ANSWERS: CHAPTER 17

MATCHING
1. c 3.  b  5.  f  6.  g
2. h 4.  e  6.  a  8.  d

IMAGE LABELING
1A. Appendix testis
1B. Appendix epididymis
1C. Efferent ductules
1D. Ductus deferens
1E. Head, body, tail of epididymis
1F. Superior aberrant ductule
1G. Rete testis
1H. Tunica albuginea
1I. Mediastinum testis
1J. Lobules of testis
1K. Seminiferous tubule
2A. Testis
2B. Tail of epididymis
2C. Body of epididymis
2D. Head of epididymis
3A. Spermatic cord
3B. Epididymis
3C. Testis
4A. Tunica albuginea
5A. Mediastinum testis

MULTIPLE CHOICE
1. d 6.  a  11.  b  16.  c
2. b 7.  b  12.  a  17.  c
3. b 8.  d  13.  d  18.  c
5. c 10.  c  15.  b  20.  b

FILL-IN-THE-BLANK
1. Malignant; benign
2. Spermatic cord; testes; epididymis; 2 to 8 mm; median raphe
3. Testicular; cremasteric; deferential; pampiniform plexus; nerves; lymphatics; vas deferens
4. Superolaterally; 10 to 12 mm; sagittal; posterior; inferior
5. Sperm; seminiferous; testosterone; Leydig
6. Tunica vaginalis; visceral; parietal; visceral; parietal
7. Mediastinum testis
8. 3 to 5 cm; 2 to 3 cm
9. Spermatic cord; venous; arterial; torsion knot
10. Appendix testis; appendix epididymis
11. Epididymitis; orchitis; hypervascularity or hyperemia
12. Hydrocele; posteromedial; torsion; neoplasms
13. Posteromedial; scrotal pears or scrotiliths
14. Spermatoceles; epididymal cysts; spermatoceles; epididymal cysts
15. Pampiniform plexus; 2 mm; left; Valsalva
16. Bowel; omentum; vaginalis
17. Hematocele; trauma; surgery; a tumor; torsion
18. Leydig; Sertoli
19. Microlithiasis; five; testicular carcinoma
20. Seminoma; germ; embryonal; AFP; beta-hCG

SHORT ANSWER
1. Scrotal sonography is used to evaluate a palpable mass or enlarged scrotum, and is especially helpful in distinguishing if a mass is extratesticular or intratesticular. Sonography is used in cases of acute scrotal pain to distinguish between inflammatory processes and torsion. Sonography is also useful in cases of trauma, suspected undescended testis, and infertility workups.

2. When a patient is experiencing acute scrotal pain, scanning the asymptomatic side first allows the sonographer to set the gray-scale, color, and power Doppler settings, hopefully with less patient discomfort. Once the settings are appropriate for this patient, the symptomatic side can be quickly evaluated. Having the asymptomatic side for comparison gives the sonographer a normal baseline for echogenicity and color flow. The symptomatic side should exhibit similar vascularity, size, and echotexture. If the symptomatic side is hyperemic compared to the asymptomatic side, an inflammatory process is suspected. If no flow can be obtained in the symptomatic side, even with low flow settings, torsion should be suspected.

3. Patients with a testicular malignancy typically present with a painless scrotal mass, hardening of the testis, or diffuse testicular enlargement. Orchiectomy or epididymectomy may also be present in a minority of patients. These patients present with acute pain and fever. The majority of testicular tumors are hypoechoic; less often they are hyperechoic, complex, or diffusely infiltrating. If the mass has broken through the tunica albuginea, the testicle will have a distorted contour. The majority of testicular tumors show an increased vascularity with color Doppler. With testicular malignancy, the scrotal wall thickness is typically normal as is the epididymis. A reactive hydrocele may be present in 10% of cases.

4. An undescended testis is 48 to 50 times more likely to develop a malignancy than a normally descended testis. The risk of seminoma is 2.5 to 8 times higher and the contralateral testis has an increased risk as well. Cryptorchidism is also associated with infertility if it is not corrected by the age of 2 years old. The risk of torsion and scrotal hernia is also higher.
5. Sonographic findings of epididymo-orchitis include enlargement of the affected structures, hypoechoic echotexture, and hypervascularity. Focal orchitis can be difficult to distinguish from a testicular tumor. A reactive hydrocele and scrotal wall thickening are common associated findings.

**IMAGE EVALUATION/PATHOLOGY**

1. A large simple cyst is seen superior to the testis and adjacent to the epididymis. The differential diagnosis includes spermatocele or epididymal cyst.

2. A torsion knot is seen with the classic whirlpool pattern. This results from twisting of the spermatic cord and is the most specific sign of a complete or incomplete testicular torsion.

3. The arrows represent dilated veins of the pampiniform plexus or a varicocele. The normal veins measure less than 2 mm. Color Doppler should be used to confirm flow within the vessels and the Valsalva maneuver should be performed. An increase in size and flow should be visualized in a varicocele during the Valsalva maneuver.

4. This large, well-circumscribed mass is heterogeneous and complex, with both cystic and solid components. Embryonal cell carcinoma, choriocarcinoma, mixed germ cell tumors, and teratoma can all present as solid masses with cystic components.

5. The epididymis appears large and heterogeneous. A reactive hydrocele is noted. The scrotal skin appears thickened. The diagnosis is epididymitis.

**CASE STUDY**

1. The appendix testis is seen. The large arrows are pointing to a scrotal pearl, which represents calcifications that are typically the result of chronic inflammation. They may also represent a chronically torsed appendix testis or epididymis. A hydrocele is also noted. A large chronic hydrocele can place pressure on the testis, restricting blood flow and causing atrophy.

2. Microlithiasis is seen in both testes. The left testis is enlarged with a large, solid, heterogeneous mass. The most likely diagnosis is a testicular malignancy. All intratesticular masses are considered malignant until proven otherwise. The exact diagnosis cannot be made with sonography but common malignancies include seminoma, embryonal cell carcinoma, choriocarcinoma, and mixed germ cell tumor.