Case History

A 44-year-old man with a history of vesicocutaneous fistula, pelvic abscess, and obstructive uropathy was taken to the operating room for bilateral stent placement and ileal conduit urinary diversion. During surgery, an incidental “small bowel diverticulum” was removed via a wedge resection and submitted to pathology. A 1.8 x 0.7 x 0.7 cm firm, ovoid lesion was found that had solid, tan-white cut surfaces. The lesion appeared to be arising from the external layer of the muscularis propria of the small bowel and did not involve the serosa.

Histologic sections of the lesion are depicted below. Immunohistochemical stains were negative for Kit, DOG-1, S-100, desmin and smooth muscle actin.

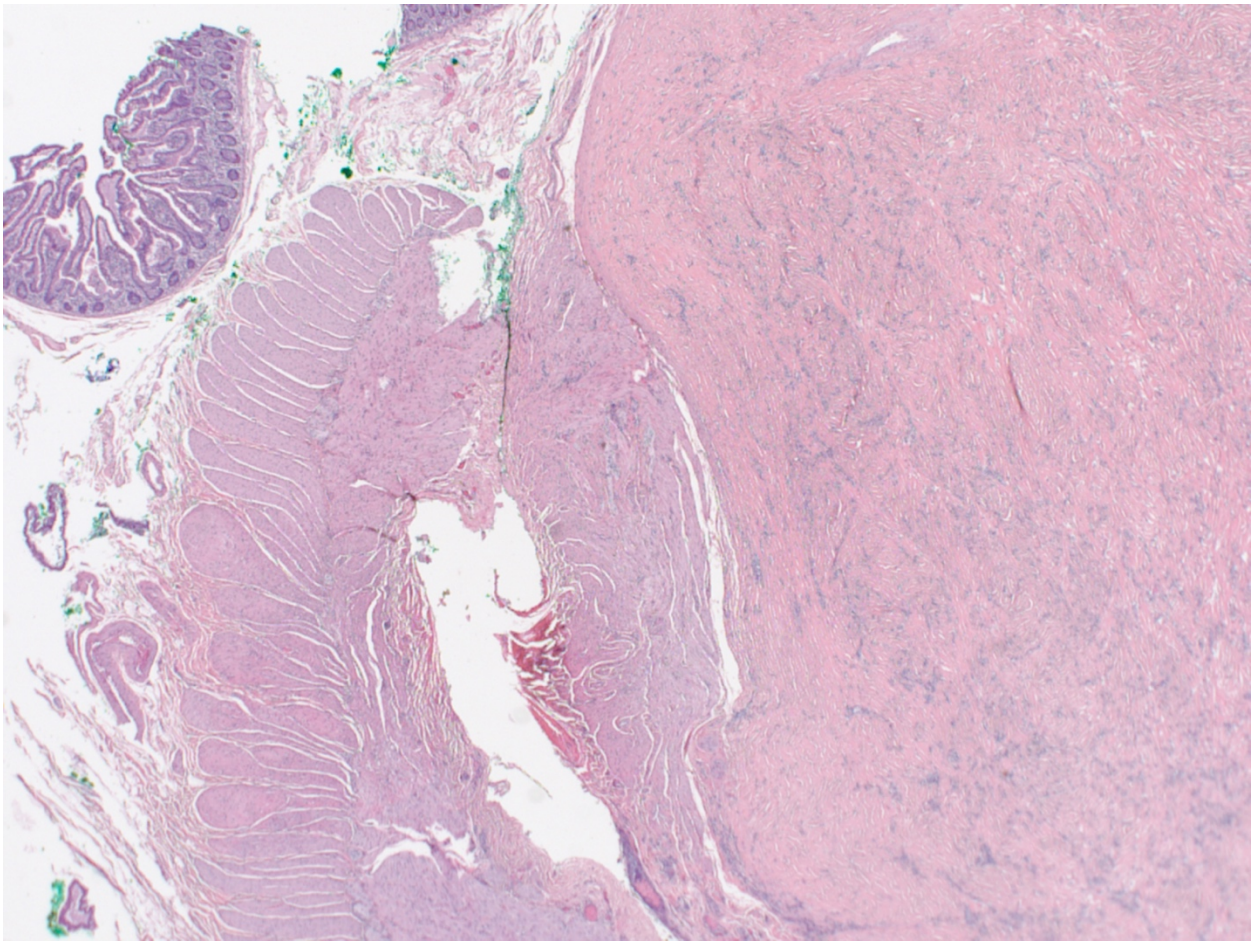

Figure 1: H&E stain. Lesion (on right) showing thin area of attachment to the muscularis propria of the small bowel (on left).

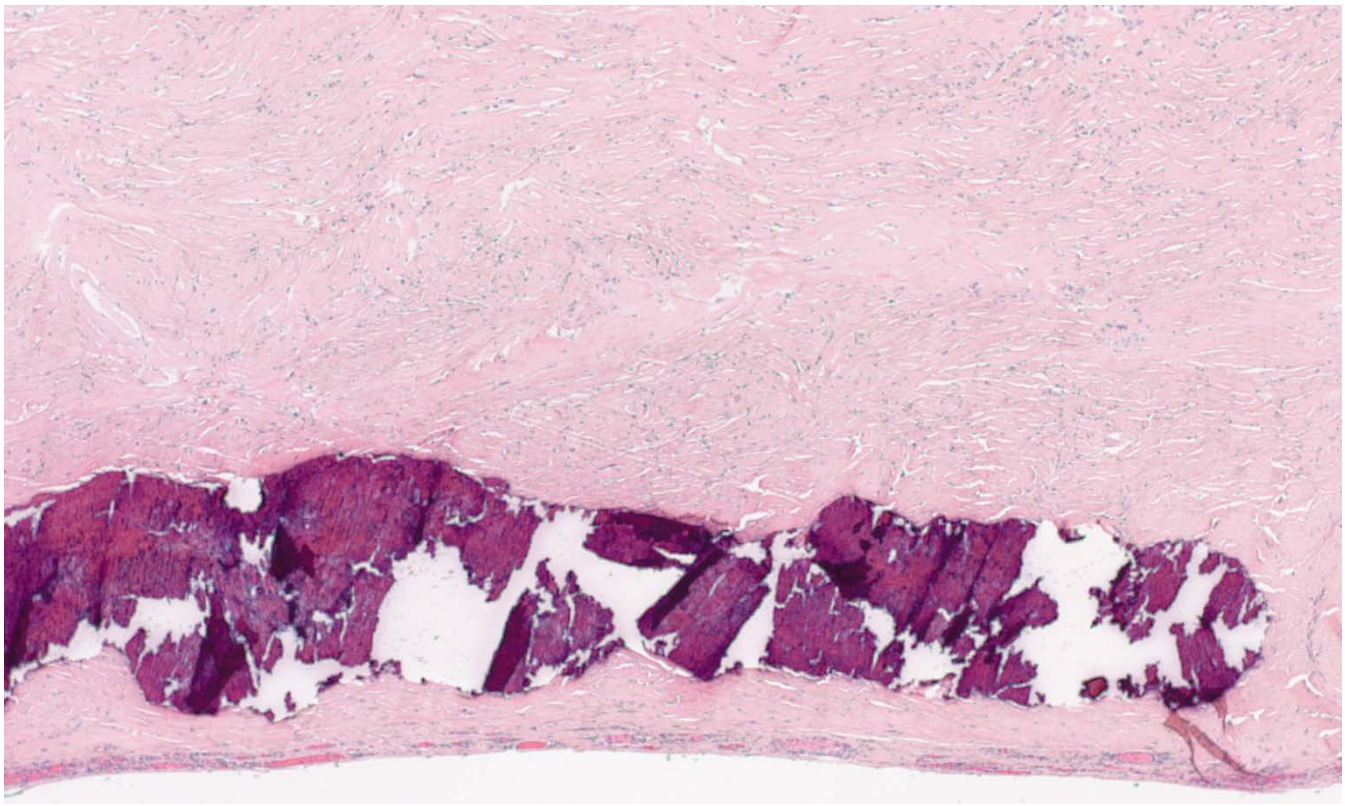

Figure 2: H&E stain. Hyalinized stroma and dystrophic calcifications.

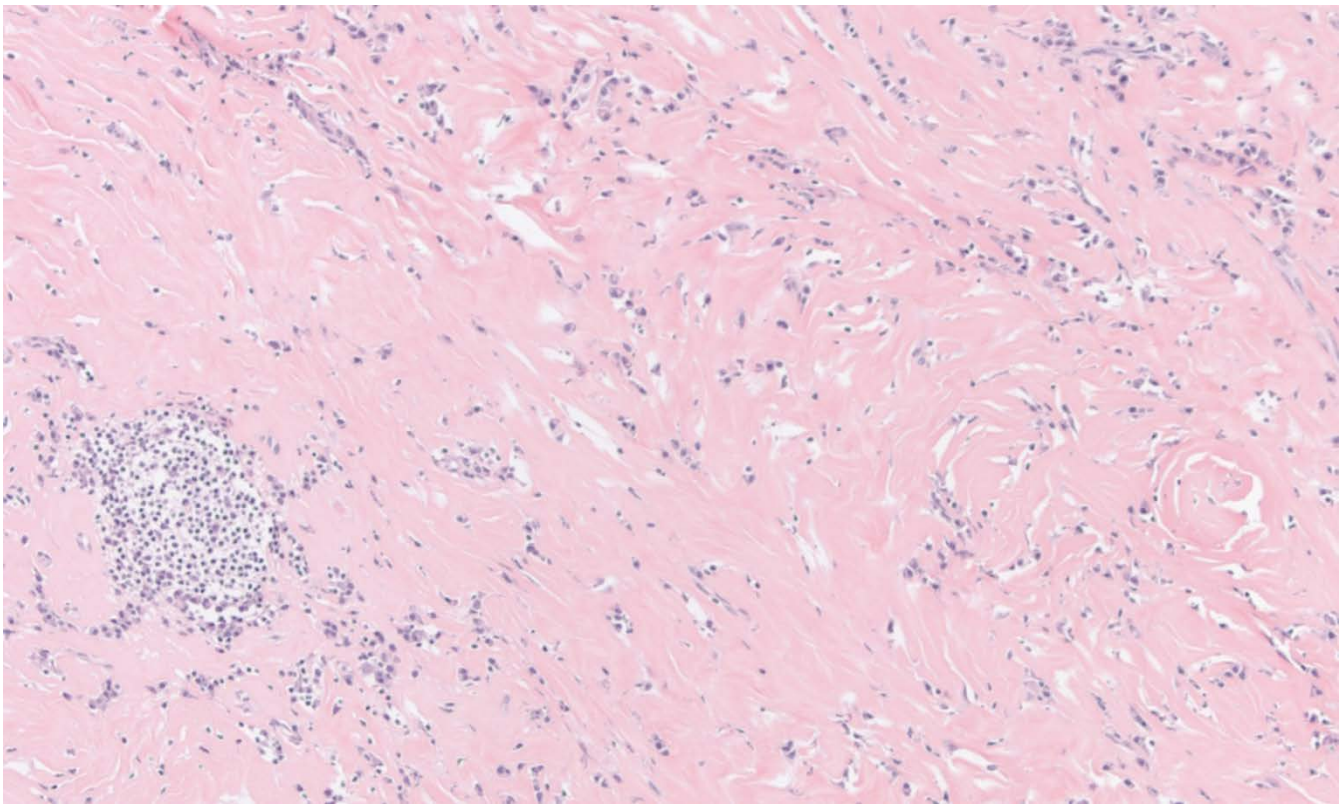

Figure 3: H&E stain. Lymphoid aggregates and lymphoplasmacytic infiltrate.

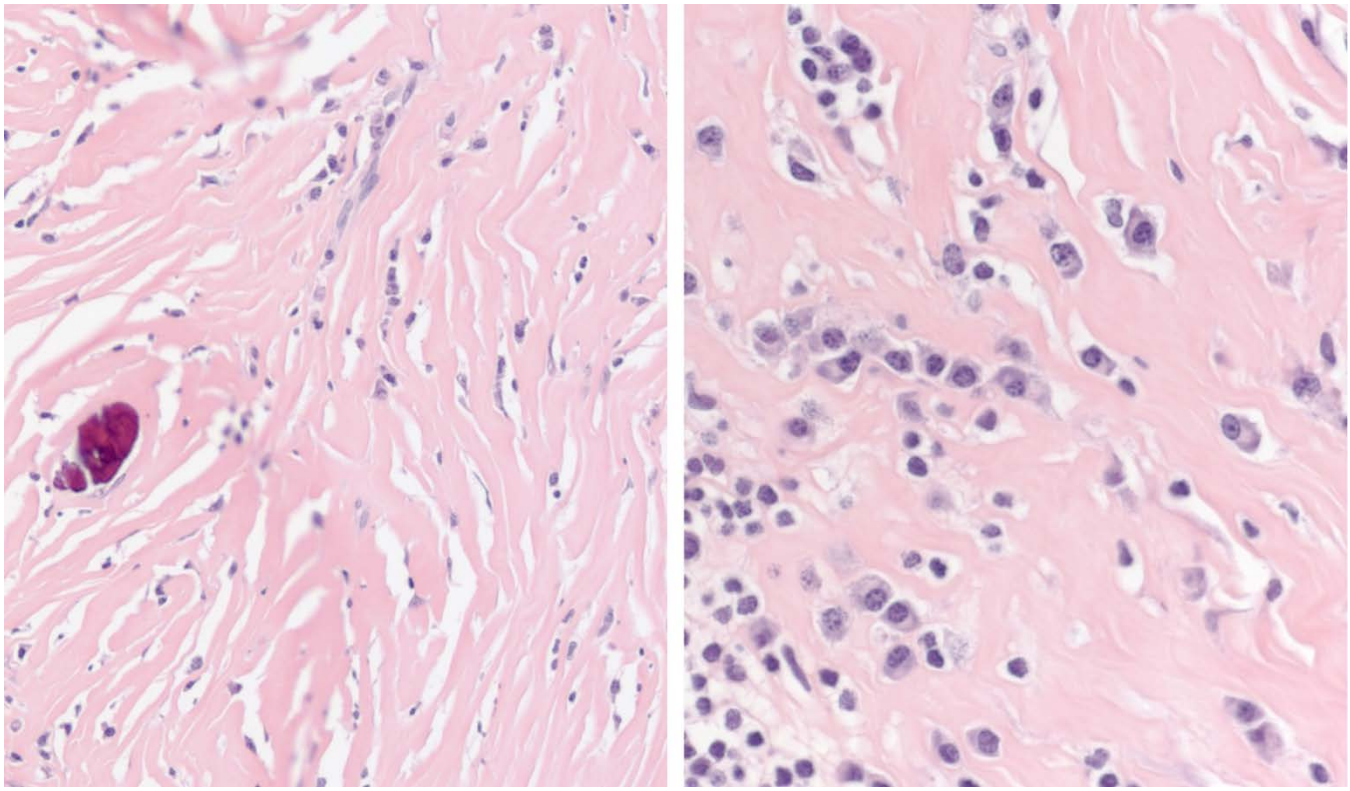

Figure 4: H&E stain. Higher power views.

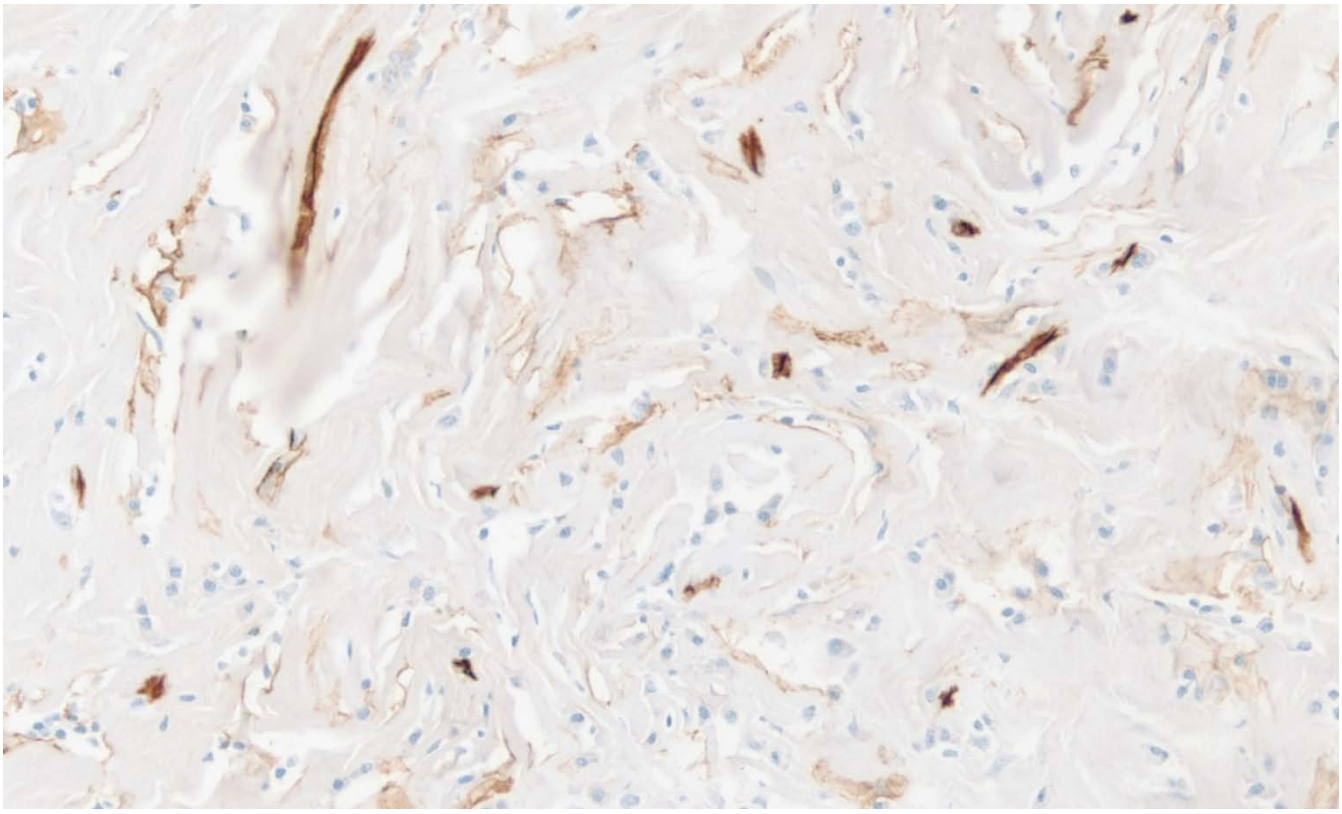

Figure 5: CD34. Highlights vessels and occasional fibroblasts.

What is the most likely diagnosis?

A. Gastrointestinal stromal tumor
B. Schwannoma
C. Calcifying fibrous tumor
D. Sclerosing/hyalinized leiomyoma
E. Inflammatory myofibroblastic tumor

Answer: C. Calcifying fibrous tumor

Histologic sections show a well circumscribed, hypocellular lesion that is composed of a bland spindle cell proliferation within a hyalinized stroma. Dystrophic calcifications are present within the lesion. Lymphoid aggregates and scattered individual plasma cells and lymphocytes are seen throughout the lesion. Given the morphologic and immunohistochemical findings, this lesion is most consistent with a calcifying fibrous tumor (CFT).

CFT is a rare benign tumor that can occur in a variety of sites, including soft tissues of the extremities and trunk, lung, pleura, peritoneum, liver, tubular GI tract, amongst others. With regards to the tubular GI tract, CFT is most commonly found in the stomach, followed by the small intestine, colon, and esophagus. CFT is a well circumscribed lesion characterized by the following:

1) Abundant, dense, paucicellular, hyalinized collagen
2) Lymphoplasmacytic infiltrate
3) Cytologically bland spindle cells
4) Varying amounts of psammomatous or dystrophic calcifications

The inflammatory infiltrate can be present as scattered single cells or as larger aggregates, sometimes forming germinal centers. The diagnosis of CFT is based on morphology, but ancillary studies may be performed to exclude other possibilities. By immunohistochemistry, the spindle cells should be positive for vimentin and factor XIIIa. Smooth muscle actin, desmin, and CD34 are usually negative or show weak and patchy staining. The variable expression of these latter markers is likely related to the appearance of the lesional cells as immature fibroblasts on electron microscopy.

A. Gastrointestinal stromal tumor (GIST) is an important diagnostic consideration. The majority of GISTs are positive for Kit by immunohistochemistry. While a minority of GISTs can be negative for Kit by immunohistochemistry, this subtype tends to occur more frequently in children and adolescents. In these cases, DOG-1 is usually positive. In cases of a KIT negative, DOG-1 negative tumor with no alternative diagnosis, mutation analysis can be considered (e.g., for detection of PDGFRA mutations, etc.). In general, GIST tends to be more cellular and the spindle cells are usually not as bland on microscopic exam compared to CFT. Calcifications can be seen in GIST, but are uncommon and not a characteristic finding. (Answer A: Incorrect)

B. Schwannoma can also present as a spindle cell proliferation in the GI tract and is most commonly seen in the stomach, followed by the colon. There is typically an intratumoral lymphocytic infiltrate and a peritumoral lymphoid cuff. The stromal matrix in schwannomas of the GI tract shows collagen deposition, but it is not as dense/hyalinized, and calcifications are rare. In addition, schwannomas usually have moderate cellularity and the nuclei of the spindle cells have a characteristic wavy appearance with tapered ends. By immunohistochemistry, S-100 should be positive. (Answer B: Incorrect)

D. Sclerosing/hyalinized leiomyoma can mimic CFT given the overlapping features of a hypocellular spindle cell proliferation, hyalinized stroma, and occasional calcifications. Morphologic clues to leiomyoma include areas showing the arrangement of intersecting fascicles and spindle cells

with blunt-ended nuclei. Leiomyoma should be positive for smooth muscle actin, desmin, and/or caldesmon by immunohistochemistry. (Answer D: Incorrect)

E. Inflammatory myofibroblastic tumor (IMT) is a neoplasm characterized histologically by a myofibroblastic spindle cell proliferation with admixed inflammatory cells (generally lymphocytes, plasma cells, eosinophils and neutrophils), similar to CFT. Three main pattern subtypes have been described including a myxoid/vascular pattern, compact spindle cell pattern, and fibromatosis-like pattern, which often occur in some combination within the same tumor. Unlike CFT's, however, IMT's usually appear to arise from the serosal side, have a myxoid stromal component, and do not typically have calcifications. Immunohistochemically, IMT's are positive for smooth muscle actin in up to 90% of cases (usually diffusely positive as compared to CFT), desmin in up to 60%, and can sometimes be positive for MDM2. On the molecular level, ALK rearrangement is found in roughly 50% of cases, which can be detected by FISH or immunohistochemical methods. (Answer E: Incorrect)

References:

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