

CONGENITAL RENAL AND URETERAL ANOMALY IN OVARIAN CANCER SURGERY

Hsuan Su, Kuan-Gen Huang*, Hung-Yen Chin, Lih-Lian Hwang¹

Department of Obstetrics and Gynecology, Chang Gung Memorial Hospital, Chang Gung University College of Medicine, and ¹Department of Healthcare Information and Management, Ming Chuan University, Kwei-Shan, Tao-Yuan, Taiwan.

Identifying the ureters during an operation is important in gynecologic surgery, especially in surgery involving retroperitoneal lymph node dissection. Accurate surgical technique and knowledge of the urogenital anatomy are important in avoiding intraoperative ureter injury in cases of unexpected intraoperative findings. Here, we present a case of congenital renal and ureteric anomalies complicating debulking surgery for ovarian cancer.

A 43-year-old woman, gravida 2, para 2, suffered from persistent abdominal distension for one month. She had a history of bilateral endometrioma, with laparoscopic enucleation 6 years previously. Gynecologic ultrasonography revealed a heterogeneous complex 6.2 × 5.5 cm mass with an irregular surface in the cul-de-sac. Acute abdomen with fever developed, and laboratory data revealed leukocytosis (16,100/μL) and anemia (hemoglobin, 7.2 mg/dL). CA-125 was 29.07 U/mL. Tubo-ovarian abscess with peritonitis was suspected. Diagnostic laparoscopy was performed, and intraoperative frozen section revealed a right poorly differentiated ovarian carcinoma. The operation was then converted to a laparotomy. Maximal debulking with retroperitoneal pelvic lymphadenectomy was undertaken upon diagnosis of ovarian cancer. During the pelvic lymphadenectomy, we incidentally discovered the absence of a right ureter and kidney and duplication of the left ureter. We performed a comprehensive staging surgery for the ovarian cancer, without ureter injury. Postoperative intravenous pyelogram confirmed a left incompletely duplicated ureter with complete absence of a right kidney and ureter (Figure).



Figure. Intravenous pyelogram revealed a left incompletely duplicated ureter (arrow) with complete absence of a right kidney and ureter.

Emergency surgery is indicated for acute abdomen. Ureteral injury is a rare but important complication of gynecologic surgery, with serious long-term sequelae. Gynecologic surgery accounts for 75% of surgical ureteral injury. Identifying the ureters during an operation is an especially important procedure in gynecologic surgery involving retroperitoneal lymph node dissection. Accurate surgical technique and knowledge of urogenital anatomy are important to avoid intraoperative ureter injury in cases of unexpected intraoperative findings.

Duplication of the ureter is the most common anomaly of the urinary tract, with an incidence of approximately 1% [1]. During the fifth week of embryogenesis, the ureteric bud arises from the mesonephric duct. If a single ureteral bud bifurcates before penetrating the metanephric tissue, an incompletely duplicated or bifid ureter results. If two ureteral buds arise from the mesonephric duct, it will result in a complete ureteral

*Correspondence to: Dr Kuan-Gen Huang, Department of Obstetrics and Gynecology, Division of Gynecologic Oncology, Chang Gung Memorial Hospital, Linkou Medical Center and Chang Gung University College of Medicine, 5, Fu-Hsin Street, Kwei-Shan, Tao-Yuan 333, Taiwan.
E-mail: kg Huang@ms57.hinet.net
Accepted: May 25, 2007

duplication. The incidence of incomplete duplication of the ureter is 1 in 125 individuals and that of complete duplication is 1 in 500 individuals [2]. The incompletely duplicated ureter is Y-shaped (extravesical) and completely duplicated ureter is V-shaped (intravesical), joining the bladder. As in our case, if the ureteric bud fails to arise from the mesonephric duct, the metanephros will not be induced to form a kidney (renal agenesis). Other anomalies may potentially be present with duplication of the ureter, such as ectopic ureter, renal dysplasia, renal agenesis and hydronephrosis or vesicoureteral reflux, which are secondary to the anomaly.

An ectopic ureter with renal agenesis or dysplasia is very rare. The clinical symptom is often urinary incontinence or repeated urinary tract infection [3,4]. Most ureteral duplications are of no clinical significance; they are detected incidentally and are of academic interest only. However, if patients require surgical interventions, especially for procedures using the retroperitoneal approach, ureteral duplications become clinically important.

Benedetti-Panici et al described the anatomic variations seen during pelvic lymphadenectomy [1]. The literature shows that the most frequent anomalies were vascular, such as those involving the renal and ovarian vessels [1,5,6]. Ureter variations could be detected by preoperative pyelography, thus reducing the risk of intraoperative injury [5]. Post-procedure cystoscopy with intravenous injection of indigo carmine is increasingly used to demonstrate ureteral patency after gynecologic surgery [7]. Cystoscopy is only one factor in the

early diagnosis of ureteral injury. An accurate knowledge of pelvic anatomy, meticulous dissection of the ureters in their entirety from the pelvic brim to insertion into the bladder, and attention to the development of hydronephrosis or hydronephrosis in all prolonged and difficult abdominal procedures are also key diagnostic factors.

References

1. Benedetti-Panici P, Maneschi F, Scambia G, Greggi S, Mancuso S. Anatomic abnormalities of the retroperitoneum encountered during aortic and pelvic lymphadenectomy. *Am J Obstet Gynecol* 1994;170:111-6.
2. Minevich E, Tackett L, Wacksman J, Sheldon CA. Extravesical common sheath detrusorrhaphy (ureteroneocystotomy) and reflux in duplicated collecting systems. *J Urol* 2002;167:288-90.
3. Li J, Hu T, Wang M, Jiang X, Chen S, Huang L. Single ureteral ectopia with congenital renal dysplasia. *J Urol* 2003;170:558-9.
4. Al Attia HM. Cephalad renal ectopia, duplication of pelvicalyceal system and patent ductus arteriosus in an adult female. *Scand J Urol Nephrol* 1999;33:257-9.
5. Brener BJ, Darling RC, Frederick PL, Linton RR. Major venous anomalies complicating abdominal aortic surgery. *Arch Surg* 1974;108:159-65.
6. Karkos CD, Bruce IA, Thomson GJ, Lambert ME. Retroaortic left renal vein and its implications in abdominal aortic surgery. *Ann Vasc Surg* 2001;15:703-8.
7. Wiskind AK, Thompson JD. Should cystoscopy be performed at every gynecologic operation to diagnose unsuspected ureteral injury? *J Pelvic Surg* 1995;1:134-7.