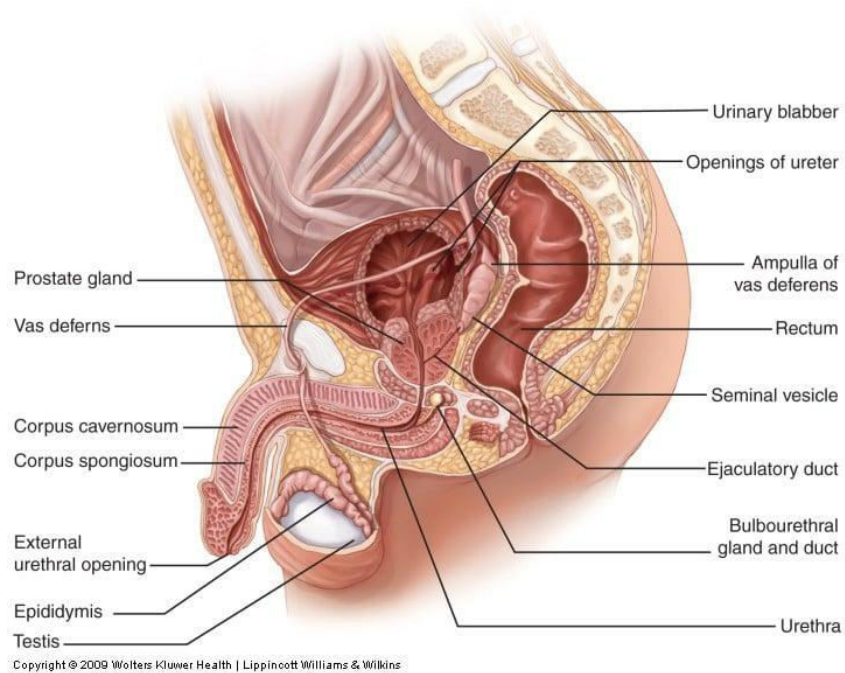


DISORDERS OF MALE REPRODUCTIVE SYSTEM

Anatomy and physiology of male reproductive system



Epididymis

- This is a tightly coiled tube that is responsible for conducting the sperm from the tubule to the vas deferens.
- It has a length of approximately 20 feet long.
- Some sperm are stored in the epididymis, along with the semen.
- The sperm takes an estimated 12 to 20 days of travel along the epididymis, and a total of 64 days to reach maturity.

Vas Deferens

- The function of the vas deferens is to carry the sperm through the inguinal canal from the epididymis into the abdominal cavity where it will end at the seminal vesicles and the ejaculatory duct.
- It is a hollow tube that is protected by a thick fibrous coating and surrounded by arteries and veins.

Seminal Vesicles

- These are two convoluted pouches along the lower portion of the posterior surface of the bladder.
- The seminal vesicles secrete a liquid that is viscous and alkaline and has high protein, sugar, and prostaglandin content, which makes the sperm increasingly motile.

Ejaculatory Ducts

- These ducts pass through the prostate gland to join the seminal vesicles and the urethra.

Prostate Gland

- This is a chestnut-sized gland that is situated below the bladder.
- It secretes a thin, alkaline fluid that adds protection to the sperm from being immobilized by the low pH level of the urethra.
- The urethra passes through its center like a doughnut.

Bulbourethral Glands

- Also called as Cowper's gland, these glands also secrete alkaline fluid to counteract the acidic environment in the urethra.
- These are two glands located at either side of the prostate gland and seminal vesicles and empty through the short ducts towards the urethra.
- Semen is a product of 60% from the prostate gland, 30% from the seminal vesicles, 5% from the epididymis, and 5% from the bulbourethral glands.

Urethra

- This structure passes through the prostate gland towards the shaft and glans penis.
- It is a hollow tube from the base of the bladder and lined with mucous membrane.
- It has a length of approximately 8 inches or 18 to 20 cm.

External Structures

Scrotum

- The scrotum is responsible for the support of the testes and it regulates the temperature of the sperm.
- It is a rugated, muscular, skin-covered pouch over the perineum.
- To promote the production and viability of the sperm, the scrotum contracts towards the body during a very cold weather and relaxes away from the body during a hot weather.

Testes

- In each scrotum lies two oval-shaped glands called the testes.
- These are 2 to 3 cm in width and are encapsulated in a protective, white fibrous capsule.
- Several lobules are contained in each testis, which also contains Leydig's cells that produce testosterone and seminiferous tubules that produce spermatozoa.
- In most men, one testis is slightly lower than the other to prevent trauma and easily sit or do any muscular activity.

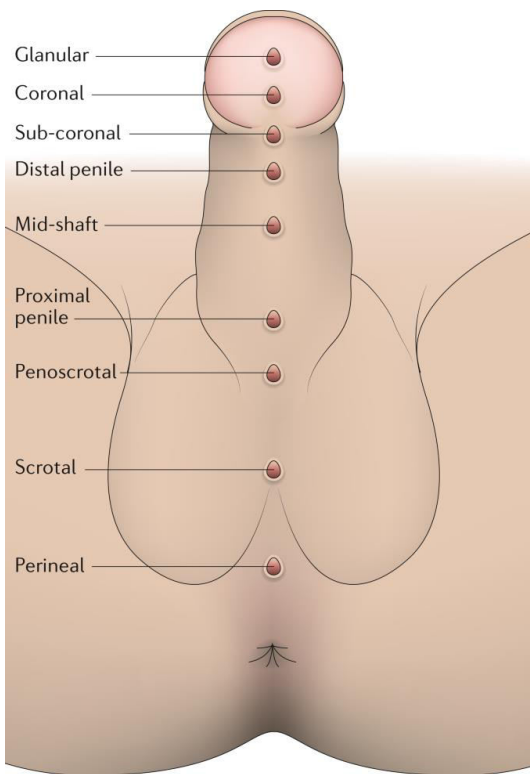
Penis

- The penis has three parts: two are called the corpus cavernosa, and the other is the corpus spongiosum.
- These erectile tissues also contain the urethra, making the penis an outlet for both urinary and reproductive functions.
- Erection of the penis is stimulated by the parasympathetic nerve innervations, and the blood supply for the penis is from the penile artery.
- The glans, a sensitive, bulging ridge of tissue, is located at the distal part of the penis.
- The prepuce, which is a retractable casing of skin, protects the glans at birth. It is also the part that is surgically removed during circumcision.

HYPOSPADIAS

DEFINITION

Hypospadias is the most common congenital anomaly of the penis. In this anomaly the urethral opening is situated on the ventral side of the shaft of penis in one or several positions, just behind the glans.



Statistics and Incidences

Hypospadias and epispadias occur across the world and may go untreated and neglected.

- Hypospadias occurs in approximately 1 in every 250 male births in the United States..
- Epispadias occurs more commonly in males than in females, with a prevalence of 1 case in 10,000-50,000 persons; the male-to-female ratio is 2.3:1.

Risk factors

Although the cause of hypospadias is usually unknown, these factors may be associated with the condition:

- **Family history.** This condition is more common in infants with a family history of hypospadias.
- **Endocrine.** A decrease in available androgen or an inability to use available androgen appropriately may result in hypospadias.
- **Genetics.** Certain gene variations may play a role in disruption of the hormones that stimulate formation of the male genitals.
- **Maternal age over 35.** Some research suggests that there may be an increased risk of hypospadias in infant males born to women older than 35 years.
- **Exposure to certain substances during pregnancy.** There is some speculation about an association between hypospadias and a mother's exposure to certain hormones or certain compounds such as pesticides or industrial chemicals, but further studies are needed to confirm this.

Pathophysiology

The pathophysiology of hypospadias and epispadias occur as follows:

1. Hypospadias is a congenital defect that is thought to occur embryologically during urethral development, between 8 and 20 weeks' gestation.
2. The external genital structures are identical in males and females until 8 weeks' gestation; the genitals develop a masculine phenotype in males primarily under the influence of testosterone.
3. The classic theory is that the urethral folds coalesce in the midline from base to tip, forming a tubularized penile urethra and median scrotal raphe.

4. The anterior or glanular urethra is thought to develop in a proximal direction, with an ectodermal core forming at the tip of the glans penis, which canalizes to join with the more proximal urethra at the level of the corona.
5. The prepuce normally forms as a ridge of skin from the corona that grows circumferentially, fusing with the glans.
6. Failure of fusion of the urethral folds in hypospadias impedes this process, and a dorsal hooded prepuce results.
7. In males, epispadias causes impotentiacoecundi, which results from the dorsal curvature of the penile shaft, and impotentiagenerandi, which results from the incomplete urethra.
8. Also reported are frequent ascending infections to the prostate or bladder and kidneys and psychological problems related to the deformity.

SYMPTOMS

- Abnormal urine stream
- Opening of the urethra at a location other than the tip of the penis
- Downward curve of the penis (chordee)
- Sexual Dysfunction later in life.
- Fertility Problems

ASSESSMENT

- History collection and physical examination
- Abnormal pattern of voiding.
- Stream of urine may be deflected downward.
- Child voids in sitting position in penoscrotal and perineal
- Hypospadias. In Glandular or coronal hypospadias child able to voids in standing position, by tilting the penis slightly upward

MANAGEMENT

There is no medical management for this defect.

Surgery may be recommended for its correction and the goals of surgery are:- To bring the urethral opening to the tip of the penis via a procedure known as Urethroplasty.

- To straighten the penis.
- Circumssion of the foreskin should be avoided as this foreskin should be used for surgical repair.
- Surgery should be done preferably at the age of 6 -24 months of age.

Complications

If hypospadias is not treated, it can result in:

Abnormal appearance of the penis

- Problems learning to use a toilet
- Abnormal curvature of the penis with erection
- Problems with impaired ejaculation

EPISPADIAS

Epispadias is a rare defect that is present at birth. In this condition, the urethra does not develop into a full tube. The urethra is the tube that carries urine out of the body from the bladder. The urine exits the body from the wrong place with epispadias.

The causes of epispadias are unknown. It may be related to improper development of the pubic bone. In boys with epispadias, the urethra generally opens on the top or side of the penis rather than the tip.

TYPE

- Glanularepispadias: It is found on the head of the penis
- Penile epispadias: It is found along the shaft of the penis
- Penopubicepispadias: it is found or near the pubic bone

Embryology

- There is a disorder of the mesoderm cell migration during the 4th developmental week.
- There is a defective migration of the paired primordia of the genital tubercle that fuse on the midline to form the genital tubercle at the fifth week of embryologic development.
- The urethra does not develop into a full tube.
- Epispadia can occur with Exstrophy of the bladder; in which the anterior wall of the abdomen and bladder are absent.

Symptoms

- Abnormal opening from the joint between the pubic bones to the area above the tip of the penis
- Backward flow of urine into the kidney (reflux nephropathy)
- Short, widened penis with an abnormal curvature
- Urinary tract infections
- Widened pubic bone

Diagnosis

- History collection and physical examination
- Blood test to check electrolyte levels
- Intravenous pyelogram (IVP), a special X-ray of the kidneys, bladder and ureters
- MRI and CT scans, depending on the condition
- Pelvic X-ray

- Ultrasound of the urogenital system

Management of Surgery

- Glandular epispadias → corrected with reposition of the distal urethra and creation of a symmetric glans (glanuloplasty) → for cosmetic or psychological reasons.
- Penile epispadias → corrected with penile straightening by resection of the chordae and creation of a new urethra of adequate caliber and length (urethroplasty).
- Penopubic epispadias → corrected to close the abdominal wall and the bladder exstrophy

The Modified Cantwell Technique

The modified Cantwell technique involves "rebuilding" the penis. It takes some of the penis apart to move the urethra to a more normal position.

The Mitchell Technique

The Mitchell technique involves taking the penis apart completely, then putting it back together. This is done so the urethra is in the most functional and normal position, and dorsal bend (chordee) is corrected.

Nursing Management

Nursing management of a child with hypospadias or epispadias include:

Nursing Assessment

Assessment of a child with hypospadias or epispadias include the following:

- **History.** Obtain a thorough history and physical examination, including any history of a familial pattern of hypospadias, any past medical history or comorbidity, and a physical assessment focusing on the meatal location, glans configuration, skin coverage, and chordee.
- **Physical examination.** Although the diagnosis of hypospadias has been made with other antenatal fetal ultrasonography and magnetic resonance imaging (MRI), the diagnosis is generally made upon examination of the newborn infant.

Nursing Diagnoses

Based on the assessment data, the major nursing diagnoses are:

- **Acute pain** related to physical factors: damage to the skin/tissue.

- **Impaired skin integrity** related to surgical trauma.
- **Impaired urinary elimination** related to mechanical trauma from surgery.
- **Anxiety** related to threat to self-concept; change in health status and environment.
- **Risk for infection** related to inadequate primary defenses.

Nursing Care Planning and Goals

- Child will experience decreased pain as evidenced by infrequent crying episodes and exhibit normal sleeping pattern.
- Child will experience improved urinary elimination.
- Parent will experience less anxiety.
- Child will remain free from infection as evidenced by clean and intact wound without redness, edema, odor or drainage and negative urine culture.
- Child will experience decreased pain as evidenced by infrequent crying episodes and exhibit normal sleeping pattern.
- Child will experience improved urinary elimination.
- Parent will experience less anxiety.
- Child will remain free from infection as evidenced by clean and intact wound without redness, edema, odor or drainage and negative urine culture.

Evaluation

- Child will experience decreased pain as evidenced by infrequent crying episodes and exhibit normal sleeping pattern.
- Child will experience improved urinary elimination.
- Parent will experience less anxiety.
- Child will remain free from infection as evidenced by clean and intact wound without redness, edema, odor or drainage and negative urine culture

Documentation Guidelines

Documentation in a patient with hypospadias and epispadias include:

- Client's description of response to pain.
- Acceptable level of pain.
- Current antibiotic therapy.
- Plan of care.
- Teaching plan.

- Response to interventions, teaching, and actions performed.
- Attainment or progress towards desired outcomes.
- Modifications to plan of care.

Complication

- Stress Incontinence → because the bladder neck can not close completely, and the result is leakage of urine.
- Urinary Tract Infections (UTIs)
- Infertile → the bladder neck may not close completely during ejaculation → Retrograde ejaculation.
- Difficult sexual intercourse → because of dorsal chordae and a short, stubby penis.

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Question and key points

1. Define hypospadias

The urethral opening is situated on the ventral side of the shaft of penis in one or several positions

2. List out the type of hypospadias

- The presence of opening near glans is known as Glandular Hypospadias
- Presence of opening at corona is known as Coronal Hypospadias.
- Presence of opening at shaft is known as Penile Hypospadias.
- Opening at junction of penis and scrotum is known as Penoscrotal Hypospadias
- Presence of opening at perineum is known as perineal hypospadias

3. Definition Epispadia

Epispadia is an abnormality in which the opening of the urethra is localized on the dorsum (upper side) of the penis or clitoris.

4. Surgical Management of Epispadia

- Glandular epispadias → glanuloplasty
- Penile epispadias → urethroplasty
- Penopubicepispadias → exstrophy

• Surgical Technique in Male:

1. Modified Cantwell-Ransley Technique o Involves partial disassembly of the penis
2. Mitchell Technique - involves complete disassembly of the penis

5. care of patient with Epispadia

Post operative care

- Monitor vital signs
- Catheter care should be given
- Put restraints so that child should not take out catheter or other tubings.
- Urine examination should be done to rule out any infection.
- Support and guidance of parents is also important.