THE MALE URETHRA (Figs: MU 1 to MU4)

**Description:** The male urethra is a 20cm-long muscular tube, which transports urine and semen. Extending from the neck of the urinary bladder to the external urethral orifice at the tip of the glans penis, it is subdivided into pelvic and perineal divisions by the perineal membrane, which it traverses.

**Parts of the Male Urethra:** The male urethra is subdivided into four parts, viz.

1. **Preprostatic Urethra:** This part measures about 1cm and has a stellate lumen, which is 6mm in diameter when fully opened.
2. **Prostatic Urethra:** This segment traverses the prostate gland. It is about 3cm long and has a slit-like canal with anterior and posterior walls. **It is the widest and most distensible part of the male urethra.**
3. **Membranous Urethra:** This part measures about 1cm in length, with a 6mm wide stellate lumen and traverses the urogenital diaphragm – A muscular sheet.
4. **Spongiose Urethra:** This is about 15cm long with a 6mm wide slit-like lumen. It is further subdivided into Bulbous part (within the bulb of the penis) and Pendulous part (within the body of the penis).

**Figure MU 1**

![Image of Male Urinary Bladder & Urethra](image)

**The Preprostatic (Intramural) Urethra**
The preprostatic urethra runs vertically downwards from the neck of the urinary bladder to the base of the prostate gland. It measures 0.5 to 1.5 cm (Average – 1 cm). It is continuous proximally with the neck of the bladder at the **internal urethral sphincter**, which is surrounded by a collar of smooth muscle. This muscle is innervated by myoconstrictor sympathetic fibers. Lined by urothelium, the preprostatic urethra transports urine from the urinary bladder above it and **prevents retrograde flow of semen into the bladder.** This sphincteric arrangement and function is absent in the female urethra.

**The Prostatic Urethra**
This is the **widest and most distensible** part of the male urethra. Its length ranges from 3 to 4 cm (Average – 3 cm). It traverses the prostate gland nearer its anterior aspect and terminates at the superior fascia of the
urogenital diaphragm anterosuperior to the apex of the prostate gland. Here it is continuous with the membranous urethra which is surrounded by a collar of striated muscle fibers derived from the external urethral sphincter.

**Features of the posterior wall of the prostatic Urethra: (MU 2)**

The posterior wall of the cavity of the prostatic urethra possesses certain characteristic features, which include:

1. The urethral crest: This is a median longitudinal ridge located on the posterior wall.
2. Seminal colliculus (Verumontanum): This is a prominence located at the summit of the urethral crest at the center of which is an orifice leading into:
3. A 6mm deep recess called the prostatic utricle (Uterus Masculinus/Vagina Masculina). The utricle is responsible for occasional menstruation in males.
4. Left and right prostatic sinuses on either side of the urethral crest which receive 15-20 prostatic ducts through which the prostate gland empties its secretion into the lumen of the male urethra
5. The orifices of the left and right ejaculatory ducts, which lie on either side of the seminal colliculus.

The proximal part of the prostatic urethra, above the orifices of the ejaculatory ducts is lined by urothelium. Below that landmark, it is lined by pseudostratified/stratified columnar epithelium. The prostatic urethra transports urine and semen.

**Figure: MU 2**

**The Membranous Urethra**

This is the least distensible and second narrowest part of the male urethra (The external urethral orifice at the glans penis is the narrowest part of the urethra). Measuring 1 – 1.5 cm (Average – 1 cm), it runs with a ventral concavity from the end of the prostatic urethra to the bulb of the penis at the perineal membrane...
traversing the urogenital diaphragm. It is located entirely in the deep perineal pouch, surrounded by inner smooth and outer striated muscle fibers. The striated muscle receives nerve supply from the pelvic splanchnic nerve, which enables it to undergo sustained contractions for long period to maintain urinary continence. It is lined by Pseudostratified/stratified columnar epithelium.

**Figure: MU 3**

**The Spongiose Urethra**

This is the longest part of the male urethra. Measuring about 15cm with a diameter of 6mm, it extends from the perineal membrane to the external urethral meatus of the glans penis. It is located in the perineum within the substance of the corpus spongiosus of the penis. It is subdivided into two parts based on the parts of the corpus spongiosus. These are:

1. **The Bulbous part:** Located in the bulb of the penis
2. **The Pendulous part:** Located in the penile part of the penis.

**Other characteristic features of the spongiose Urethra are:**

1. It transports urine and semen.
2. It is dilated at two sites, viz. Intrabulbar fossa at the bulb and the Navicular fossa (Lacuna Magna) at the glans penis.
3. It is lined by pseudostratified/stratified columnar epithelium at its proximal part and by stratified squamous epithelium at its distal part. The latter epithelium becomes keratinized as it approaches the external urethral orifice. The navicular fossa is lined entirely by stratified squamous epithelium.
4. The mucosa contains isolated and clusters of mucous secreting cells.
5. The mucosa also contains aggregates of cells, which form branching tubular submucous glands (Littre’s urethral glands).
6. It possesses several pit-like recesses (Lacunae) on the surface of the mucous membrane, which receive the ducts of the urethral glands of Littre.
7. It receives the ducts of the right and left Bulbourethral glands about 2.5cm distal to the perineal membrane.

**Blood Supply:**
The male urethra receives its blood supply from the prostatic branches of
1. The inferior vesical arteries
2. The middle rectal arteries,
3. Internal pudendal artery.

**Venous Drainage:**
Companion veins of the arterial supply drain into the internal iliac vein.

**Lymphatic drainage:**
Lymph vessels accompany the vascular tree to drain into the internal iliac, sacral and inguinal lymph nodes.

**Innervation:**
The male urethra is innervated by the pudendal nerve, the lower part of the inferior hypogastric plexus (Prostatic plexus) and pelvic splanchnic nerve.
Figure: MU 4
Clinical Correlates of the Urethra (Fig: MU 5)

1. Traumatic injury of the urethra
   - Urethral rupture above the perineal membrane will result in extravasation of urine into the lesser pelvis
   - Rupture beneath the perineal membrane will lead to passage of urine into the superficial perineal pouch. Urine may also leak into the connective tissue surrounding the penile urethra and unto the anterior abdominal wall deep to the scumper fascia.

2. Urethral Instrumentation and urethral fossae
   - At the Lacuna Magna, the beak of the instrument must be directed downwards instrument
   - At the Intrabulbar fossa the beak of the instrument is rotated so as to point upwards

3. Impaction of a calculus may occur in the narrow parts and short parts of the urethra particularly at the membranous part.