

Penis

1

Objectives:

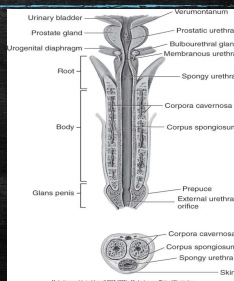
Upon completion of this presentation, students will be able to:

- Identify the anatomy and blood supply of the penis.
- Describe the function of the penis.
- Recognize the normal sonographic appearance.
- Distinguish the different pathologies of the penis.

2

ANATOMY

- Root
 - Urogenital diaphragm
- Body
 - Corpora cavernosa x2
 - Corpus spongiosum x1
 - Contains the urethra
 - Tunica albuginea
 - Fibrous tissue bounds and separates 3 corpora
- Glans penis
- Buck's fascia
 - Thick covering of skin enveloping the penis



3

ARTERIES

- Internal Iliac Arteries
- Internal Pudendal Arteries
- Dorsal Artery
- Cavernous Artery
 - supplies corpora cavernosa
- Bulbourethral Artery
 - supplies corpus spongiosum, glans penis, and urethra

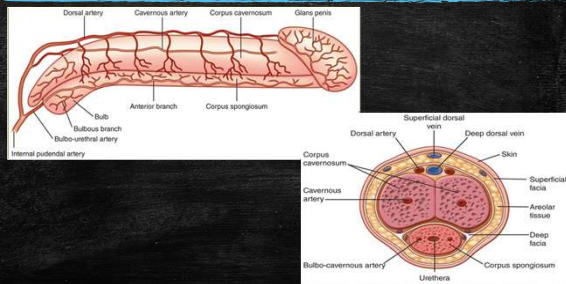
4

VEINS

- Superficial Dorsal Vein
 - Located outside of Buck's fascia
- Deep Dorsal Vein
 - Beneath Buck's fascia
- Pudendal Venous Plexus
- Internal Pudendal Vein

5

BLOOD SUPPLY



6

FUNCTION

- Eject semen
 - Stimulation increases blood supply
 - Expansion of arteries, cause compression of veins
 - Built up pressure causes bladder sphincter to close during ejaculation

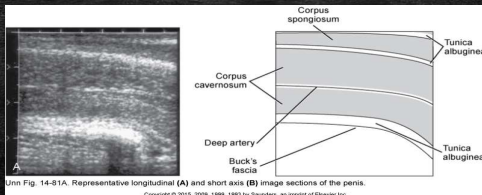
7

SONOGRAPHIC APPEARANCE

- Corpora Cavernosa
 - Paired
 - Symmetrically round or oval
 - Homogenous
 - Medium-level echoes
- Corpus spongiosum
 - Homogenous
 - Medium-level echoes
- Tunica albuginea (septum penis)
 - Echogenic

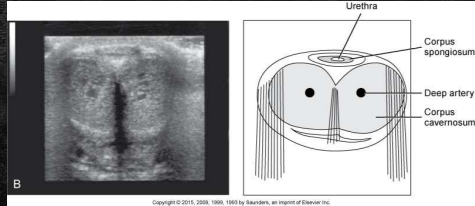
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SONOGRAPHIC APPEARANCE



9

SONOGRAPHIC APPEARANCE



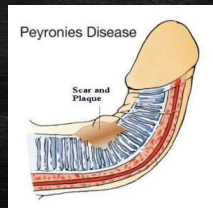
10

PATHOLOGY

11

PEYRONIE'S DISEASE

- Calcified or fibrous tissue deposited in the dorsal penis
- Can cause the penis to bend
- Becomes painful when erect
- Extent defined by ultrasound



12

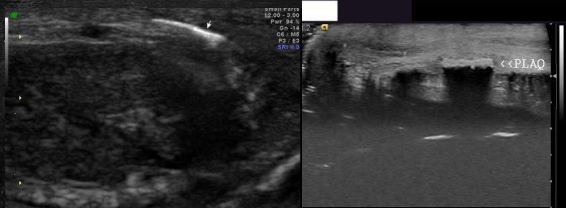
PEYRONIE'S DISEASE

- EVALUATION:
 - High frequency linear array
 - The patient or another sonographer hold the penis
 - May scan ventral or dorsal side

13

PEYRONIE'S DISEASE

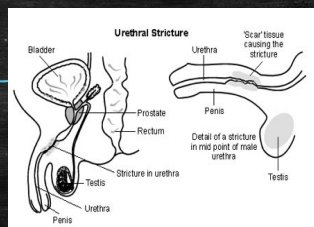
- Hyperechoic areas in peripheral margin, may shadow



14

STRICTURE

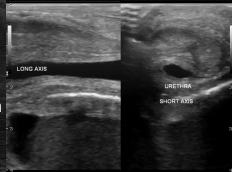
- Urethra becomes narrowed
- Develops due to trauma or infection
- Sonography determines the length and width of stricture
- Seen when urethra distended with fluid



15

STRICTURE

- Sonourethrography
- EVALUATION:
 - High frequency linear array
 - Patient needs distended urethra
 - Urine
 - Sterile Saline
 - Lidocaine gel
 - Long and transverse views obtained
 - Measure length and width of stricture



16

SONOGRAPHIC APPEARANCE

- Thickened urethral wall
- Decreased lumen



17

IMPOTENCE

- Inability to achieve or maintain erection
- Causes:
 - Poor arterial flow
 - Inadequate systolic flow indicates arterial insufficiency
 - Venous leak
 - Venous blood leaks out during erection

18

IMPOTENCE (cont'd)

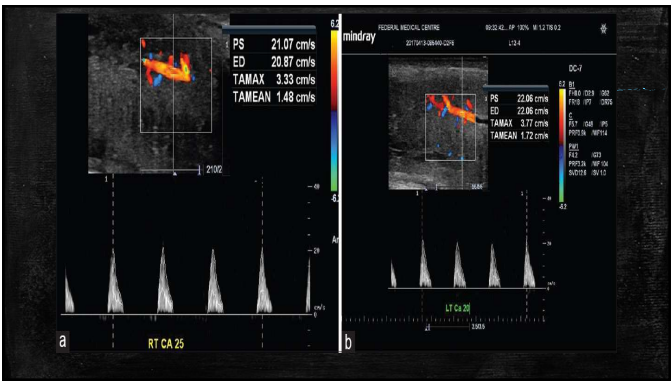
- EVALUATION:
 - Scan from ventral side
 - First scan with penis flaccid
 - Measure diameter and flow of cavernosal arteries
 - Doppler angle less than 60 degrees and matching direction of flow
 - Measure peak systolic and end-diastolic velocities
 - Vasodilator injected into cavernosum
 - Measure diameter and velocities every 5 minutes until erection stops

19

IMPOTENCE (cont'd)

- Cavernosal peak systolic arterial velocity >30 cm/sec is normal
- Cavernosal systolic arterial velocity <25 cm/sec after injection = poor arterial flow
- Cavernosal end-diastolic flow at 15-20 min after injection > or = 5 cm/sec, indicates venous incompetence
 - Surgically corrected

20



21



22
