

## Case report



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## Iatrogenic ureterocutaneous fistula and incisional hernia following laparotomy - case report

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## Abstract

*Ureteric injuries are known and preventable complications that may follow pelvic surgeries. These injuries are commonly ligation of the distal ureters and are frequently missed intraoperatively. Symptoms typically comprise of post-operative flank pain, fever, and flank swelling from urinary tract obstruction or urinoma. We hereby present a rare case of iatrogenic ureteric injury, ureterocutaneous fistula, and an associated incisional hernia in a middle-aged woman who had ovarian cyst excision.*

## Introduction

Ureteric injuries are an uncommon complication that may follow open and laparoscopic procedures in the pelvis such as gynecological, colorectal, or vascular surgeries [1]. Gynecological surgeries account for 50-70% of these injuries [2]. The distal ureter may be inadvertently ligated or transected during the control of vascular pedicles in the pelvis especially as it lies beneath the infundibulopelvic ligament during gynecological procedures such as abdominal hysterectomy [3]. Most of these injuries are not recognized intraoperatively in 70% of cases, hence the diagnosis is made following evaluation for postoperative fever, flank pain, flank mass, or anuria from bilateral urinary tract obstruction [4]. Rarely a fistula may occur. We present a case of iatrogenic ureteric injury with subsequent complications from the ureteric injury.

## Patient and observation

A 38-year-old woman was referred with complaints of an 8-weeks history of discharge of urine from a site on the anterior abdominal wall following abdominal surgery as well as a painless anterior abdominal wall swelling which was exaggerated on exertion. She had earlier presented to the referring hospital with 6 months history of recurrent pelvic pain. She was evaluated and a diagnosis of a right ovarian cyst was made for which she was counseled and had laparotomy and excision of the cyst. She, however, had dull right flank pain and fever in the first-week post-surgery and by the second week, the leakage of urine and abdominal swelling were noticed. She had no comorbidities. We found a middle-aged woman who was afebrile, well-nourished, and body mass index of 23.9kg/m<sup>2</sup>. She had a wide poorly healed midline abdominal scar extending from the pubic symphysis to the umbilicus with an underlying incisional hernia; facial defect of 12cm. In the middle of the scar lies hyperemic 0.5cm fistula with continuous egress of urine. **Figure 1** shows the clinical image at presentation with the fistula. The abdomen was non-tender, with no palpable mass. Other systemic

examinations were normal. An assessment of iatrogenic ureterocutaneous fistula with an incisional hernia was made. Abdominopelvic ultrasound finding was that of a right hydronephrosis and normal left kidney and bladder while computerized tomography (CT) Urography scan with intravenous contrast showed a dilated right renal pelvis and proximal ureter with spillage of contrast in the region of the right middle ureter. The contrast was also noted in the peritoneal cavity and the anterior abdominal wall. In addition, defect in layers of the lower anterior abdominal wall was also noted. **Figure 2** and **Figure 3** depicts the CT- Urography images of the patient. She was counseled and prepared for exploration and reconstruction of the urinary tract and anterior abdominal wall. Intraoperative findings were abdominal scar, widely separated recti and facial defect of 15cm, multiple fibrous adhesions between small bowel loops and the anterior abdominal wall, an 8cm epithelialized fibrous tract between the anterior abdominal wall and the right ureter at the level of the distal right sacroiliac joint surrounded by fibrous adhesions with dilation of the ureter proximal to the point of adhesions. **Figure 4** shows the intraoperative findings. The renal function was normal. She had excision of the fistulous tract, right ureteroneocystostomy with a Boari Flap and psoas hitch as well as a double J stenting of the right ureter. Also, the anterior abdominal defect was repaired using tension-free tissue repair. She had an uneventful and satisfactory postoperative recovery. The clinical image at the second week after reconstruction is shown in **Figure 5**.

## Discussion

This presentation has brought to fore the possible preventable complications that may follow a pelvic surgery. Gynecological procedures account for most of the reported ureteric injuries as seen in this case. The unrecognized injury led to the fistula, intrabdominal infection, poor wound healing, and subsequently, an incisional hernia developed. These morbidities warranted reconstruction of the

urinary tract, increased cost of healthcare prolonged hospital stay, and increased duration of recuperation and time off work. Besides, the social and psychological burden of the urinary fistula is enormous. Ureteric injuries are relatively rare and an ureterocutaneous fistula following these injuries is even rarer [5]. Most injuries based on the type of injury results in obstruction of the ureter (ligation or ischemia of the ureter) or a flank mass from a urinoma (transection or resection of the ureter). Also, most reported cases of iatrogenic ureterocutaneous fistulae are following procedures in the urinary tract such as partial nephrectomy, renal transplant, or urinary diversion [5,6]. A few reports of ureterocutaneous fistula due to iatrogenic ureteric injury during non-urological procedures such as an appendectomy and aortofemoral bypass are in literature [7]. The recommended treatment of this fistula based on its location is a ureteric re-implantation [1]. However, due to the loss of about 8cm of the distal ureter, a Boari flap was raised and a vesico-psoas hitch was done for a tension-free reconstruction. The presence of the urinary fistula and high risk of infection was the basis of the choice of a tension-free repair of the incisional hernia following adequate patient counseling on the risk of recurrence. This is because although mesh repair has a lower risk of recurrence, tissue repair should be considered when the risk of infection or seroma collection is high [8]. Prevention of these ureteric injuries is important. Caution and a low threshold during dissection or ligation of vessels in the region of the course of the ureter may help in observing the principles of *primum non nocere*. The use of preoperative ureteric catheters or lighted ureteric stents to help in the identification of the ureters as well as iatrogenic ureteric injuries during anticipated complex pelvic procedures have been found to reduce the incidence of these injuries [9]. A high index of suspicion is important to prevent and recognize this injury when it occurs intraoperatively which is the best time for its repair [4].

## Conclusion

Iatrogenic ureteric injury and ureterocutaneous fistula may occur following gynecological procedures. Use of good surgical techniques, and in addition, preoperative ureteric stenting, when the risk of inadvertent ureteric injury is high, it may reduce the incidence of these preventable surgical complications and associated morbidities.

## Competing interests

The authors declare no competing interests.

## Authors' contributions

All the authors have read and agreed to the final manuscript.

## Figures

**Figure 1:** clinical image at presentation showing the stoma of the fistula

**Figure 2:** depicts axial CT urography images of the patient. A) right hydronephroses; (B,C) lateral deviation of right distal ureter with intraperitoneal extravasation of contrast; D) extravasation of contrast through surgical site unto anterior abdominal wall

**Figure 3:** depicts coronal and sagittal reformatted CT urographic images; A) right hydronephroses; B) lateral deviation of right the middle ureter; C) extravasation of contrast intraperitoneally and via surgical site on abdominal wall; D) incisional hernia

**Figure 4:** intraoperative image with the green arrow depicting the dilated ureters and the blue arrow showing the post-operative adhesions

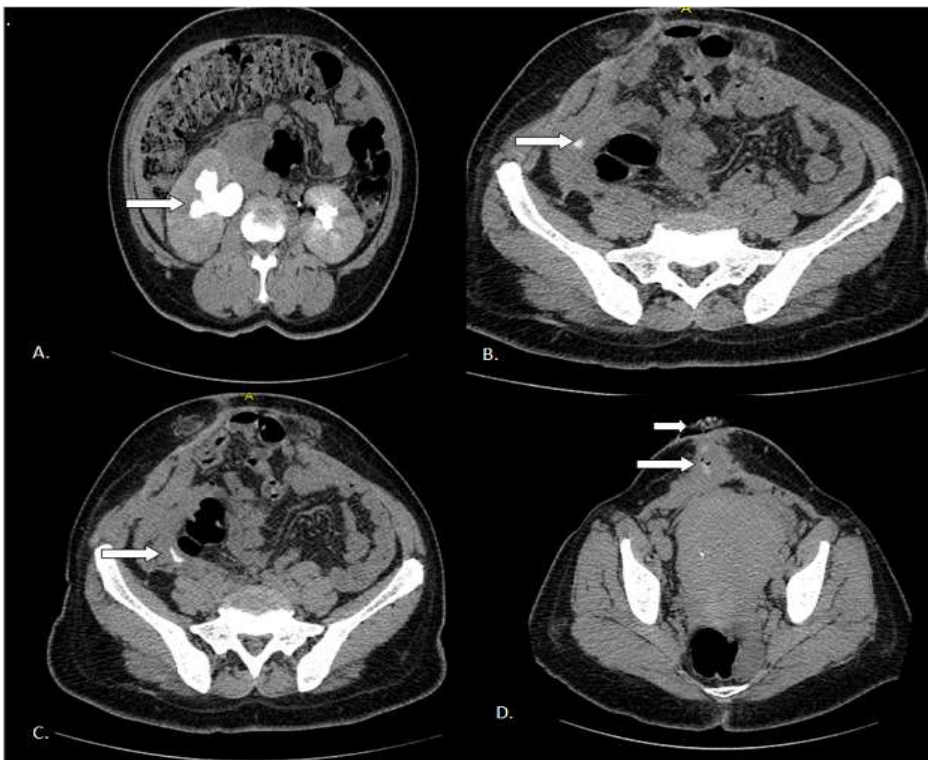
**Figure 5:** clinical image at the second post-operative week

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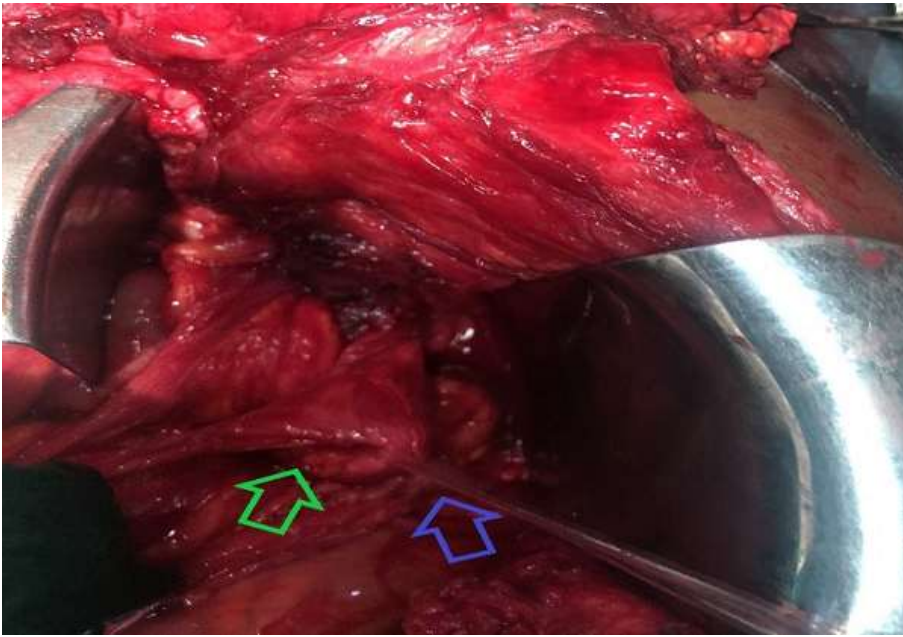
**Figure 1:** clinical image at presentation showing the stoma of the fistula



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**Figure 3:** depicts coronal and sagittal reformatted CT urographic images; A) right hydronephroses; B) lateral deviation of right the middle ureter; C) extravasation of contrast intraperitoneally and via surgical site on abdominal wall; D) incisional hernia



**Figure 4:** intraoperative image with the green arrow depicting the dilated ureters and the blue arrow showing the post-operative adhesions



**Figure 5:** clinical image at the second post-operative week