A case study regarding iatrogenic ureterovaginal fistula following hysterectomy: radiologic findings

AHMED SAMY EL-AGWANY

Abstract

Ureterovaginal fistula following abdominal hysterectomy is reported. The injury was missed. The patient developed a ureterovaginal fistula which was repaired successfully with a uretero-neocystostomy three months later. This case is reported to highlight a complication that can go unnoticed. The causes of ureteral injuries, prevention and management are discussed here.

Key words: radiology, fistula, hysterectomy, ureter

Introduction

Urinary leakage following gynecological or obstetric surgery is a complication due to the formation of urogenital fistula. The commonest urogenital complication is the vesicovaginal fistula. Ureteral fistulas to the genital tract in the female may connect with the vagina or much less commonly with the fallopian tube or the uterus [1].

The incidence of iatrogenic ureteral injury during major gynaecological surgery is around 0.5% to 2.5% [2, 3]. Risk factors for the development of ureteral fistulas also include endometriosis, obesity, pelvic inflammatory disease, radiation therapy and pelvic malignant disease [4].

This study was conducted to assess the etiological factors of ureterovaginal fistula and to evaluate the outcome of the operative intervention performed.

Case report

A 50-year-old woman underwent an abdominal hysterectomy at a district hospital. Two weeks later she noted, a leaking of urine from her vagina. In the hospital she was diagnosed to have a urinary fistula through a pelvic examination. She was admitted. She had continuous leak of urine from vagina.

The IVP revealed a right mild hydroureterophrosis with a right ureterovaginal fistula. Other investigations were normal. CT urography revealed a stricture of the lower third of the right ureter with leak of contrast media and ureterovaginal fistula as well as mild right hydronephrosis (Fig. 1 and 2).

Urological consultation was done and laparotomy revealed a stricture of the right distal ureter with a uretero-vaginal fistula. A right uretero-neocystostomy was done. A double J stent was inserted, the bladder was closed by two layers. A transurethral and a suprapubic catheters were inserted. The postoperative period was uneventful. After 10 days, the transurethral catheter was removed and patient passed urine without leakage. The suprapubic catheter was removed the following day and the patient discharged without leakage of urine. The JJ stent was removed after six weeks after repeating the CT urography revealing no fistula or leak.

Fig. 1. CT urography showing right ureter with leak of contrast media out and appearance in vagina

1 Department of Obstetrics and Gynecology, Alexandria University, Alexandria, Egypt
Discussion

In open operation, at least one third of the ureteral injuries are recognized immediately [5]. Therefore a high index of suspicion is required and patients must be monitored after operation for fever, peritonitis and leukocytosis, which herald the possibility of missed ureteral injury. A small number of patients have hematuria or pelvic mass representing urinoma.

Avoidance of injury to the ureter is predicated on the intimate knowledge of its location, especially in relation to the uterine and ovarian arteries if those structures are to be ligated as in hysterectomy. Visualization of the ureter in the area of the ureterosacral ligaments is thought to be especially difficult [6]. In patients with uncontrolled bleeding, adequate intra-operative hemostasis and surgical exposure are critical. Intraoperative hydration or diuretic administration may enhance ureteral visualization and pre-operative ureteral stenting can ease identification [6].

Direct visualization of the ureter during the operative procedure, with careful dissection is the best way to prevent ureteral injuries [7]. The injury can be a ligation, a transection, a crush or an excision of a portion of the ureter. Additionally, there may be ischemic injury to a segment of the ureter [8, 9]. Presenting signs and symptoms may include flank or abdominal pain persisting fever, drainage from vagina or wound, nausea and vomiting, prolonged ileus, anuria and leukocytosis [10, 11]. In some cases the diagnosis was made on identifying the ureter histologically in the pathology specimen [11]. Once the diagnosis of suspected ureteral injury is made, the patient should have a diabetes profile, renal ultrasonography if there is an elevated BUN or creatinine level. This will delineate the location of the obstruction and also help to identify any associated fistulas. If there is a leak from the vagina or wound, the administration of IV indigo carmine, with a Foley’s catheter in the bladder can help to identify a ureterovaginal or ureterocutaneous fistula.

If the injury is recognized intra-operatively or with three to five days of the surgical procedure, immediate repair can be performed. This may include deligation, deligation and ureteroureterostomy or ureteroneocystostomy if the ligated segment appears ischemic. If the injury is discovered five to seven days post-operatively, placement of a ureteral stent, if possible. If this is unsuccessful, placement of a percutaneous nephrostomy tube will decompress the obstructed kidney and allow future treatment to be planned. In time the sutures may dissolve and the periureteral edema may resolve, relieving the obstruction and eliminating the need for further management. If these are unsuccessful, additional procedures such as ureteroneocystostomy, with or without a psoas hitch, or ureteroureterostomy may be performed.

In the case presented there was delay in diagnosis. This leads to a delay in repair of the injury with prolonged discomfort to the patient. Post-operative care should always include a high index of suspicion of the possibility of ureteral injury even when the operation appears easy.

Conclusion

Ureterovaginal fistula commonly occurs in emergency procedures conducted by the residents/junior registrars, including the emergency caesarean section and emergency hysterectomies. At least 36 months rotation
in urology should be mandatory for residents in gynecology and obstetrics. Planned hysterectomy for benign and malignant uterine pathologies are relatively less common. Definitive surgical procedure has excellent results for ureterovaginal fistula with no recurrence and minimal complications. The operative intervention can be done safely as early as 4 weeks. In planned cases of abdominal hysterectomy for complex pelvic/uterine-ovarian masses, pre-operative bilateral double J ureteric stenting can be useful in avoiding the ureteric injury.

**Ethical approval**

Written informed consent was obtained from the patient for publication of this case report and accompanying images.

**Acknowledgments**

I acknowledge the cooperation of EL-Shatby Maternity University Hospital residents who participated in appointing the patient and following up. We also appreciate the commitment and compliance of the patient who reported the required data and attended for the regular follow up.

**References**


