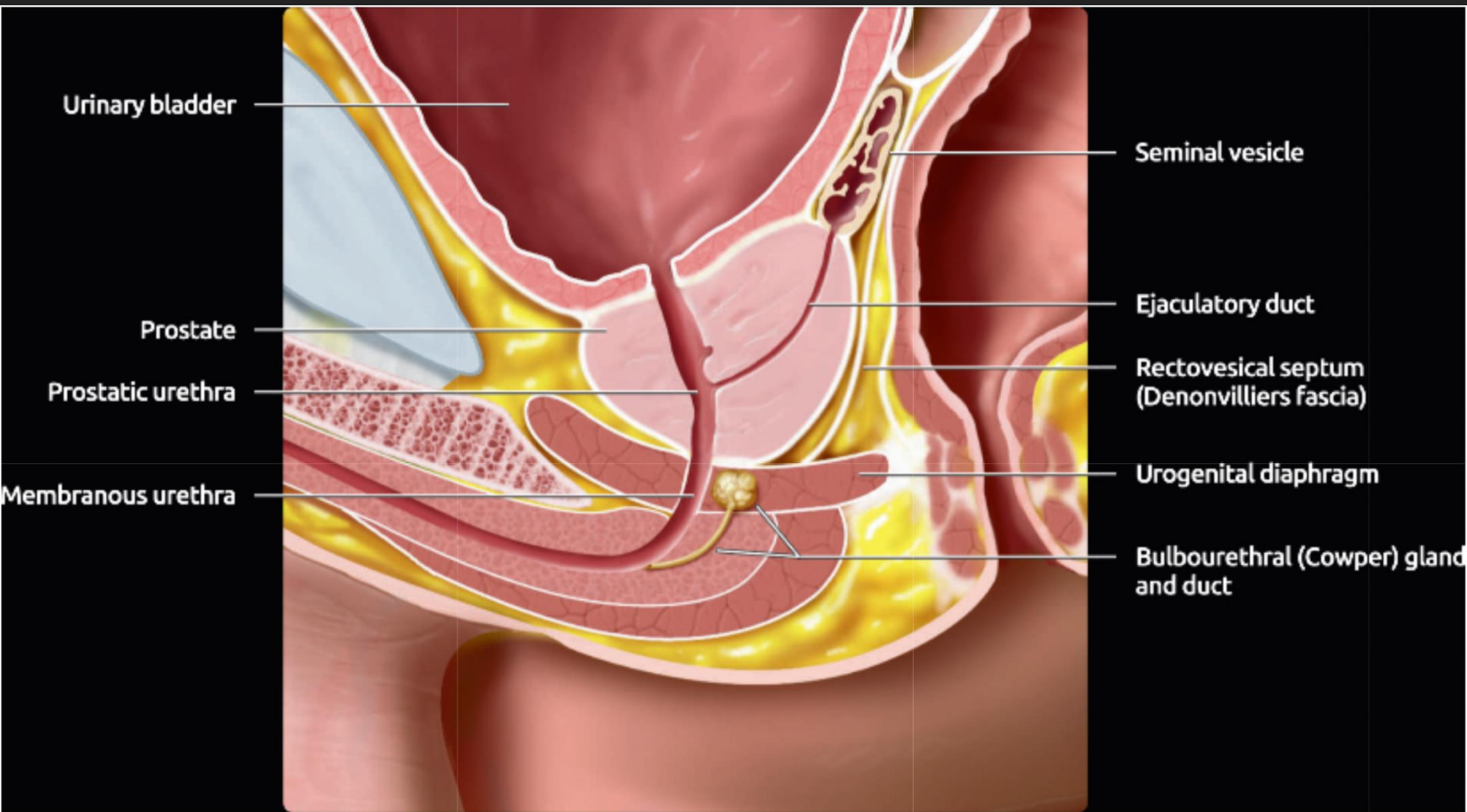


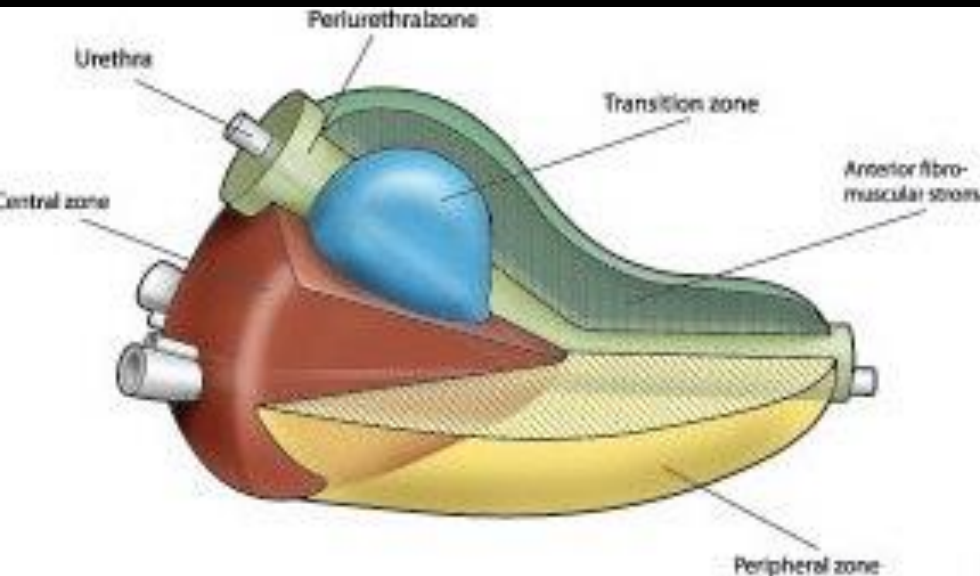
US OF THE PROSTATE

中國附醫急重症超音波訓練中心

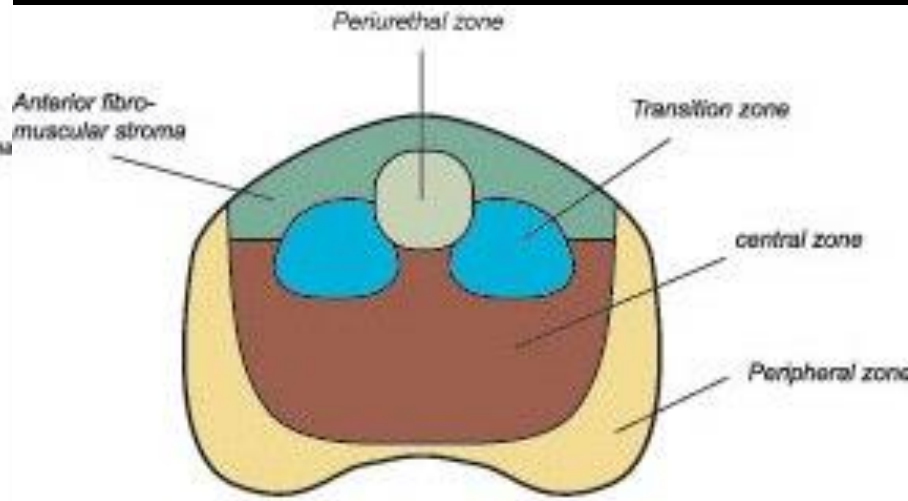
邱德發



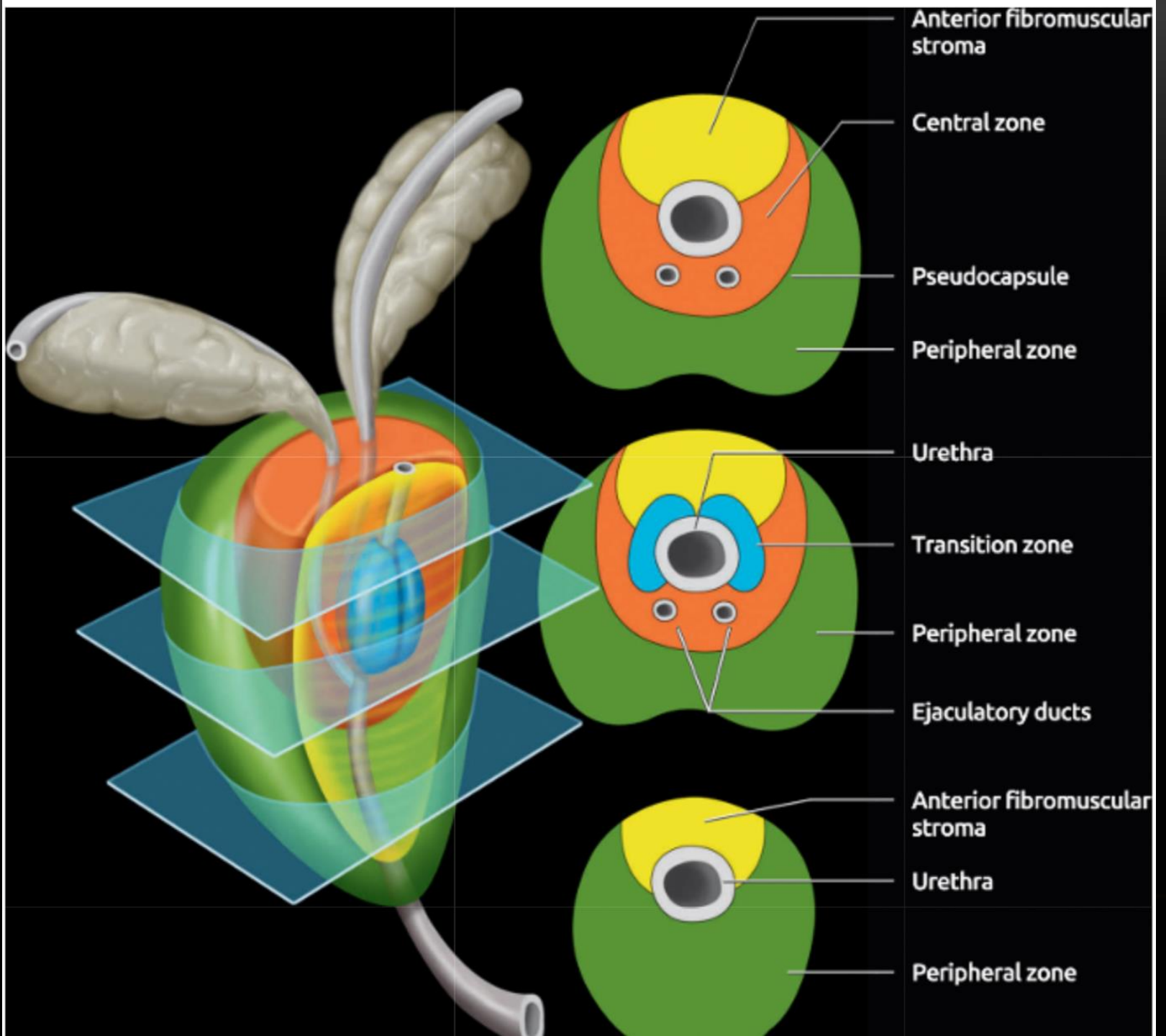
Normal Prostate Anatomy

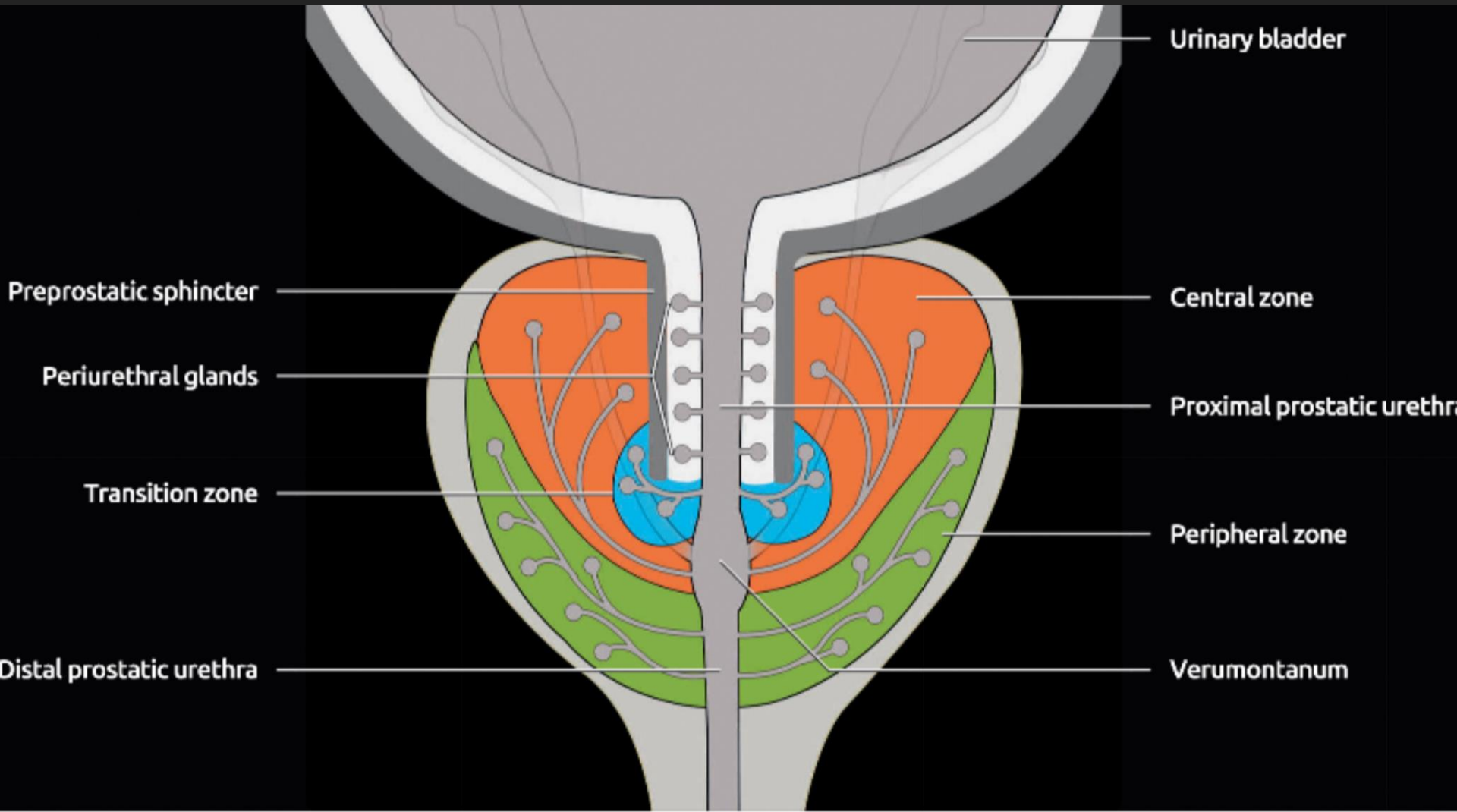


Longitudinal View



Axial View

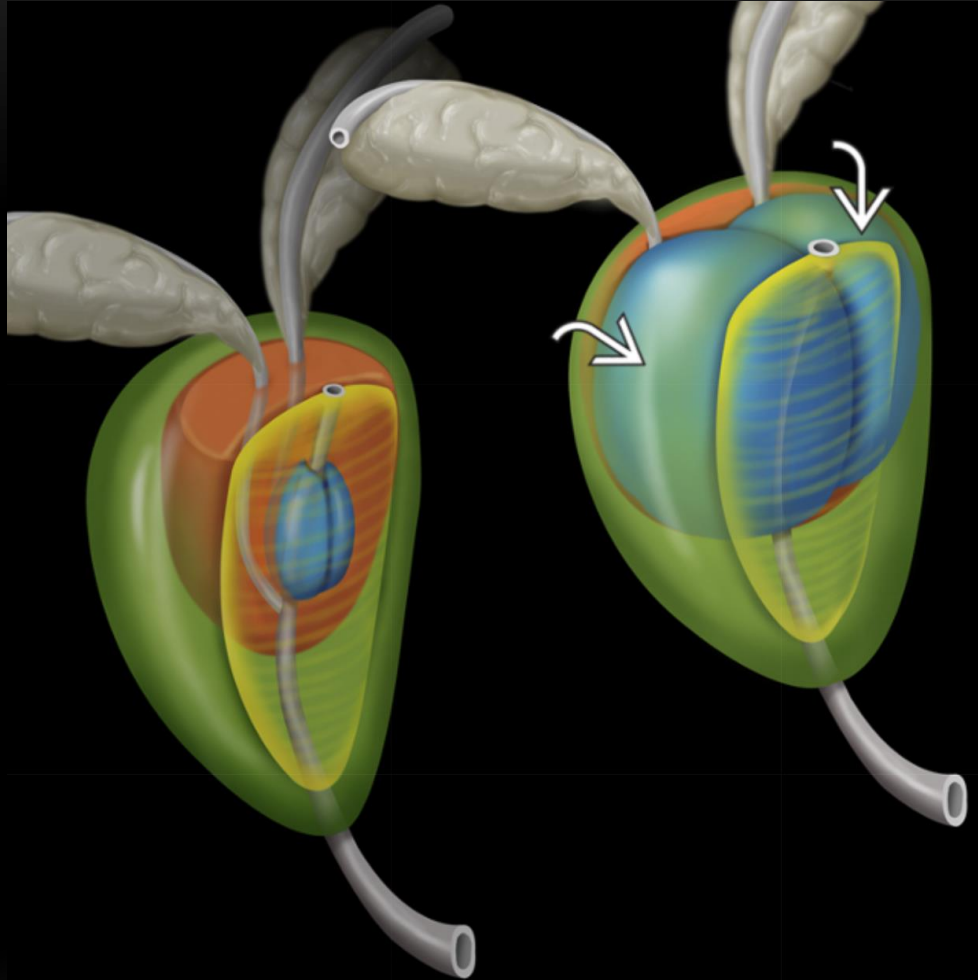




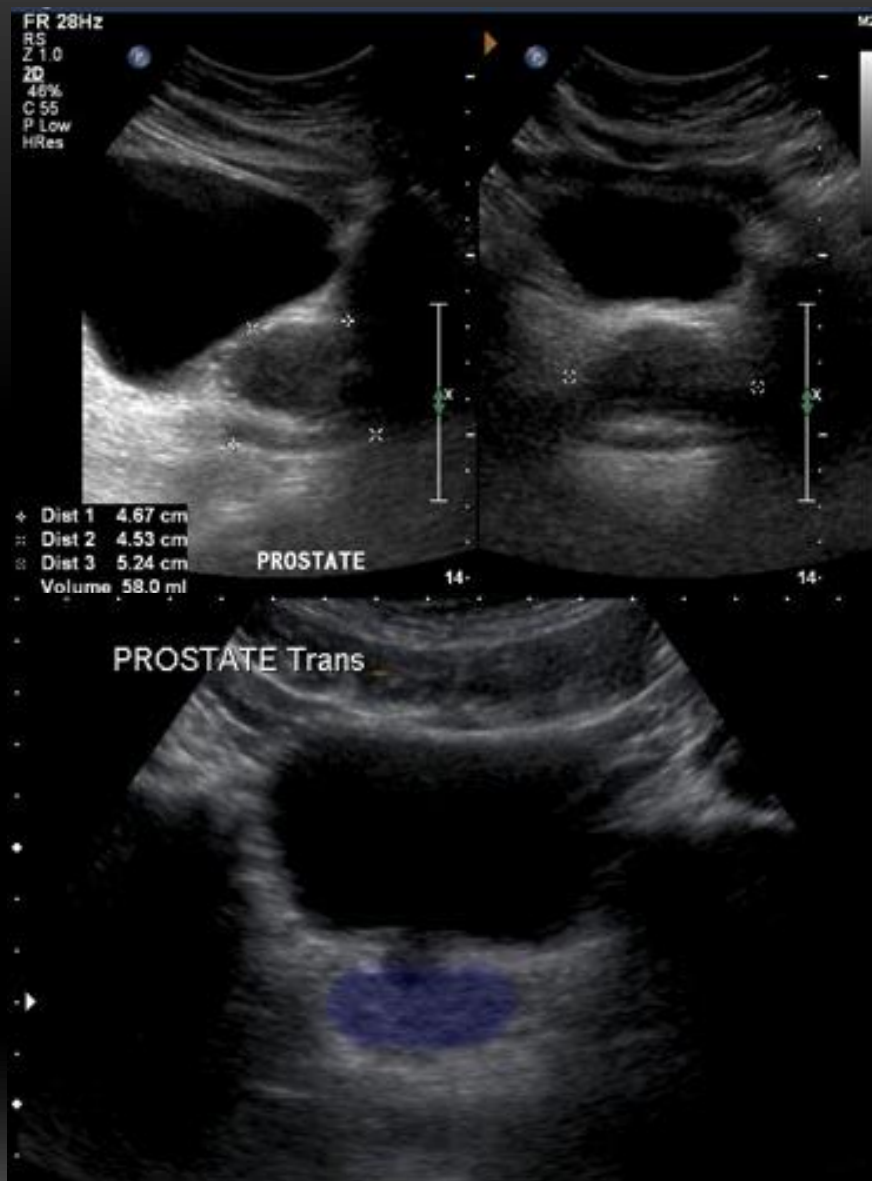
Normal prostate

- 20-30 grams
- in young male ~ 3 cm length × 4 cm width × 2 cm depth
- Estimated prostate volume:
 - $W \times H \times L \times \pi/6 = W \times H \times L \times 0.52$
 - 1 cc of prostate tissue ~ 1 g
- US cannot reliably differentiate BPH from prostate cancer

Benign prostatic hyperplasia (BPH)



US cannot reliably differentiate BPH from prostate cancer

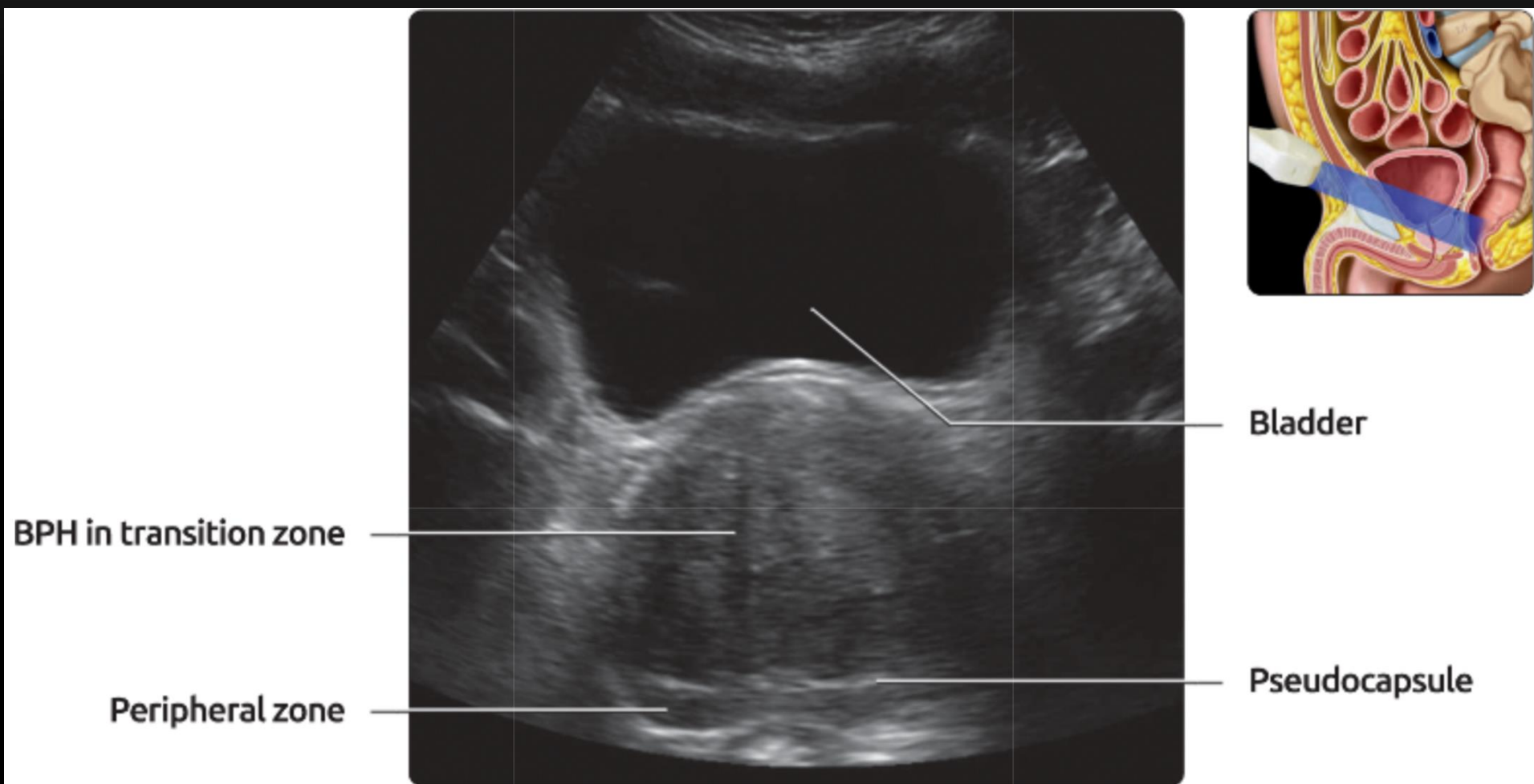


TRANSABDOMINAL

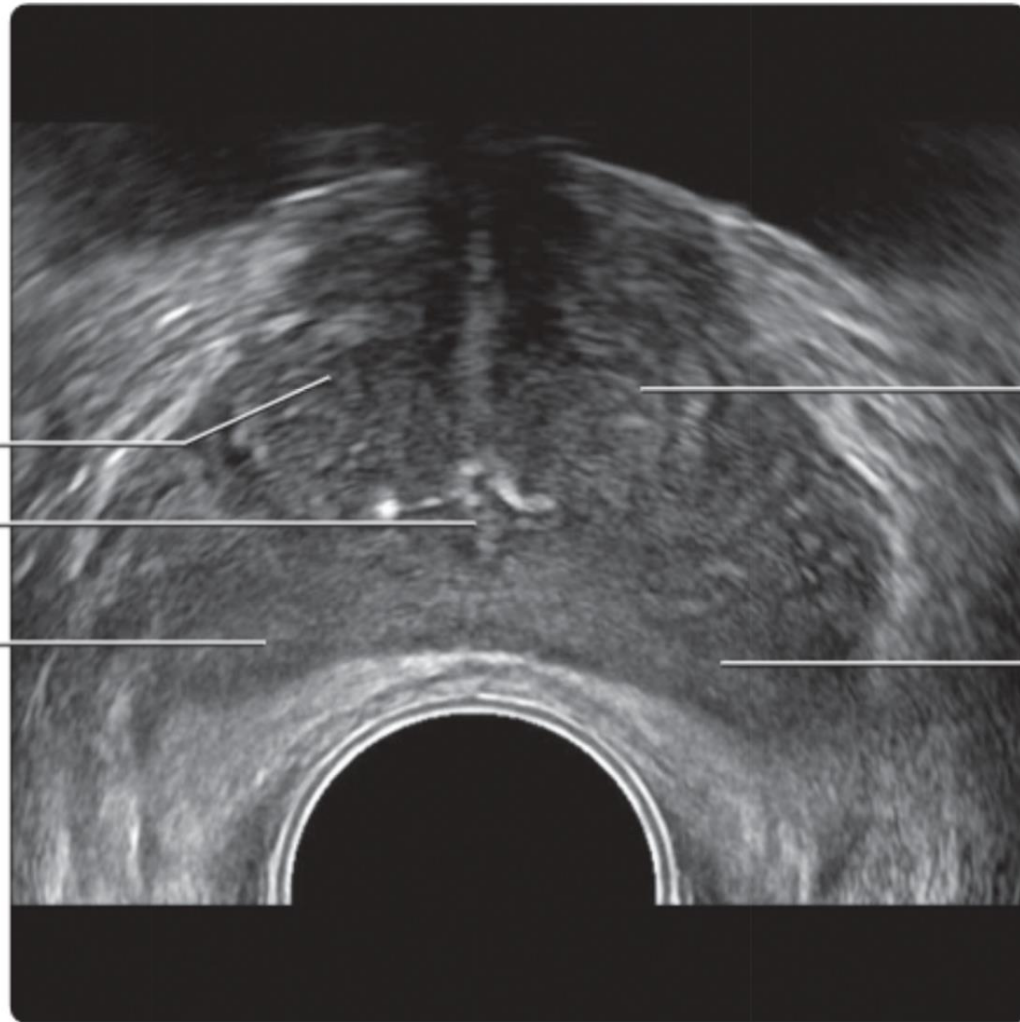
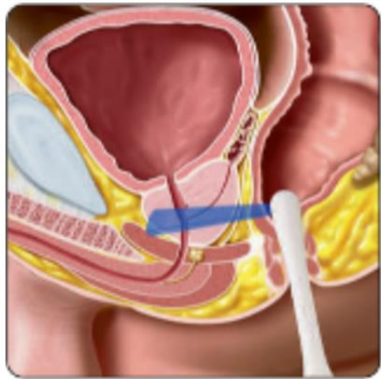
Transabdominal Ultrasound

- can assess the volume of the prostate
 - not reliable to diagnose carcinoma

 - Supine
 - 500 mls of water 1 hr before the scan
(a half full bladder)
-



Transverse TRUS at the level of the midprostate



Transition zone

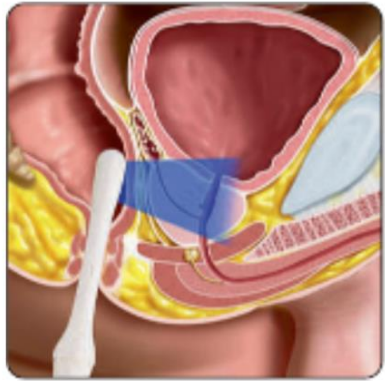
Urethra

Peripheral zone

Transition zone

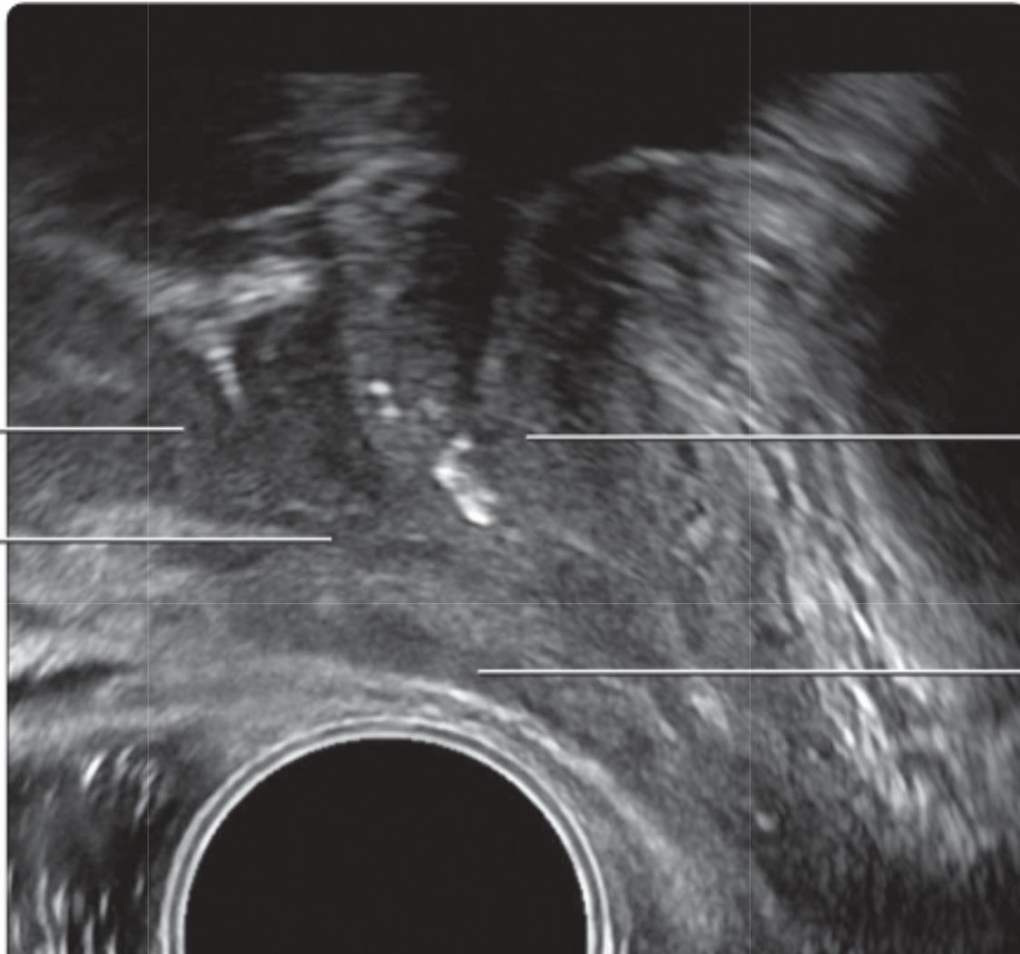
Peripheral zone

Parasagittal TRUS



Seminal vesicle

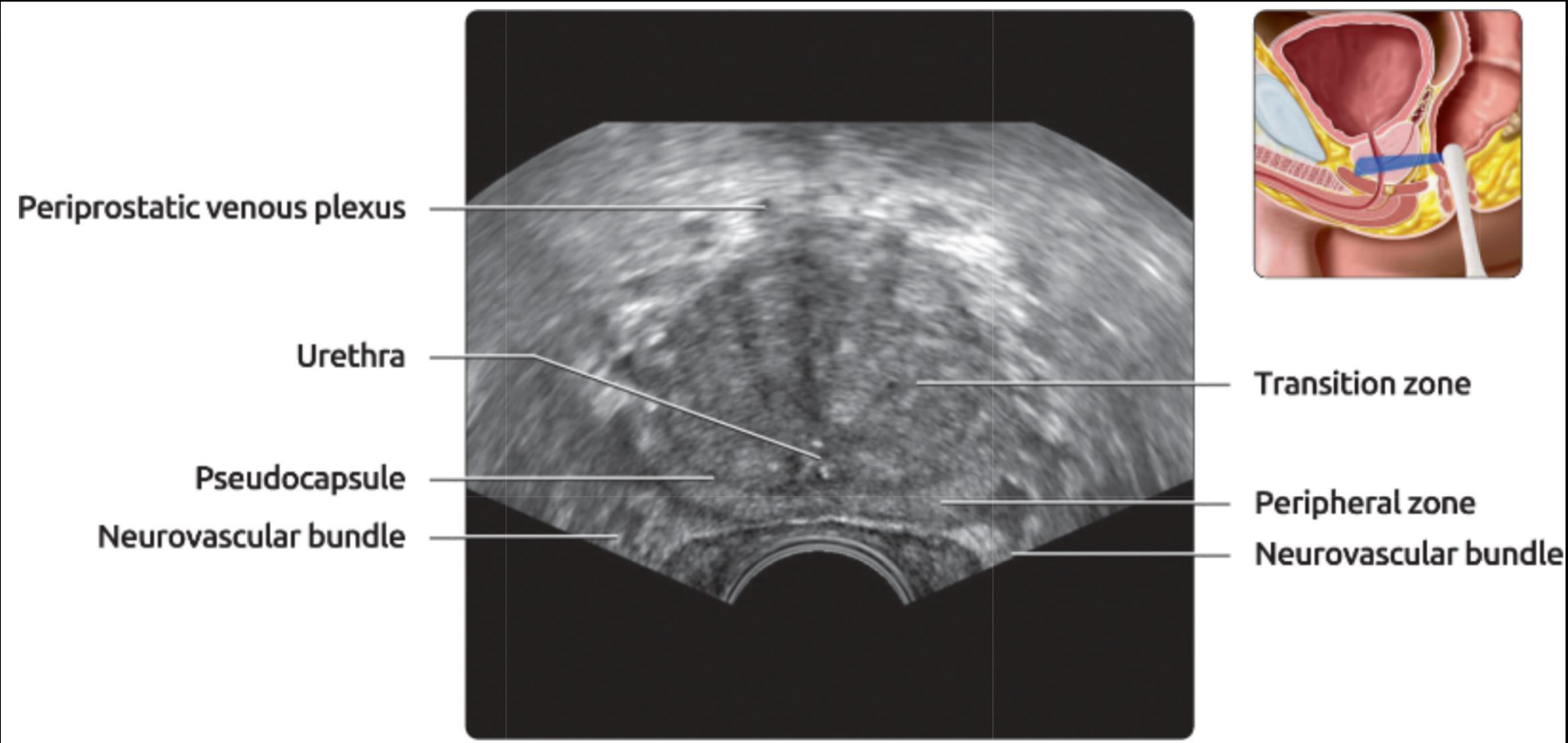
Ejaculatory duct



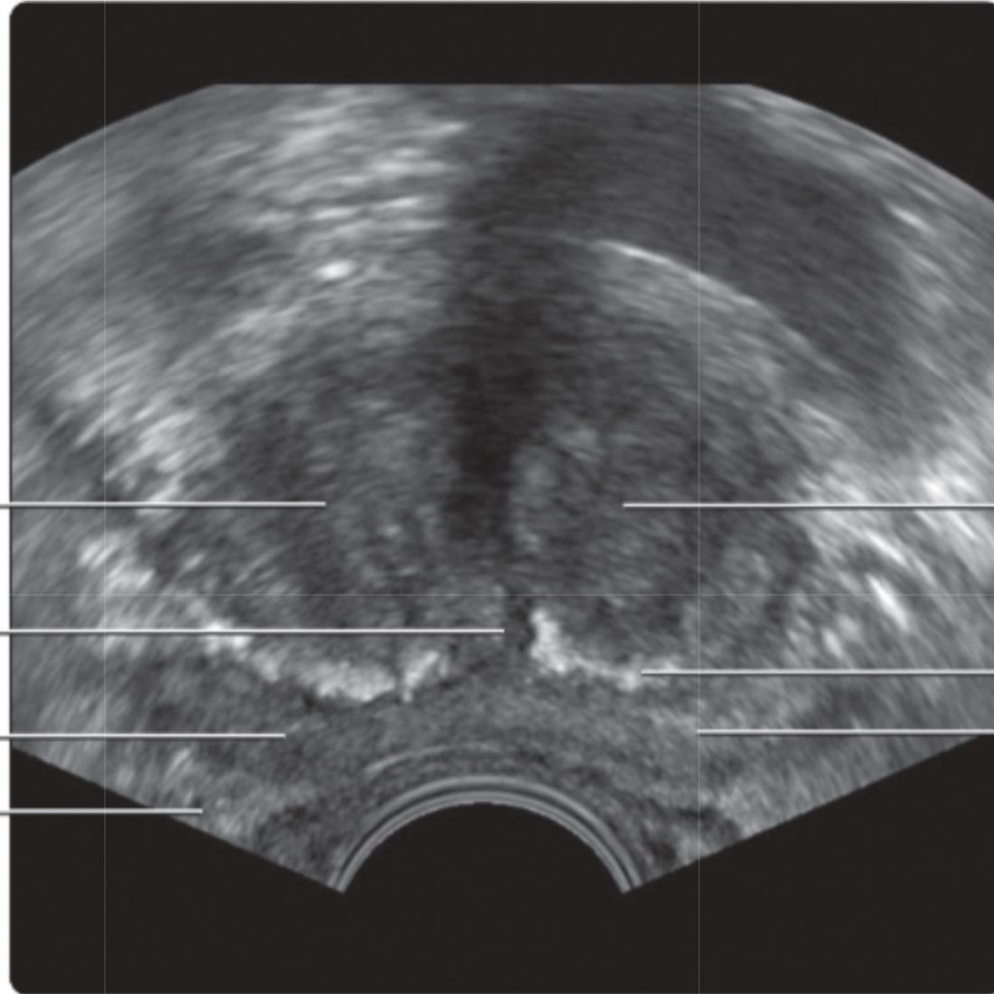
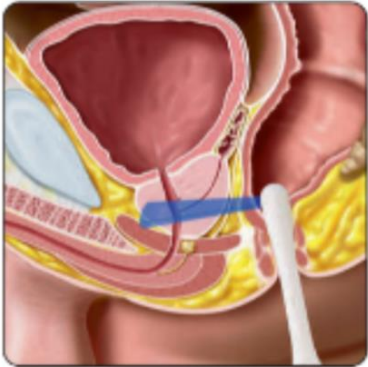
Transition zone

Peripheral zone

TRUS, BPH



TRUS, BPH



Transition zone

Urethra

Peripheral zone

Neurovascular bundle

Transition zone

Pseudocapsule

Peripheral zone

Pseudocapsule, outlined by calcifications

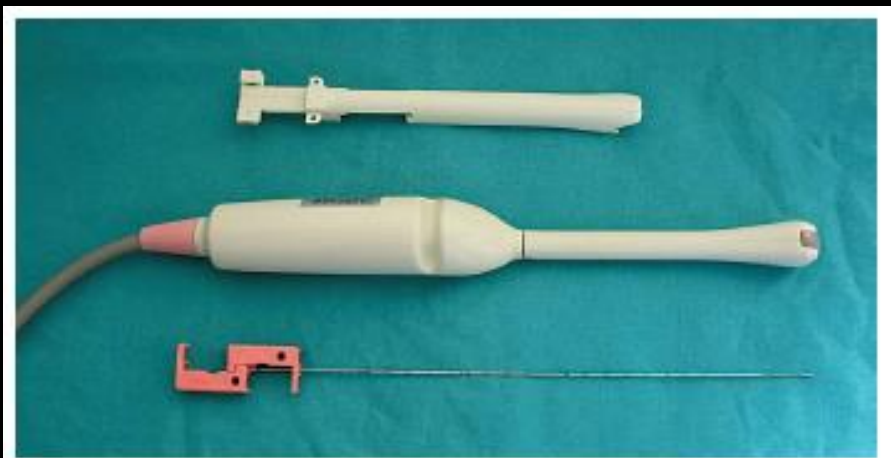


Figure 2 – Reusable needle guide and transrectal probe.

TRANSRECTAL (TRUS)

Volume

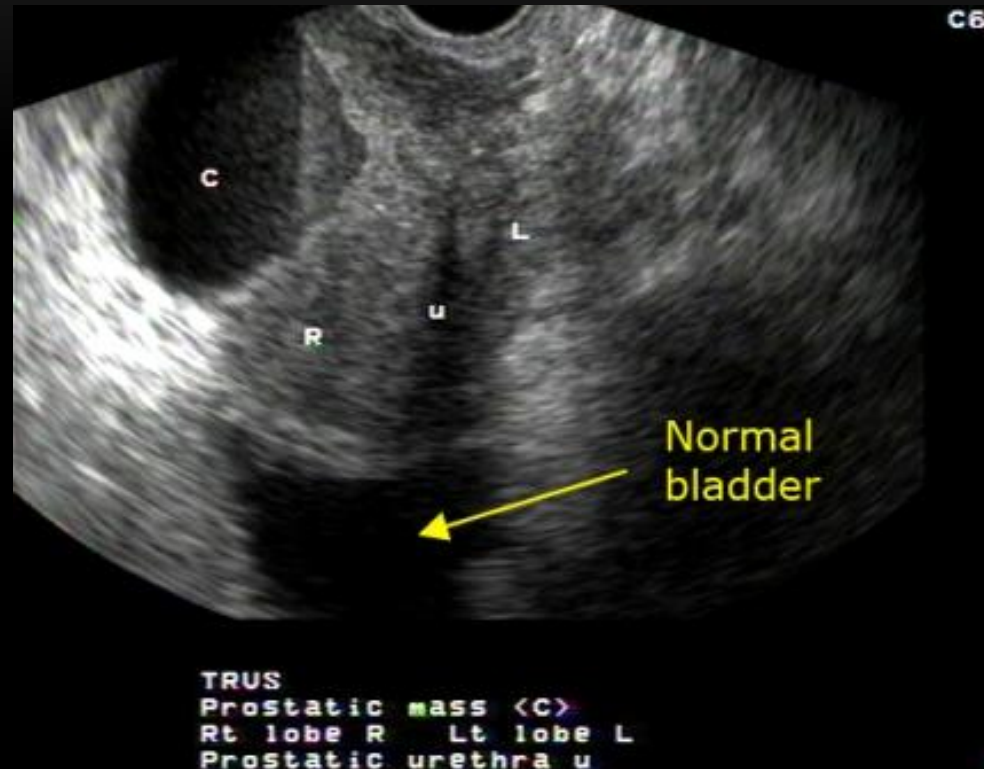
- height x length (sagittal plane) x width x 0.52 (axial plane)



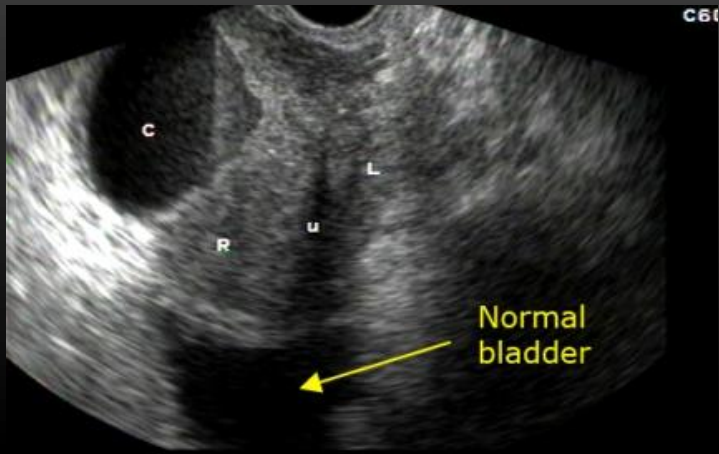
Common Pathology

- Cysts
 - Benign Prostatic Hyperplasia (BPH)
 - Prostate Carcinoma
 - Prostatitis
 - Enlarged seminal vesicles
 - Stones in the seminal vesicles, prostate or ejaculatory ducts
-

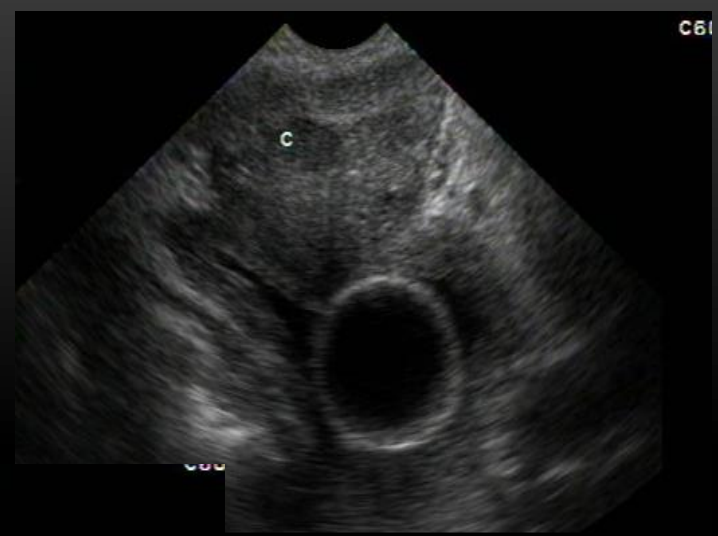
Nocturnal frequency and urgency x 2 months



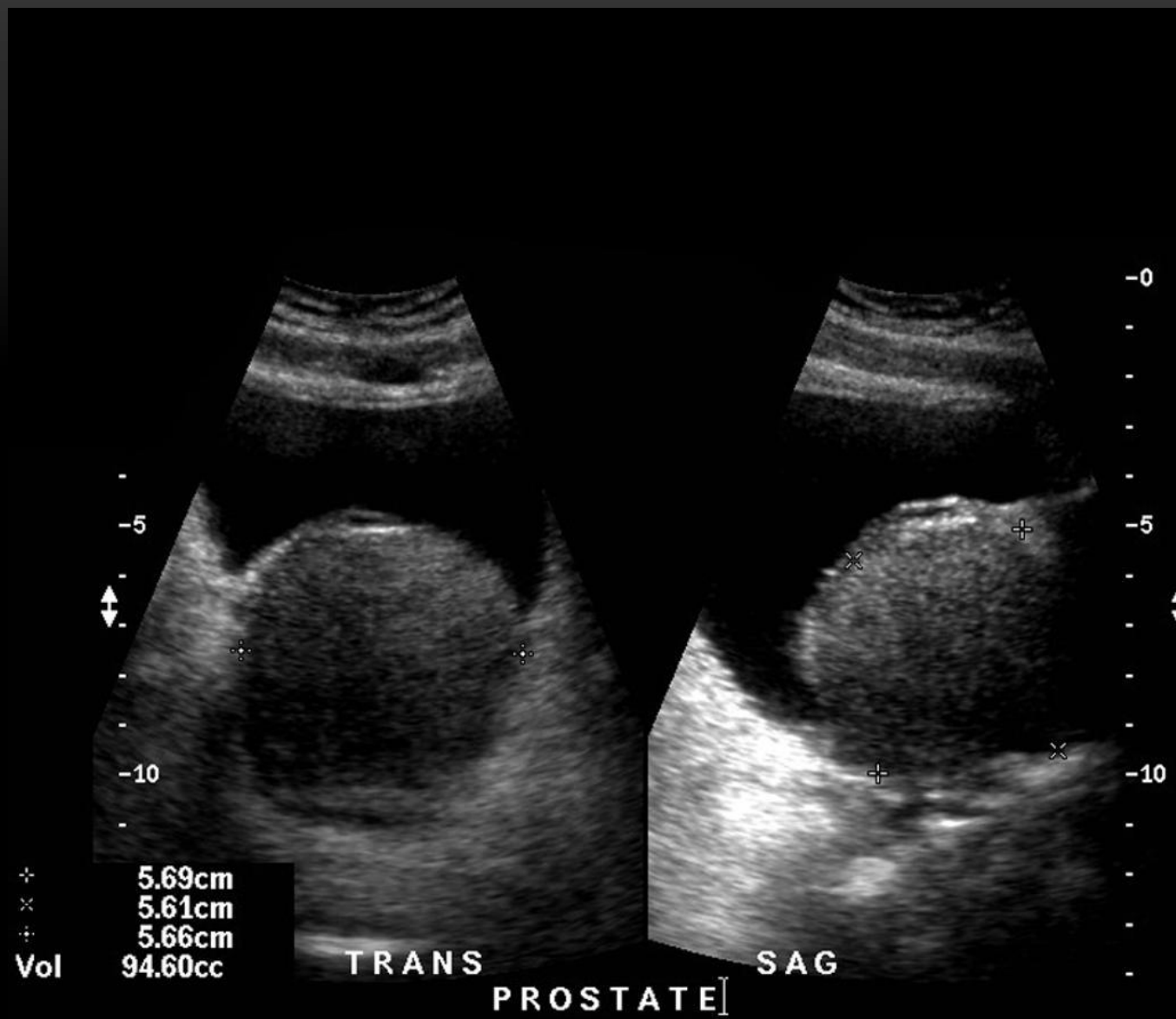
- TRUS - hypoechoic lesion in the R lobe
- PSA >1000
- Gleason score 9



TRUS
Prostatic mass <C>
Rt lobe R Lt lobe L
Prostatic urethra u



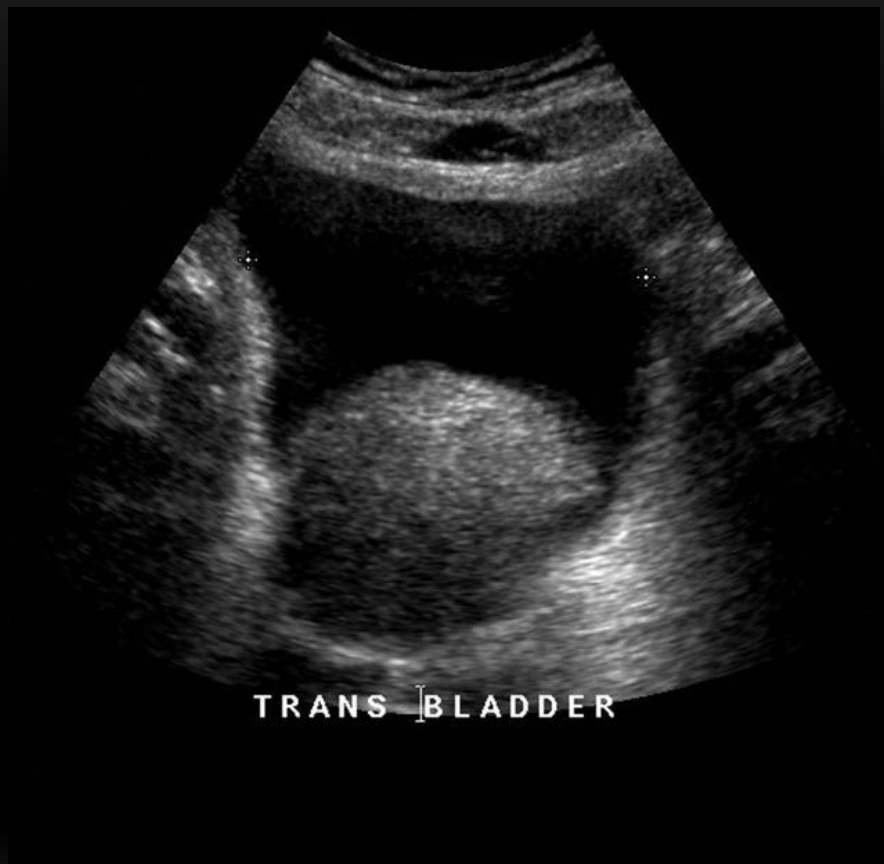
CARCINOMA OF THE PROSTATE (CAP)
hypoechoic, hyperechoic, or isoechoic on
TRUS



BPH

Benign prostatic hyperplasia

- volume of the prostate > 30 mL
- combination of stromal and glandular hyperplasia, predominantly of the transitional zone (prostate ca -- peripheral zone)
- the central gland is enlarged, and is hypoechoic or of mixed echogenicity



REFERENCES

1. <http://emedicine.medscape.com/article/457757-overview>
2. <http://www.cancer.org.au/cancer-control-policy/position-statements/prostate-cancer.html>
3. <http://www.cancer.gov/cancertopics/factsheet/detection/PSA>
4. BJU Int. 2002 Apr;89(6):538-42.