

NAME: SHUTTI AISHAT OLANSILE

MATRIC NUMBER: 18/MHS02/178

DEPARTMENT: NURSING

COURSE CODE: PHS 212

- write a short note on micturition

Micturition is a process where urine is expelled from the body. Animals and humans have a specialized system of organs known as the excretory system to eliminate the waste products from the body. In other words, **the process of expelling urine from the body is called micturition.** It is brought about by reflex contraction of a special muscle called the detrusor muscle after voluntary relaxation of the sphincter muscle. The human excretory system consists of a pair of kidneys and ureters, a urinary bladder, and a urethra. The kidneys play a major role in the process of urine formation and its excretion. The urine formed is stored in the urinary bladder. Micturition is also known as voiding phase of bladder control and lasts for a short time. As the bladder becomes full, the stretch receptors increase their firing rate. This increase the urge to urinate and causes micturition reflex. It sometimes even causes involuntary urination.

Physiologically, micturition involves the coordination of the central, autonomic, and somatic nervous systems. The brain centers that regulate urination include the pontine micturition center, the periaqueductal gray, and the cerebral cortex, which cause both involuntary and voluntary control over micturition.

MICTURITION PROCESS

Micturition process consists of two phases:

- Storage phase
- Voiding phase
- Storage Phase

The urinary bladder is a balloon-shaped, hollow, muscular, organ that acts as the storage organ for urine. The urinary bladder in a healthy urinary system can store up to 16 ounces of urine for 2 to 5 hours easily. The circular sphincter muscles prevent leakage of urine. They close tightly around the opening of the bladder into the tube (urethra) that allows the passage of urine outside the body.

- Voiding Phase

When the bladder is filled with urine, the nerves in it are triggered, which in turn stimulates the need to urinate. The brain signals urinary bladder to contract. The receptors of the urinary bladder send a signal to the central nervous system, in response to which the nervous system sends a signal that incites the contraction of the urinary bladder. Through the urinary opening at the urethra, the urine is eliminated, and the process is called micturition. The neural mechanism involved is called the micturition reflex. The state of the micturition reflex system is dependent on both a conscious signal from the brain and the firing rate of sensory stretch fibers from the bladder and urethra. At low bladder volumes, the afferent firing of the stretch receptors is low, and results in relaxation of the bladder. At high bladder volumes, the afferent firing of the stretch receptors increases, and causes a conscious sensation of urinary urge. This urge becomes stronger as the bladder becomes more full.

The micturition reflex causes bladder contraction during voiding, through a neural pathway. This reflex may lead to involuntary micturition in individuals that may not be able to feel the sensation of urinary urge, due to the firing of the stretch receptors themselves.

PHYSIOLOGY OF MICTURITION

- Afferents to Spinal cord → sphincter relaxation
- Afferents to Pons → Contraction of detrusor
- **Spinal center:** Reflex ill-sustained contractions of detrusor – **incomplete evacuation**
- **Pontine center: Coordinating center.**
Synchronization and maintenance of sustained contractions to **complete evacuation.**
- **Cortical Center:** Controls pontine center till a suitable socially acceptable situation for micturition is available.