Your Bladder: The Muscle Behind the Urinary System

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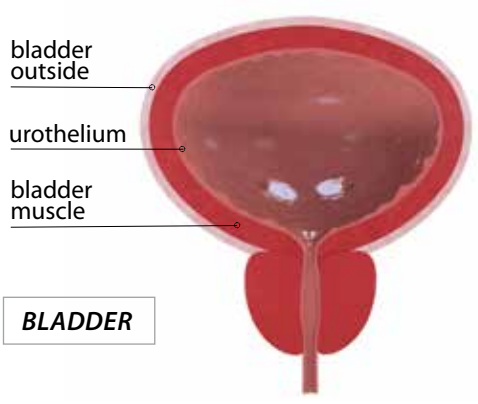
When patients are told they have a tumor in their bladder, often it's difficult for them to picture where in this complex muscle it might be located. To start, the bladder is a balloon-shaped muscular sac that serves as a reservoir for urine. It has three layers of tissue and sits in the pelvis. The innermost layer is called the mucosa, which comprises several layers of transitional cells. These cells, which also form the inner lining of the ureters, kidneys, and part of the urethra, form a waterproof lining within these organs.



The middle layer is a thin lining known as the lamina propria and borders the inner mucosa and the outer muscular layer. This layer is an important staging area for bladder cancer. The outer layer of the bladder comprises the detrusor muscle or muscle layer of the bladder. As the thickest layer of the bladder wall, it provides low-pressure storage for urine as the bladder fills. It then contracts to compress the bladder and expel the urine. When urine reaches a certain level, the bladder sends a message to the brain, which triggers the urge to urinate. When empty, the bladder's muscle wall becomes thicker, like flexing a muscle in your arm. As the bladder fills from two ureters—tubes transporting urine from the kidneys to the bladder—the muscle wall thins, and the bladder stretches outward.

Outside these three layers is a variable amount of fat that lines and protects the bladder like a soft cushion, and separates it from the surrounding organs, such as the rectum and the muscles and bones of the pelvis.

Locating a Tumor

Transitional cell (urothelial cell) carcinoma is by far the most common type of bladder cancer. It is classified primarily as low grade or high grade, with low grade being less aggressive and high grade more aggressive. When staging bladder cancer, urologists will try to determine how invasive it may be. This is where the anatomy of the bladder plays a crucial role. Non-invasive bladder cancers are localized, in the inner layer of cells (the transitional epithelium), and have not penetrated the deeper layers. Bladder cancers can grow into the lamina propria or even deeper, into the muscle layer.

Papillary carcinomas grow in slender, finger-like projections from the inner surface of the bladder, toward the hollow center. Papillary tumors often grow toward the center of the bladder, without penetrating the deeper bladder layers. These tumors are called non-invasive papillary cancers. Very low-grade, non-invasive papillary cancer is sometimes called papillary neoplasm of low-malignant potential, and tends to have a very good outcome.

How It Works

- The urge to urinate will normally occur when the bladder reaches anywhere between 25 and 75 percent full, usually before 100 percent capacity.
- To maintain a healthy urinary tract, the amount of water recommended is around two to three liters daily. This will keep you well hydrated and your kidneys healthy.
- The inside of the bladder is covered with a urine-proof lining called the urothelium.
- When the bladder needs to be emptied, nerves send signals to the brain indicating this, and you will feel the urge to empty your bladder.
- A normal bladder empties completely.

Tumors of the Bladder

- Next to prostate tumors, bladder tumors are the second most common tumor that can occur in the genitourinary system.
- Bladder tumors are three times more common in men than women.
- Tumors of the lining of the bladder cause about four percent of all cancers in the United States.