Innervation

- Nerves derive from adjacent autonomic plexuses (renal, aortic, superior and inferior hypogastric)
- Mostly superior to the pelvic pain line
- Afferent pain fibres follow sympathetic fibres to T10-L2
- Ureteric pain usually referred to ipsilateral lower quadrant of the abdomen and groin
The uteric orifices and the internal urethral orifice are at the angles of the trigone of the bladder
  
  - Orifices are encircled by detrusor muscle; when contracted, prevents reflux into the ureter
  - Uvula of the bladder is an elevation of the trigone

Taken from Moore et al, Clinically Oriented Anatomy., Seventh Edition
Innervation

- Derived from the prostatic plexus (extension of the inferior hypogastric plexus)
- Contains sympathetic, parasympathetic and visceral afferents

Female urethra

- Passes from internal urethral sphincter to the external urethral orifice, located in the vestibule of the vagina, anterior to vaginal orifice
- Urethral glands present – paraurethral glands are homologous to the prostate
  - Para-urethral ducts of these glands open near external urethral orifice

Arterial blood supply and venous drainage

- Internal pudendal and vaginal arteries
- Veins follow the arteries

Innervation

- Arise from the vesical plexus and pudendal nerve
- Visceral afferents run in the pelvic splanchnic nerves, with some from the pudendal nerve
- Visceral and somatic afferents extend from S2-4
Clinical note

Iatrogenic compromise of ureteric blood supply

- Ureters may be damaged during surgery by inadvertent interruption of the blood supply
- Longitudinal anastomoses are usually adequate to maintain blood supply along the ureters
- Traction of the ureter during surgery can lead to rupture

Ureteric caliculi

- Can dilate if obstructed by a ureteric caliculus
- Large caliculi can produce pain due to hyperperistalsis at the superior region, which will migrate from lateral abdominal to inguinal regions
- Can cause obstruction to urinary flow
- Can occur at any part of the ureter, but usually at one of the three regions where ureters are relatively constricted

Hernia of the bladder (cystocele)

- Loss of bladder support following childbirth can cause collapse of the bladder onto the anterior vaginal wall
- Increased intra-abdominal pressure may cause protrusion of the anterior wall of the vagina into the vestibule

Bladder rupture

- Can be ruptured by injuries to the inferior part of anterior abdominal wall or pelvic fractures
- Escape of urine intraperitoneally or extraperitoneally
- Can tear the peritoneum, resulting in urine in the peritoneal cavity

Cystoscopy

- Interior of bladder can be examined with a cystoscope, via passage through the urethra
- Can be used for tumour resection

Differences in male and female urethras

- Female urethra is distensible due to elastic and muscle tissue
- Can thus be dilated easily, and passage of catheters of cystoscopes is easier in females than males
- Infections of the urethra and bladder is more common in females due to shorter, more distensible, and opening near vagina