Lesson 24: Avoiding the “Knee-Jerk” Diagnosis of a Baker’s Cyst: Anatomy, Imaging, and Pathology of the Popliteal Fossa
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Question 24-1. This question brings attention to the most common vascular lesion seen clinically in the popliteal fossa, which is deep venous thrombosis of the popliteal vein (C). So (C) is the correct answer.

Question 24-2. This question addresses MRI characteristics seen with nerve sheath tumors in the popliteal fossa. The MRI characteristics include associated fatty atrophy of the innervated muscle (A), peripheral fat surrounding the mass (C) (“split-fat” sign), fusiform mass with entering and exiting nerves (D), and ring-like configuration (E) (“fascicular” sign), but low internal and high peripheral T2 signal (“target” sign) not vice versa (B). So (A), (C), (D) and (E) are true, but (B) is false and the exception; and (B) is the correct answer.

Question 24-3. This question concerns MRI characteristics that favor an aggressive lipomatous mass in the popliteal fossa. These MRI characteristics include thick septal enhancement (B), nodular nonadipose areas within the mass (C), size greater than 10 cm (D), and fat component less than 75% (E), but not a superficial location (A), which is more likely to be found in a nonaggressive lipoma. So (B), (C), (D), and (E) are true, but (A) is false and the exception; and (A) is the correct answer.

Question 24-4. This question is illustrated by a posterior ultrasound image (Figure 10) of the right knee of a 45-year-old woman who presents with a new, painless popliteal fossa mass. What should the radiologist include in the ultrasound report? The ultrasound shows a complex cystic and solid mass in the popliteal fossa. The sonographic features do not meet the criteria for a Baker’s cyst. Unless a popliteal fossa mass has all the characteristic sonographic features of a Baker’s cyst, further evaluation should be performed before any biopsy. MRI should be performed to further characterize the mass (C). Biopsy of the popliteal mass revealed a myxofibrosarcoma. So (C) is the correct answer.

Question 24-5. This question highlights conditions associated with the development of a Baker’s cyst, which include intraarticular pathology with internal derangements and inflammatory processes such as rheumatoid arthritis (A), osteoarthritis (B), meniscal tear (C), anterior cruciate ligament tear (D); but not semimembranosus tendon tear (E), which is an extraarticular condition. So (A), (B), (C), and (D) are true, but (E) is false and the exception; and (E) is the correct answer.

Question 24-6. This question draws attention to the location of Baker’s cysts in the popliteal fossa, which is medially between the semimembranosus tendon and medial head of the gastrocnemius tendon (B). So (B) is the correct answer.
Question 24-7. This question speaks to T1 MR features that help the radiologist to differentiate a benign from a malignant peripheral nerve sheath tumor (PNST) in a patient with a known neurogenic tumor in the popliteal fossa. Homogeneous signal of the mass (A), preserved fat planes about the mass (B), and size of the mass less than 5 cm (D) favor a benign tumor, whereas presence of perilesional edema (C) favors a malignant PNST. So (A), (B), and (D) are false, but (C) is true; and (C) is the correct answer.

Question 24-8. This question highlights an important fact that radiologists should know about popliteal masses in young individuals. Specifically, in a 15-year-old patient (or in people 6–35 years of age) the most frequently found malignant soft tissue mass found in the popliteal fossa is a synovial sarcoma (A). So (A) is the correct answer.

Question 24-9. This question refers to a clinical vignette in which a 40-year-old man presents to the emergency department with a popliteal fossa mass. On MRI, the mass is isointense to muscle on the T1 sequence with increased signal on T2 sequence and thin peripheral contrast enhancement. Aspiration of the mass reveals thick fluid rich in hyaluronic acid. Both the MR features suggesting a cystic soft tissue mass and the analysis of the aspirated thick fluid containing hyaluronic acid are classic findings of a ganglionic cyst (C) in the popliteal fossa. So (C) is the correct answer.

Question 24-10. This question calls attention to some of the structures that form the borders of the popliteal fossa, which include the semitendinosus muscle (A), semimembranosus muscle (B), and medial head of the gastrocnemius muscle (C) medially; plantaris muscle (D), biceps femoris muscle, and the lateral head of the gastrocnemius muscle laterally; the knee joint anteriorly; and subcutaneous tissue posteriorly. So (A), (B), (C), and (D) are true. However, the soleus muscle (E) does not form one of the borders of the popliteal fossa. Thus (E) is false and the exception, and (E) is the correct answer.

**Answer key for Volume 35 # 24:**

1. C
2. B
3. A
4. C
5. E
6. B
7. C
8. A
9. C
10. E