Kinking of the Lower Ureter — Is this a Sign of Suspected Concomitant Ureteral Injury with Vesico-vaginal Fistula?

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INTRODUCTION

In developed countries, genitourinary tract fistulas are usually the consequence of complications resulting from gynecological or other pelvic surgery [1-5]. Fistulas cause substantial life disruption for the patient and there are medicolegal consequences for caring physicians regardless of the cause [6]. The most common presenting symptom of an iatrogenic genitourinary tract fistula is continuous urinary drainage from the vagina after gynecological or pelvic surgical intervention. A fistula may become apparent either immediately or, much more commonly, there is a delay of several days to weeks after surgery [4, 5].

Cystoscopy is a crucial adjunct to demonstrate the location and size of the fistula. An assessment of ureteral integrity by either excretory urography or retrograde pyelography (RP) is also suggested [4-7]. We present an iatrogenic vesico-vaginal fistula in a female that was accompanied by lower ureteral injury. This presented as ureteral kinking by excretory urography.

CASE PRESENTATION

A 46 year-old female had a history of thalassemia and cesarean section. She received laparoscopic assisted vaginal hysterectomy due to adenomyosis and uterine myoma. Abdominal distention and prolonged ileus were noted postoperatively. An abdominal X-ray showed no signs of bowel obstruction, and she was discharged in a stable condition.

However, continuous urinary drainage from her vagina was noted one week after discharge. Excretory urography revealed contrast medium within the vaginal space and a vesico-vaginal fistula was considered. Kinking of the right lower ureter was also noted but with no signs of obstruction or contrast medium extravasation (Fig. 1). A urinary bladder defect over the posterior wall was noted via cystoscopy. Cystography revealed a wide-opening fistula tract at the midline posterosuperior surface of the bladder cavity and there was significant passage of contrast medium into the vaginal space (Fig. 2).

After discussing the risk and benefit of the various types of surgery available, ureteroscopy guided double J stenting and laparoscopic repair were planned initially. Unfortunately, the true ureteral lumen could not be identified via ureteroscopy and therefore transabdominal open exploration and repair was chosen. Intra-operatively, a severe adhesion around the right lower ureter was found and right ureteroneocystostomy was performed due to difficulty in dissecting ureter from the surrounding tissue. Fistulectomy and bladder repair were also carried out. The patient tolerated the operation and no further urine leakage occurred when the Foley catheter was removed four weeks after operation.

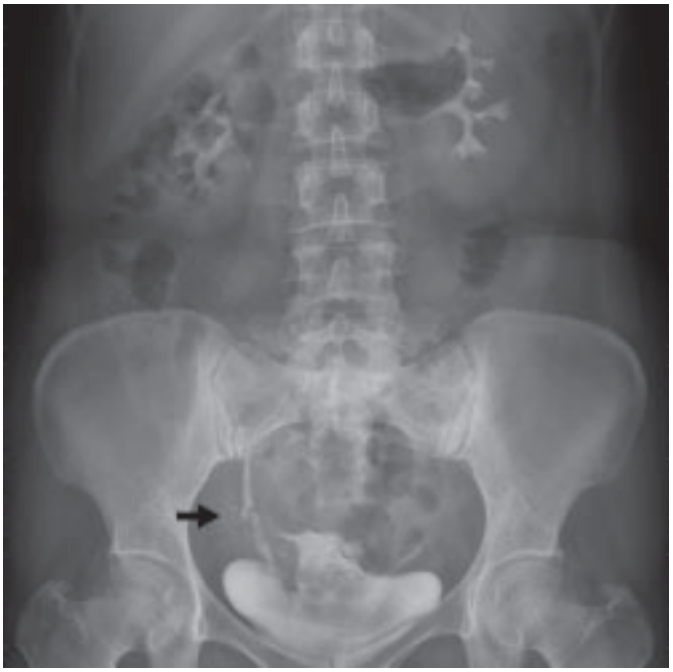

Fig. 1. Excretory urography showed kinking of right lower ureter with no signs of obstruction or contrast medium extravasation.

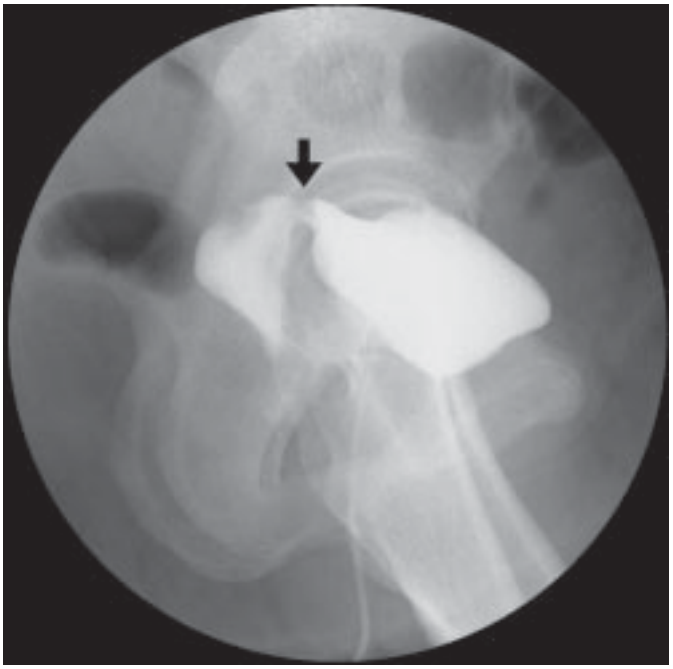

Fig. 2. Cystography revealed a wide-open fistula tract at the midline posterosuperior surface of the bladder cavity and significant passage of contrast medium into the vaginal space.

DISCUSSION

Vesico-vaginal fistulas are the most common causes of genitourinary tract fistulas in developed countries, and approximately 75% are subsequent to hysterectomy [1-5]. Nowadays, laparoscopic hysterectomy has become a generally accepted treatment of choice among gynecologists. However, the risk of urinary tract injury is higher after laparoscopic hysterectomy compared with traditional hysterectomies [8,9]. Soong YK [10] reported the incidence of urinary tract injury after laparoscopic-assisted vaginal hysterectomy was 4.9/1000 procedures and these consisted of 3.9/1000 for urinary bladder injury and 1.0/1000 for ureteral injury. Prior cesarean section was the most common risk factor associated with bladder injury.

Most urinary bladder injuries are detected and treated during surgery, but only half of ureteral injuries are identified during surgery. The most common presenting symptom of an iatrogenic genitourinary tract fistula is continuous urinary drainage from the vagina after gynecological or pelvic surgical intervention. The signs and symptoms of a possibly missed injury or of delayed urinary leak, which should prompt further investigation, include prolonged ileus, urinary leakage, prolonged high output from any drains, fever/sepsis, persistent flank or abdominal pain, urinary obstruction, elevated creatinine or blood-urea nitrogen, and flank mass [5]. Although urinary tract injury was not diagnosed postoperatively at an early stage in our patient, persistent ileus and abdominal pain after a hysterectomy may also be an important sign of urinary tract injury.

The ureter is injured in 0.5% to 2% of all hysterectomies and routine gynecological pelvic operations and in 10% of radical hysterectomies [5]. Goodwin et al [1] reported that simultaneous ureteral injury was accompanied by iatrogenic vesico-vaginal fistula in up to 10% of cases. Although excretory urography is not considered a sensitive method for the detection of vesico-vaginal fistulas, it is mandatory to exclude a concomitant ureterovaginal fistula or ureteral obstruction before management is decided. This approach may reveal extravasation of contrast media, which collects outside the ureter, eventually draining into the vaginal cavity. The presence of an obstructed ureter in patients with vaginal drainage may also suggest the diagnosis [7]. If excretory urography has failed to detect the ureteral anatomy in sufficient detail or if ureteral injury is suspected, RP is the approach with highest diagnostic accuracy for pinpointing the site of the ureterovaginal fistula or the possibility of a combined uretero-vaginal and vesicovaginal fistula [4].

In our case, excretory urography showed neither definite ureteral obstruction nor contrast medium extravasation. However, these findings cannot exclude the possibility of ureteral injury because minor ureteral injury may not be revealed by excretory urography. Preoperative RP examination is another choice, but the patient hesitated to receive repeated urological examinations. We explained the risk of ureteral injury due to the kinking noted over the right lower ureter, and decided to perform ureteroscopy guided double J stenting prior to fistula repair.

The surgical approaches used for vesico-vaginal fistulas include abdominal, vaginal, and combined approaches [1-4]. The approach chosen is contingent on several factors, including location of fistula, quality of tissue, and surgical experience. Laparoscopic repair of iatrogenic vesicovaginal fistulas is another choice [11,12], but it may be difficult if multiple injuries are encountered.

The method of ureteral repair is determined by the location and length of the injury, the time of diagnosis, the type and mechanism of injury, and the presence of associated medical or surgical illnesses. Retrograde stenting or ureteroscopic treatment for small ureteral injuries can be safe and effective. Temporary urinary diversion followed by staged ureteral reconstruction is another choice for selected patients. The optimum time for repair is during surgery when it initially occurs. Unfortunately, most (>65%) iatrogenic ureteric injuries are discovered after a delay, which tend to result in greater complexity, require more difficult repairs, require multiple procedures, and have higher rates of nephrectomy and death [5].

In summary, ureteral injury is not uncommon in patients with iatrogenic vesico-vaginal fistula [1,2]. Any insidious lower ureteral abnormality in excretory urography should be further evaluated using RP or ureteroscopy to discover if a concomitant ureteral injury existed. The transabdominal approach for vesico-vaginal fistula repair is more favored if the ureteral injury is suspected preoperatively.

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