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Case Report

First case of spontaneous rupture of the left ureter in immediate post-partum

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ABSTRACT

The rupture of the ureter during pregnancy is a rare complication and is most frequently observed in the right ureter. We report below the case of a rupture in the left ureter.

A 36-year old woman gave birth vaginally to a 3010-g girl without operative vaginal delivery or episiotomy. The following day, the patient exhibited a sudden pain in the left side spreading to the left iliac fossa. An abdominopelvic CT scan was carried out and revealed a flow of contrast agent at the left ureteral lumbar level and a left urinoma.

A ureteral stent was inserted on the left side under X-ray control. Six weeks after delivery the ureteral stent was removed. The Uro CT scan allowed us to confirm the total recovery of the left ureter.

We have reported below the first case of left rupture treated in a conservative manner with positive and functional clinical progress.

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Background

The rupture of the ureter during pregnancy is a rare complication. It can be traumatic or non-traumatic [1]. The traumatic rupture of the ureter can occur during a caesarean or an emergency peripartum hysterectomy. A rupture of the ureter outside of a vesicorenal condition is an exceptional situation and is most frequently seen in the right ureter. Below, we report the case of a rupture in the left ureter.

Case presentation

A 36-year old woman, G2P1, with for only significant medical antecedent a multiple sclerosis, presented to the ER of our obstetrics department for reduced fetal movement at 41 weeks' gestation (WG). The pregnancy follow-up was without any complication. It was decided to trigger the birth using oxytocin and artificial rupture of the membranes and the patient gave birth

naturally and vaginally to a little girl of 3010 g in 6 h and 20 min, after a 15-min labor, without operative vaginal delivery or episiotomy.

The day following the birth, the patient exhibited a sudden pain in the left side spreading to the left iliac fossa, persisting even after administration of morphine (VAS = 6/10), with a fever of 100.4°F. A physical examination revealed that the abdomen was soft but sensitive in the left iliac fossa with a sharp pain under palpation of the left lumbar. An abdominopelvic CT scan was carried out and detected a flow of contrast agent at the left ureteral lumbar level during secretory phase and a left urinoma (Fig. 1). A cyto-bacteriological examination of urine revealed an *Escherichia coli* infection. The complete blood count revealed leukocytes at 7730/mm³ with a CRP at 91 mg/L. Renal function was retained (creatinine at 66 UI).

Based on the diagnosis of the left ureter rupture, the opinion of the urologist was requested. A ureteral stent was inserted on the left side under X-ray control without incident. Antibiotic treatment via ceftriaxone was injected intravenously.

There was positive clinical progress after implementation of the ureteral stent with a rapid improvement of the biological inflammatory syndrome.

Six weeks after delivery the ureteral stent was removed. The Uro CT scan allowed us to confirm the absence of contrast agent flow and thus the total recovery of the left ureter (Fig. 2).

Abbreviations: CT scan, computed tomography; VAS, visual analog scale; WG, weeks' gestation.

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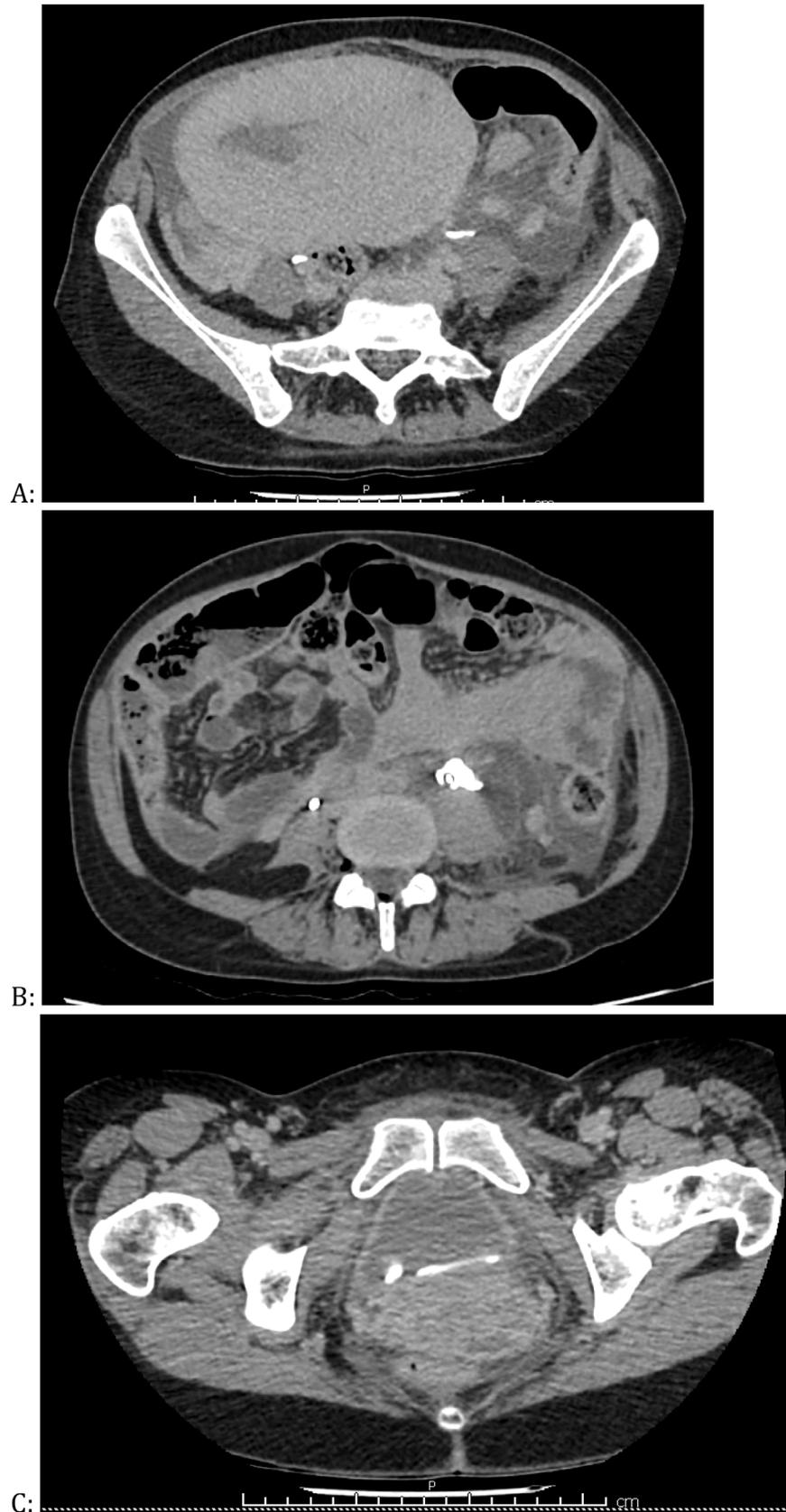


Fig. 1. Abdominopelvic scan with injection. A) pelvic collection, B et C) Perirenal liquid effusion and left periureteral.



Fig. 2. Scan at 6 weeks, integrity of urinary tracts, minimal pyelic hyptonia to the left.

Discussion and conclusions

The post-partum rupture of the ureter is a rare occurrence, to the author knowledge, only 4 cases are reported in the litterature [2–5] (Table 1).

During pregnancy, there is an automatic and hormonal physiological hydronephrosis (progesterone and prostaglandins) which occurs at 20 WG and continues until 2 weeks after birth [6]. Ureteral dilation affects 90% of patients in the third semester. The majority of cases of rupture of the urinary system during pregnancy are observed in the second or third semester [6–8]. Only 4 cases of rupture have been reported post-partum [5,6].

The intraluminal pressure is higher and the ureteral dilation is more pronounced on the right side than on the left side due to the natural dextrorotation of the uterus. In the literature Satoh reported that rupture occurred on the right side (both peri- and post-partum) in 87.5% of cases [6]. Our patient is a rare case of a rupture on the left side.

During pregnancy and post-partum, cases of the urinary system are mostly caused by an underlying renal condition (hamartoma, abscess). Indeed, Satoh et al. found that out of the 15 cases of ureter rupture, 4 cases related to a renal condition (benign tumor, hamartoma) and 5 cases of rupture of the urinary system related to pyelonephritis, an abscess or vesico-ureteral reflux [6]. Only 6 cases appeared spontaneously during pregnancy. In the literature, out of the 4 presented post-partum cases [2–5], only one case other than ours seems spontaneous [5].

The most frequent zone of rupture of the urinary system is the fornix in the epithelial transition zone. During birth, the high rupture at the fornix can be explained by an increase in intraluminal pressure related to the physiological dilation during pregnancy, associated with rapid change of secondary intra-abdominal pressure due to the pressure induced during labor. In our case, the rupture of the ureter is at left lumbar level away from the fornix. To the authors knowledge, no case occurring at this level has been reported in the literature. Deppa describes a spontaneous rupture at lumbar level on the right side which is less surprising given the dextrorotation of the uterus [5].

No case of obstetric trauma, maneuver or operative vaginal delivery is described in the various reported cases.

Clinically, the pains can be explained by fascia dissection by urine or blood, potentially leading up to peritoneal irritation with a surgical abdomen chart. Effectively, our patient exhibited a sudden pain, rated at 6/10, which was not shown to reduce after administration of grade 3 analgesics.

Further complications due to ureter rupture are urinoma, abscess, sepsis and kidney fracture.

The differential diagnoses which must be mentioned are diverticulitis, appendicitis and cholecystitis [1]. Therefore, the CT with injection was selected as the complementary examen to confirm the final diagnosis. It allowed a better picture of the lacerations of the renal parenchyma, extravasation of urine bladder wounds but also eliminated the differential diagnoses. At that point, the CT scan with injection revealed a flow of contrast agent

Table 1

Summary of cases of post-partum rupture of the ureter.

Case	Age	Gestivity-parity	Delivery	Operative vaginal delivery	Duration after delivery	Side	Level	Underlying condition	Treatment
Rusche	23	G1P0	Before 37 WG	No	12hrs	Right	Renal	Renal hamartoma	Nephrectomy 70 days after delivery
Jeppesen	27	NA	NA	NA	6hrs	Left	Renal	Renal abscess	Nephrectomy 8 weeks after delivery
Aaro	31	G8P7	Before 37 WG	No	24hrs	Right	Renal	Para renal hematoma	Nephrectomy in the 5 days following delivery
Deepa	22	G1P0	To term	No/Uterine check	12hrs	Right	Lumbar	0	Ureteral stent 1 day from delivery
Verhaeghe	36	G2P1	To term	No	18hrs	Left	Lumbar	0	Ureteral stent 1 day from delivery

at left lumbar level during secretory phase and a left urinoma (Fig. 1).

Ruptures of the urinary system can be managed satisfactorily by urine diversion (ureteral stent or nephrostomy). Nephrectomy was widely reported in the oldest cases (Sato 8 cases out of 16 [6]). After 1971 no more cases of nephrectomy are described. The derivation of the urine makes it possible to obtain a satisfactory analgesic effect and preserve the functional prognosis of the kidney [5,6].

Our patient was re-examined a month later and did not exhibit any symptoms related to ureteral rupture. The CT scan revealed a

ureteral stent which remained in position, without dilation of the pyelo-calicielles cavities, urinoma or periureteral abscess. Therefore, the ureteral stent was removed.

After 2 months, the patient did not exhibit any symptoms. Diagnostically, the scan did not reveal any urinoma, the left ureter was shown to be continuous over its entire length without ureterohydronephrosis upstream or ureteral stenosis (Fig. 2). No urological follow-up is to be expected (Fig. 3).

The rupture of the ureter is an exceptional obstetric complication. We have reported the first case of left rupture treated in conservative manner with positive and functional clinical progress.

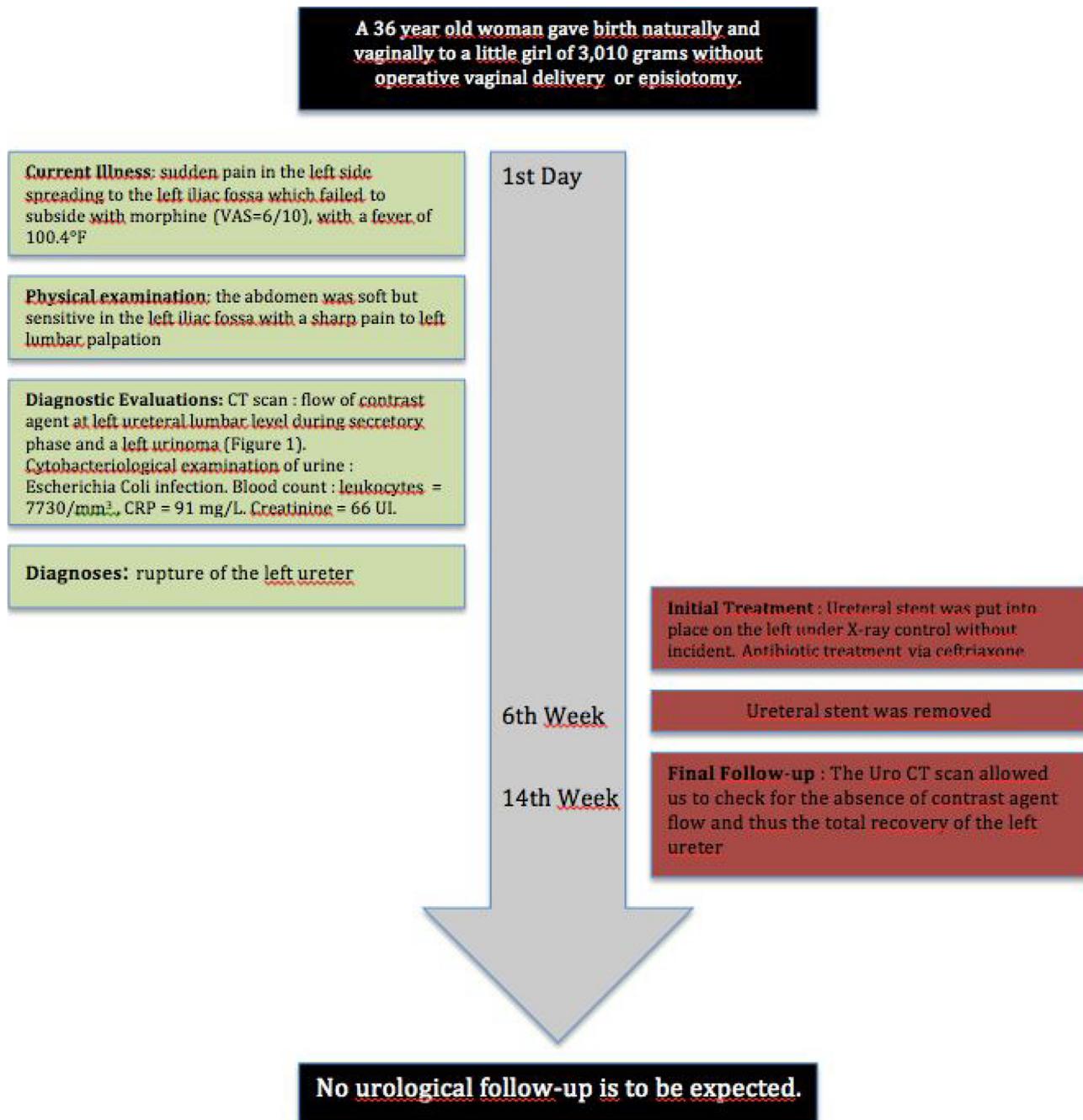


Fig. 3. Timeline.

Ethics approval

Not applicable.

Patient consent

Informed consent was obtained from the patient.

Competing interests

None.

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Author's contribution

GL & PhD analyzed and interpreted the patient data. PP performed the urologic care. CV was a major contributor in writing

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