

PHYSIOLOGY

Q11 – Micturition

Ans : 11 – Answer

Introduction

Micturition is the physiological process by which urine formed in the kidneys is stored in the urinary bladder and later expelled through the urethra. It maintains homeostasis by removing metabolic waste and regulating body fluid balance. This process involves coordinated activity of the bladder, spinal cord, brainstem, cerebral cortex, and autonomic and somatic nerves.

Definition

Micturition is defined as emptying of urine from the urinary bladder through the urethra by coordinated contraction of the detrusor muscle and relaxation of the urethral sphincters.

Anatomical Structures Involved

The urinary bladder, detrusor muscle, internal urethral sphincter, external urethral sphincter, and urethra together form the structural basis of micturition.

Nerve Supply of Urinary Bladder

Parasympathetic fibers from S2–S4 initiate detrusor contraction. Sympathetic fibers from T11–L2 facilitate urine storage. Somatic fibers via the pudendal nerve provide voluntary control.

Phases of Micturition

Micturition has filling and voiding phases. Filling allows urine storage with minimal pressure rise, while voiding is initiated by bladder stretch receptors.

Micturition Reflex

The reflex is initiated by stretch receptors, transmitted to the sacral spinal cord, and executed by parasympathetic detrusor contraction and sphincter relaxation.

Role of Higher Centers

The pontine micturition center coordinates voiding, while the cerebral cortex provides voluntary control.

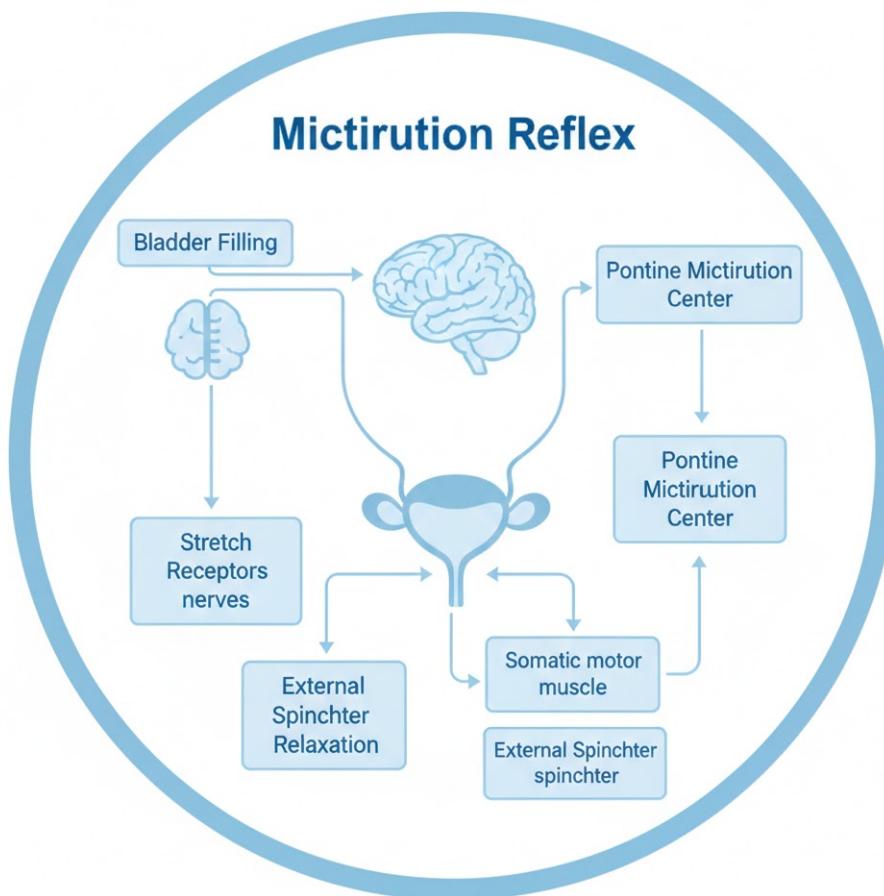
Disorders of Micturition

Atonic bladder, automatic bladder, and neurogenic bladder result from neural damage.

Clinical Importance

Understanding micturition helps in management of urinary disorders in spinal injury, diabetes, and prostate diseases.

Diagram – Micturition Reflex



Conclusion

Micturition is a well-coordinated neurophysiological process that ensures effective urine elimination while maintaining voluntary control, essential for normal urinary function.