Case of a duplicated ureter: an important reminder of a surgically significant anatomical variant

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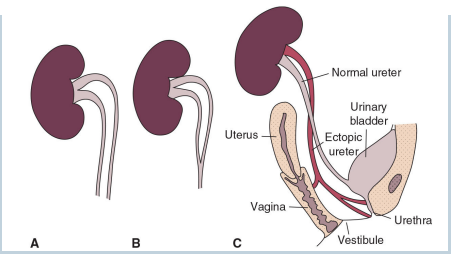
Background

Anomaly: duplex ureters - a form of renal tract duplication (1).
Epidemiology: renal tract duplication is the most common congenital renal tract anomaly (approx 5%) (2). Estimated occurrence of ureteral duplication 0.8% from autopsy studies. More common in women (1.6:1) (3). 15% bilateral, similar rates right and left sides.
Most are associated with a duplex kidney (reported rates vary from 75 to 90 percent) (3).
Presentation: vesicoureteic reflux, ureterocele, obstruction, increased rates of urinary tract infections, but many are asymptomatic (2,4).

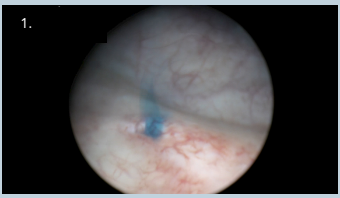


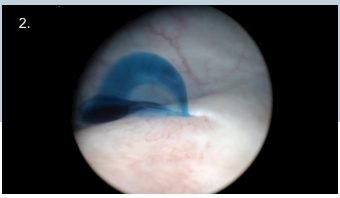
Forms of duplex ureters (3):
- double (with no communication between each) (A)
- bifid (with dual origins to a single distal ureter) (B)
- abortive (with a single origin to a dual distal ureters)

Duplex ureteral orifice insertion (C) (5):
- Bladder, the bladder neck and upper urethra
- vaginal vestibule, vagina
- cervix and uterus

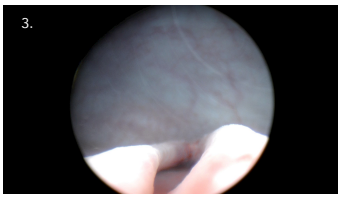
Case report

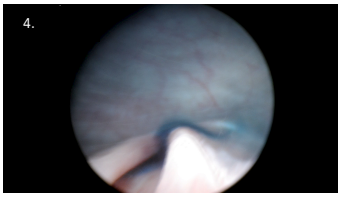
A 36-year-old woman underwent a total laparoscopic hysterectomy and bilateral salpingectomy for endometrial hyperplasia with focal atypia and menorrhagia. She had an otherwise unremarkable past history.
The operation was uncomplicated.
A routine cystoscopy was performed and the patient received indigo carmine intravenously.
Efflux was visualised from three orifices, with one on the right and two on the left, demonstrating a double ureter.
Previous ultrasound imaging noted normal appearing kidneys bilaterally and she had normal renal function.

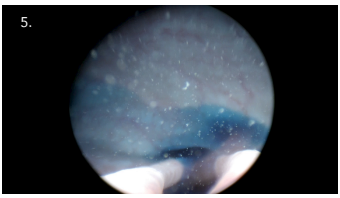




Cystoscopy images: 1. right and 2. left ureteral orifices 2. with indigo carmine jets. 3. 4. and 5. additional ureteral orifice with indigo carmine jets, left ureteral orifice seen superiorly to the additional orifice in 4.







Discussion

As in this patient, duplex ureters **may be undiagnosed** pre-operatively. They can be missed on imaging. (4)
Anatomical variants, particularly if undiagnosed, **increase the risk of ureteral damage** (6).
Ureteral injury is a **serious surgical complication** with significant morbidity and mortality. It is also one of the most common sources in gynaecology of **medico-legal litigation**. (7)
Gynaecology surgery accounts for over 75% of iatrogenic ureteric injuries and the rate of ureteral injury during laparoscopic gynaecological surgery has been estimated to be 0.1-2.5% (6). It occurs in approximately 1% of hysterectomies , estimated to be **higher in laparoscopic approaches**. (8,9)
Recognition of injury, as reported in cases of duplex ureters, may be delayed until post-operative re-presentation with complications such as genitourinary fistula formation (10). The role of universal cystoscopy following benign hysterectomy continues to be debated (11). It is reported to increase the detection rate of injury by fivefold however some will be missed (9).
The best approach to complications is prevention (10). **Awareness of this common anomaly is important in obstetric and gynaecology surgeries**.

References
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