CASE REPORT

A case of ureteric injury postappendectomy presenting as ureterocutaneous fistula

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SUMMARY

Ureteric injuries, although uncommon, are a potential complication in pelvic and gynaecological surgeries and can have serious implications. The risk is mainly related to the complexity of the surgical procedure and the presence of eventual periureteric pathology. Ureteric injury during appendectomy is rare. The ureter may be damaged by laceration, being crushed, or thermal or ischaemic injury. The retrocaecal appendix, due to its proximity to the ureter, may also get accidentally injured. The most effective measure to prevent iatrogenic injury is to have a sound knowledge of abdominal and pelvic anatomy, meticulous surgical technique and an identification of factors that increase the likelihood of developing such complications.

BACKGROUND

The incidence of ureteric injury and presentation as ureterocutaneous fistula is rare after appendectomy. A high index of suspicion is essential for diagnosis. Management is based on site, type, extent and mechanism of injury, as well as the timing of detection. We report a rare case of ureterocutaneous fistula in a 36-year-old woman after appendectomy, managed with Boari flap ureteroneocystostomy.

CASE PRESENTATION

A 36-year-old woman presented to our institute with a clear watery discharge from a surgical wound site. She had a history of acute onset right flank pain

1 month earlier; she was diagnosed to have acute appendicitis, for which she underwent an appendectomy at a local hospital. The post operative period was uneventful and the patient was discharged on day 4. Subsequently, on day 14, she had a clear watery discharge from the wound site. There was no history of fever, right flank pain or decreased urine output. General physical and systemic examination was normal. On local examination, the surgical wound site was healthy with presence of a clear watery discharge from the lower edge of the wound.

INVESTIGATIONS

The patient's routine haematological and biochemistry profile was within normal limits. Ultrasonography of the abdomen reported right moderate hydroureteronephrosis with a 4×5 cm collection in the pelvis. A fistulogram was performed, which revealed contrast pooling in the pelvis with delineation of right ureter and pelvis suggestive of ureterocutaneous fistula (figure 1). CT urography with three-dimensional reconstruction was performed, showing a right PCS and proximal ureter that was well opacified with moderate hydro-ureteronephrosis ending in a blind collection in the right iliac fossa (figure 2). The lower ureter was not opacified. The left renal system was normal.

TREATMENT

The patient was managed in a staged procedure. Initially, a percutaneous nephrostomy was placed

Figure 1 Fistulogram showing contrast delineating the proximal ureter and renal pelvis suggesting communication with the urinary tract.

Figure 2 CT urography image showing right hydroureteronephrosis with contrast pooling in right iliac fossa, lower ureter not delineated.

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Figure 3 Intraoperative image of Boari flap ureteroneocystostomy.

and the patient was kept on close follow-up. The nephrostomy drained 800 mL a day; discharge from the wound site had subsided. The patient was nutritionally built up prior to surgery. Under general anaesthesia, a right retrograde urogram was performed after cannulating the right ureter with a 5 Fr ureteral catheter. Only the distal 2–3 cm of the ureter was opacified. The patient was placed in a supine position and a right side Gibson incision was made using an extraperitoneal approach. The abdomen was opened in layers; the ureter was identified and dissected meticulously preserving vascular supply. The distal end of the ureter was not identified because of dense adhesions. In view of the long ureteral defect, Boari flap ureteroneocystostomy was planned. The space of retzius was developed and urinary bladder mobilised. The ipsilateral ureter was mobilised and divided slightly above the diseased segment. A posterolateral bladder flap was outlined and continued obliquely across the anterior bladder wall. The distal end of the flap was fixed with psoas minor tendon with absorbable sutures. The ureter was delivered through a small opening created in the posterior flap, and a tension-free mucosa-to-mucosa refluxing anastomosis was performed after spatulation of the distal ureteral end over a 4.8 Fr double J stent (figure 3). The flap was then tubularised anteriorly and closed using absorbable suture. A 20 Fr portex drain was placed and the abdomen was closed in layers.

OUTCOME AND FOLLOW-UP

The postoperative period was uneventful. The drain was removed on day 3 and the patient was discharged on day 5 under satisfactory condition. The double J stent was removed after 3 months. The patient is on follow-up and doing well with no hydroureteronephrosis on ultrasound.

DISCUSSION

Iatrogenic ureteral injuries are often the result of pelvic and gynaecological surgeries. Ureteric injuries during appendectomy are rarely reported.^{1 2} Risk factors are prior open surgeries, retroperitoneal fibrosis, bulky tumours and inflammatory processes. Additionally, the ureter may be injured intraoperatively by ischaemic, laceration, thermal or crush injuries. Obstruction may result from suture ligation, clip application or tethering.

Secondary effects include delayed necrosis, urinoma, fistula and stenosis.³ A report of ureteric injury during laparoscopic cholecystectomy as well as appendectomy has been reported.^{4 5} The presenting features may include flank pain, fever, fistula (ureterocutaneous through the wound), urinoma or prolonged ileus. Management is based on site, location, length and time of detection. If detected during the surgery and there is partial injury, reconstructive procedures may be avoided and a double J stent may be placed.⁴ Delayed diagnosis, although common, does not significantly alter the ultimate success of ureteral reconstructive procedures. Delayed repair is favoured on the grounds that the oedema and inflammation has settled by the time of the surgery.⁶ Most adult cases have lower ureteric injuries, and reimplantation with Boari flap/psoas hitch remains the standard procedure. Ureteral stricture and retained stent leading to stone formation are recognised long-term complications from reconstructive procedures.⁷ It is therefore important to be aware of the factors that could increase the likelihood of injury and take adequate measures.

In our case, the patient presented to us 1 month after the surgery with ureterocutaneous fistula. On evaluation, she was found to have ureteric injury. Percutaneous nephrostomy was placed and later Boari flap ureteroneocystostomy procedure was performed. We believe that it is a rare case report of ureteric injury after appendectomy presenting as ureterocutaneous fistula.

Learning points

- ▶ Awareness of abdominal and pelvic anatomy is essential.
- ▶ Meticulous surgical technique is required.
- ▶ Prompt measures of dealing with complications must be employed.

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