma is usually caused by iatrogenic bladder injury, and the risk decreases with greater surgeon experience. Diagnosis is made through imaging studies combined with symptomatology and elevated nitrogenous compounds. The suggested treatment is percutaneous drainage or abdominal surgery, as in our patient, who achieved complete resolution. Timely detection is key to avoiding the complications inherent to this condition.

Conflicts of interests

None declared by the authors

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