Case Report

Diagnosis and Management of Post-cesarean Ureterouterine Fistulae

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Abstract: Urinary leakage following obstetric or gynecologic surgery is a dreaded complication, most often caused by a urogenital fistula. Of these, ureterouterine fistulae are relatively rare and pose a diagnostic and therapeutic dilemma. A 29-year-old woman presented with paradoxical incontinence of urine for 3 months. She had developed vaginal leakage of urine 2 weeks following an uneventful cesarean section. Conservative measures in the form of catheterization and bed rest did not relieve her symptoms. Subsequent examination and investigations revealed that she had a ureterouterine fistula. The case is discussed as well as the diagnostic modalities and treatment options.

Keywords: Post-cesarean; Ureterouterine; Urogenital fistula

Case Report

A 29-year-old primipara presented with paradoxical incontinence of urine, i.e. she was constantly wet but also passed urine in a stream at regular intervals. Three months prior to presentation she had undergone a cesarean section for obstructed labor at another center. No intraoperative complication was reported. However, 1 week following discharge she noticed urinary leakage from the vagina. A perurethral indwelling catheter was placed by her obstetrician. This did not reduce the leakage and was therefore removed after 5 days. On speculum examination of the vagina urine could be seen

Introduction

Iatrogenic ureterouterine fistulae are rare entities. They have occasionally been reported as a complication of medical termination of pregnancy [1], ureteral calculi [2] and cesarean section [3]. During cesarean section this can occur (a) if the incision on the uterus is low and extends too far laterally to involve the ureter; (b) if the ureter is damaged during attempts to achieve hemostasis at the lateral margin; or (c) a small collection or hematoma forms around a partially damaged ureter that becomes infected [3].

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Fig. 1. Intravenous urogram demonstrating left ureter opening into uterus (arrow) and contrast in uterine cavity (arrowhead).
leaking from the cervical os and no induration could be felt in the vaginal vault. An excretory urogram revealed mild left hydroureteronephrosis with narrowing about 3–4 cm from the ureterovesical junction, and contrast was seen to fill the bladder and the uterus (Fig. 1). Cystoscopy revealed a normal urethra and bladder with bilateral normal ureteric orifices. Three swab test with instillation of methylene blue into the bladder revealed that the highest swab was wet but not stained blue, indicating that the fistula was not from the bladder. A catheter passed into the left ureter could be retrieved from the vagina. On inspection it was seen coming from the cervix uteri orifice (Fig. 2). The ureteroscope could not be negotiated further than 5 cm from the ureterovesical junction. A lower abdominal Pfannenstiel incision was made and the ureter traced down extraperitoneally up to the point where it was stuck to the uterine wall and transected. An antireflux ureteroneocystostomy was performed over a double-J ureteral stent. The patient was discharged and the catheter removed on the 10th postoperative day. The double-J stent was removed after 6 weeks. Follow-up at 6 months revealed that the kidney was functioning normally and the patient was dry.

### Discussion

Ureterouterine fistulae are rare complications following obstetric surgery and constitute 1.7%–5.1% of all urinary fistulae [3,4]. They have been reported mostly following lower segment cesarean section [5,8] and interruption of pregnancy [6]. The terminal ureter is injured by sutures or ligation in the process of achieving hemostasis. The predisposing factors are prolonged obstructed labor with continued compression of the terminal ureter and cervix against the pelvic brim, leading to pressure necrosis, especially in cephalopelvic disproportion and lateral extension of the transverse incision on delivery of the fetal head in a thinned-out lower segment [3]. The dextrotoration of the uterus brings the left ureter near to the left angle of incision, injuring it more frequently [7].

Ureterouterine fistulae can be suspected when vaginal dribbling occurs in the postoperative period despite normal voiding, and urine is seen coming from the cervix uteri orifice on speculum examination. The three-swap test and cystoscopy help to exclude vesicovaginal and vesicouterine fistulae. Sheen et al. [8] have described a method of differentiating between ureterouterine and vesicouterine fistulae by administering oral phenazopyridine every 8 hours for three doses, and at 24 hours instilling methylene blue into the bladder with a Foley catheter. A ureterouterine fistula is suspected if the urine from the vagina is yellow and that from the Foley catheter is blue, whereas in vesicouterine fistula both would be blue. Intravenous urography determines the function of the kidney, the site of ureteral involvement, continuity of the ureteral lumen and opacity of the uterine cavity, indicating communication with the ureter as demonstrated in our case. Retrograde ureteropyelography, ureteral catheterization and the appearance or non-appearance of intravenously injected indigo carmine from the ipsilateral ureteric orifice determines ureteral luminal continuation and the integrity of the ureteral distal to the lesion, thereby helping to predict spontaneous healing [9] or successful endourological management [10]. There was a loss of ureteral luminal continuity in our case, and therefore the ureteric catheter came out via the cervix uteri orifice (Fig. 2); in such cases internal stenting or diversion is not feasible. Sallutti et al. [11] found sonography and CT to be useful in determining the location and spatial relationship of the ureteral lesion, but we feel that these are indicated only if a pelvic abscess or collection is suspected, as they make no difference to management. Similarly in the acute stage, in sepsis, or when definitive surgery needs to be deferred for some time because of local conditions, an ipsilateral percutaneous nephrostomy is desirable.

The aim of treatment in these patients is to preserve renal function and restore ureteral continuity. Management consists of early diagnosis, adequate urinary drainage or diversion and the re-establishment of ureteral continuity. This can be achieved endoscopically by placing a ureteral stent or catheter [10], failing which open surgery is required. Ureteral end-to-end anastomosis and ureteroneocystostomy are the available surgical options [12]. They can either be undertaken primarily or divided into two stages: percutaneous nephrostomy followed by delayed ureteral reimplantation. Percutaneous urinary diversion allows the acute stage to pass, settles infection and helps in healing. End-to-end anastomosis of the ureter is only feasible in injuries recognized during surgery, and when the viability of the distal ureter is not in doubt. When