ANSWERS: CHAPTER 12

MATCHING

1. e  7. c
2. b  8. i
3. d  9. j
4. h  10. a
5. k  11. f
6. g

IMAGE LABELING

1A. Coccyx
1B. Rectum
1C. Seminal vesicle
1D. Bladder
1E. Ejaculatory duct
1F. Ductus deferens
1G. Penis
1H. Epididymis
1I. Testis
1J. Urethra
1K. Prostate
2A. Bladder
2B. Seminal vesicles
2C. Ejaculatory ducts
2D. Urethra
2E. Base of penis
2F. Sphincter muscles
2G. Prostate
3A. Transition zone
3B. Urethra
3C. Peripheral zone
3D. Central zone
3E. Seminal vesicle
3F. Ejaculatory duct
4A. Eiffel Tower sign – Verumontanum

MULTIPLE CHOICE

1. a  6. c  11. d  16. c
2. b  7. a  12. a  17. d
3. a  8. c  13. d  18. c
4. a  9. b  14. c  19. a
5. c  10. c  15. d  20. c

FILL-IN-THE-BLANK

1. Transrectal ultrasound
2. Malignancy; infertility; chronic pelvic pain syndrome; congenital; biopsy
3. Mesonephric; paramesonephric
4. Funnel; 4 × 3 × 2 cm
5. Base; apex; urethra
6. Homogeneous; isoechoic; surgical capsule; greater
7. Echogenicity; asymmetry; capsule
8. Inverted; bottom; top; left; right
9. Smooth; disruption
10. Müllerian; utricle
11. Endodermal; hypospadias; undescended; renal
12. Renal agenesis
13. Transition
14. Endogenous; exogenous; endogenous; prostatic; exogenous; urine
15. Periurethral
16. Fever; low back; perineal; gram-negative bacteria
17. Lower urethra; peripheral
18. Hypoechoic halo; heterogeneous
19. Prostate cancer; 65
20. Adenocarcinoma; peripheral; multifocal

SHORT ANSWER

1. TRUS of the prostate is done to evaluate for malignancy, in cases of male infertility, and in patients with symptoms of prostatitis or chronic pelvic pain syndrome. TRUS is commonly performed when a DRE or PSA is abnormal. TRUS is also used to guide biopsy and treatment procedures. TRUS is not typically done as a screening tool.

2. The most common approach is the endorectal approach because it results in improved visualization of the gland and surrounding structures. The patient’s bladder must be empty. The patient is placed in the left lateral decubitus position with the knees bent into the chest. Gel and a probe cover are placed over the probe and lubricating gel is applied to the probe. The transducer is then inserted into the rectal cavity. The ultrasound image is inverted during a prostate examination with the near field at the bottom of the image and the far field at the top. In the transverse plane, the right lobe of the gland is at the left side of the image and the left lobe of the gland is on the right side. In the sagittal plane, the base of the gland is at the left side of the image and the apex of the gland is at the right side of the image. Contraindications include rectal fissures, rectal tumors, thrombosed hemorrhoids, and prostatitis, which may prevent insertion of the probe due to patient discomfort.

3. Calcifications are common and typically asymptomatic. Corpora amylacea are the result of consolidation and calcification that occur with age. BPH or prostatitis can cause calcifications. Ejaculatory duct calcifications are also commonly seen, as are periurethral calcifications.

4. Adenocarcinoma may appear isoechoic to the surrounding tissue, making the diagnosis by sonography alone difficult. This is the reason that TRUS cannot be used alone as a screening tool. The predictive value for TRUS alone is only 6%. The seminal vesicle beak sign may be seen when a tumor...
occurs in the central zone. Most cancers appear hypoechoic sonographically; however, benign lesions typically appear hypoechoic as well. Tumor may also replace the entire gland, making diagnosis difficult.

5. Ultrasound-guided biopsy is typically performed using the endorectal approach. Periprostatic nerve block and lidocaine gel are used to minimize discomfort. The patient is given a cleansing enema and antibiotics to minimize the risk of infection with fecal material. A targeted biopsy may be done on a suspicious lesion, but more commonly multiple random biopsies of known sites of anatomical weakness are performed.

**IMAGE EVALUATION/PATHOLOGY**

1. The seminal vesicles lie lateral and superior to the base of the prostate as imaged here. They appear dilated, which can occur from obstruction or a lack of recent ejaculation.

2. The most common cysts found in the male pelvis are the Müllerian duct cysts and utricle cysts. Müllerian duct cysts are typically found in this location outside the prostate gland between the urinary bladder and the rectum. They are attached to the prostate by a stalk. Symptoms include partial urinary obstruction, hematospermia, low ejaculate volume, infertility, painful ejaculation, and rectal discomfort.

3. Small cysts within the prostate are typically retention cysts or come from cystic changes related to benign prostatic hypertrophy.

4. BPH can be treated with TURP or transurethral resection of the prostate gland. This leaves a large defect that can be seen in the center of the gland. Prostate tissue that is compressing the urethra and causing urinary retention is removed relieving the urethral compression.

**CASE STUDY**

1. The prostate gland is enlarged and is seen to indent into the urinary bladder. Benign prostatic hypertrophy occurs in men over the age of 40 and typically peaks at the age of sixty. The transition zone is affected.