

6 Colon Neoplasms

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Case 6.1: Ascending Colon Cancer

History

Patient is a 35-year-old female with ascending colon cancer for initial staging.

Findings

A soft tissue mass in the colonic hepatic flexure with SUV max 7.7 consistent with primary tumor (Fig. 6.1). There are focal areas of increased uptake which could represent mesenteric nodes and/or peritoneal/omental metastases. There are innumerable hypermetabolic panlobar metastases in the enlarged liver.

Case 6.2: Mid-ascending Colon Cancer

History

49-year-old male newly diagnosed with adenocarcinoma of the ascending colon, with possible metastasis to the lung and liver.

Findings

There are hypermetabolic metastatic lesions seen in the right hepatic lobe (involving segments 5, 6, and 7), with the most avid lesion seen in segment 6, demonstrating SUV max 9.4 (Fig. 6.2). There is an annular lesion in the mid-ascending colon, demonstrating SUV max 18.3, compatible with known site of primary neoplasm.

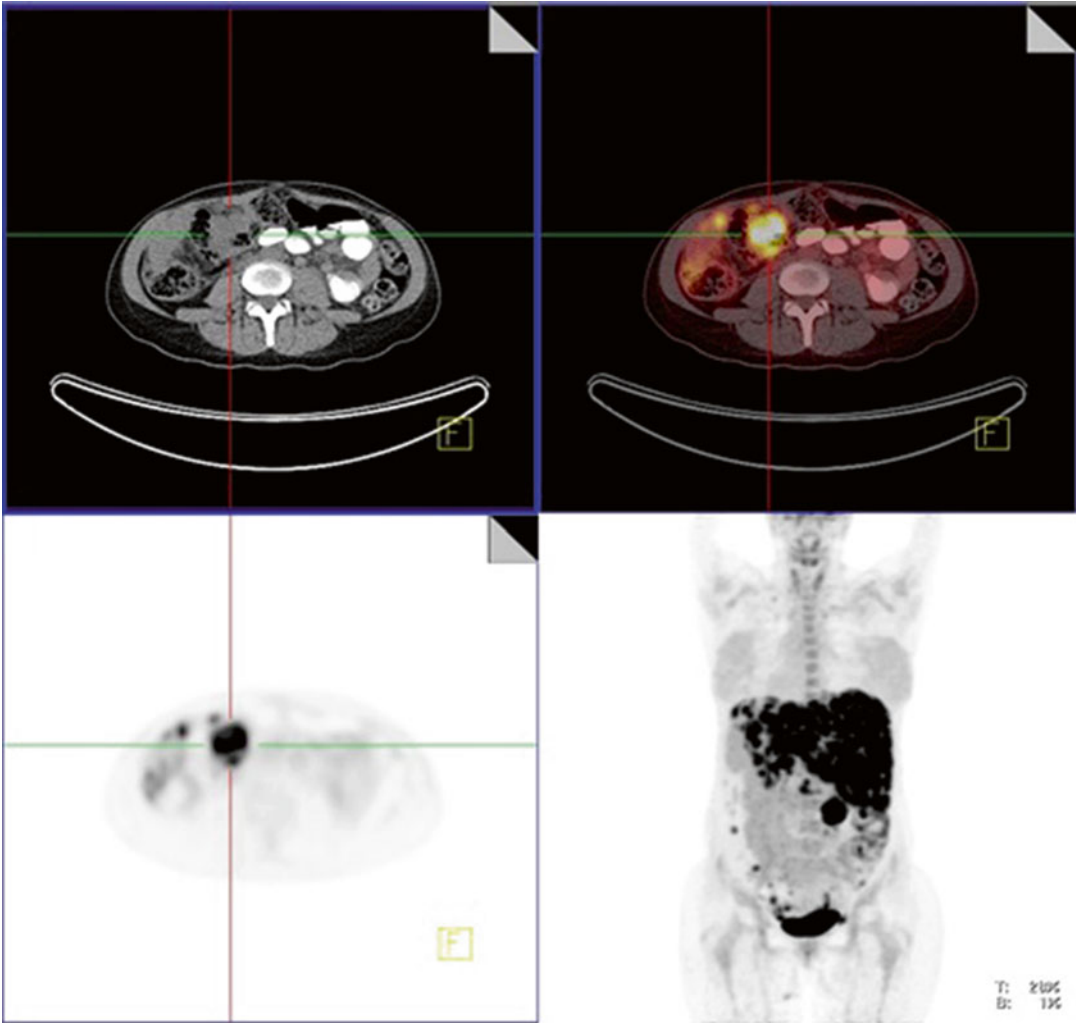


FIG. 6.1

Pearls and Pitfalls

Accurate preoperative staging is essential for the planning of optimal therapy considering the many therapeutic options available.

Discussion

CRC is the third most commonly diagnosed cancer in males and females. The survival rate depends on the stage at the time of diagnosis. Approximate 5-year survival rates are stage I 90 %, IIA 85 %, IIB 72 %, IIIA 83 %, IIIB 64 %, IIIC 44 %, and IV 8 %.

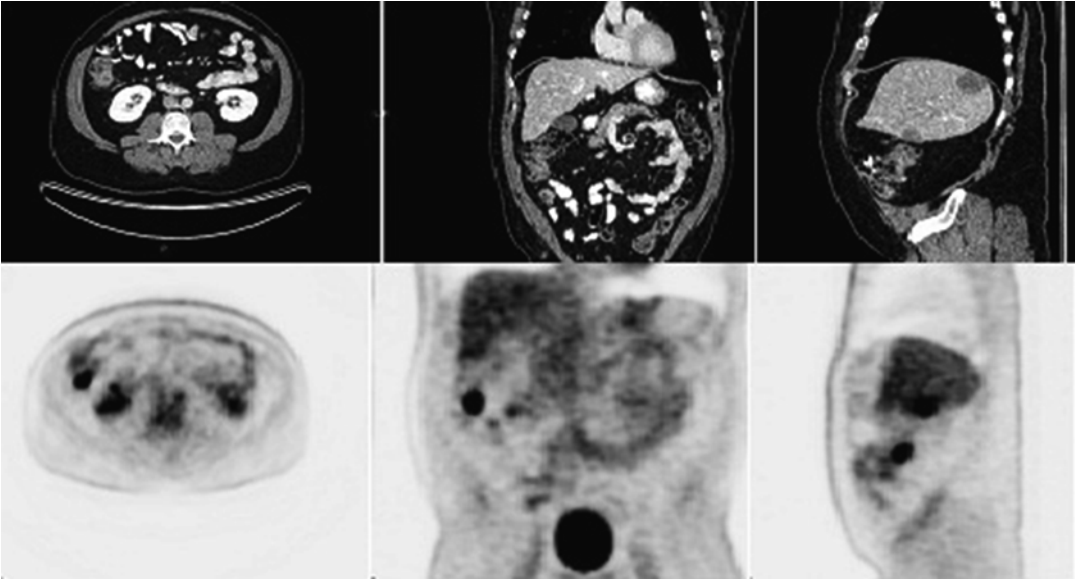


FIG. 6.2

Case 6.3: Peritoneal Metastases from Colon Cancer

History

Patient with metastatic colorectal cancer has history of cholecystectomy. Patient had last chemotherapy in 2005. This scan is being done for suspected recurrence in 2011.

Findings

There is a peritoneal nodule with adjacent peritoneal thickening measuring 1.2 cm in the right false pelvis with SUV max 16.3 (Fig. 6.3). There is an intensely active lesion anterior to the capsule of the liver at the gallbladder fossa measuring 1.7 × 0.7 cm, with SUV max 7.3.

Pearls and Pitfalls

1. Roughly one in five patients with colorectal cancer develops peritoneal minimal residual disease after surgical resection.
2. About one in seven patients develops peritoneal carcinomatosis.

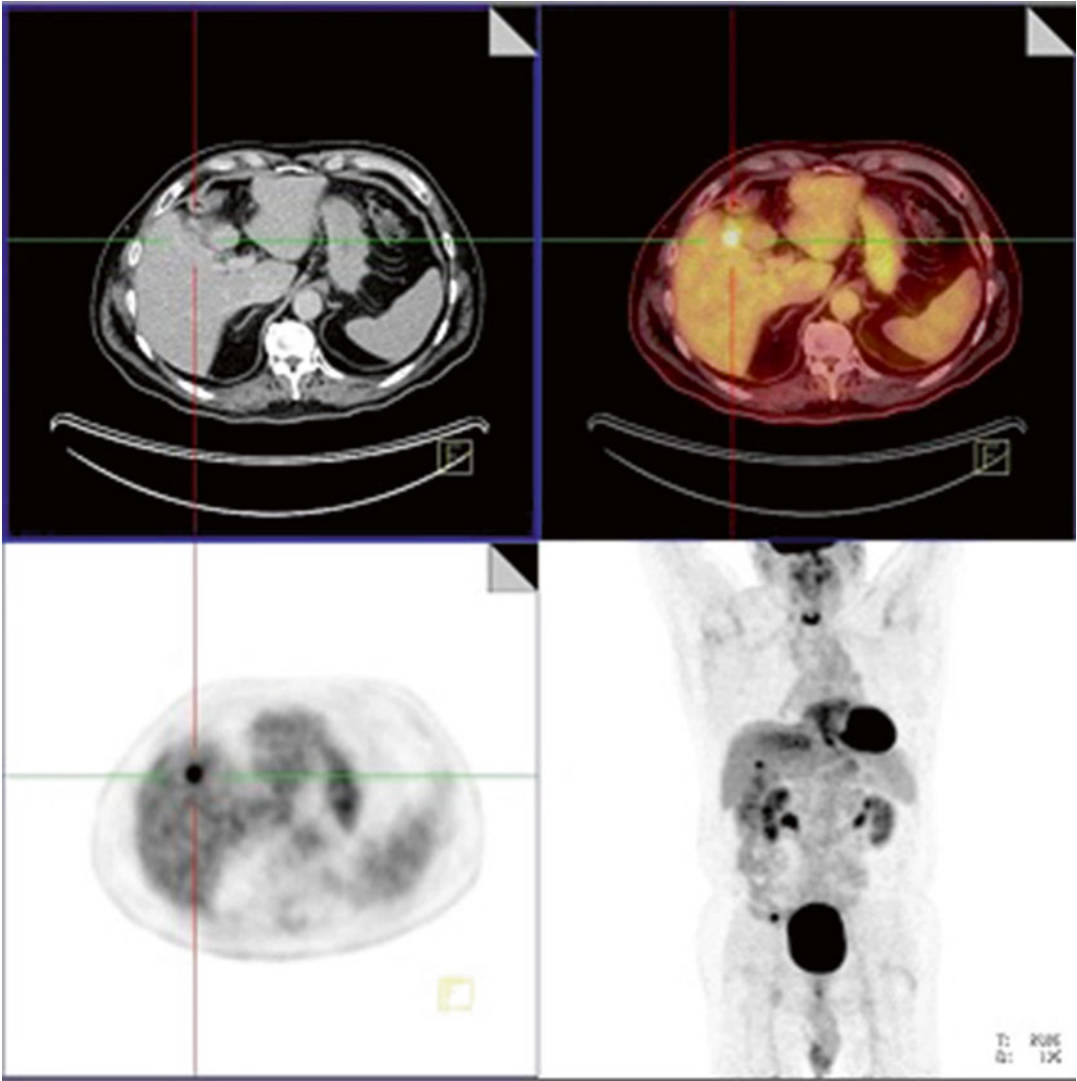


FIG. 6.3

Discussion

There is a vast body of research addressing hematogenous metastasis; little is known about the biology of peritoneal spread of colorectal cancer. The development of peritoneal carcinomatosis involves well-defined steps including cell shedding and transport, adhesion to the mesothelial layer, invasion of and proliferation into the submesothelial stroma, and potential access to the systemic circulation.

Case 6.4: Recurrent Adenocarcinoma of the Rectum Manifesting as Solitary Inguinal Adenopathy

History

Patient with moderately differentiated adenocarcinoma of the rectum diagnosed in 2005 status post resection with nodal and lung metastases. Patient underwent resection of the left upper lung lesion in April 2008. Patient is status post chemotherapy in April 2008 and radiation therapy in August 2005. No interval treatment. Scan being done for restaging.

Findings

A new 2×2.3 cm left inguinal nodal mass with SUV max 12.8 is consistent with recurrent metastatic disease (Fig. 6.4).

Pearls and Pitfalls

Low rectal carcinoma is more likely to present with pulmonary, osseous, and ilioinguinal metastases because of hemorrhoidal venous circulation.

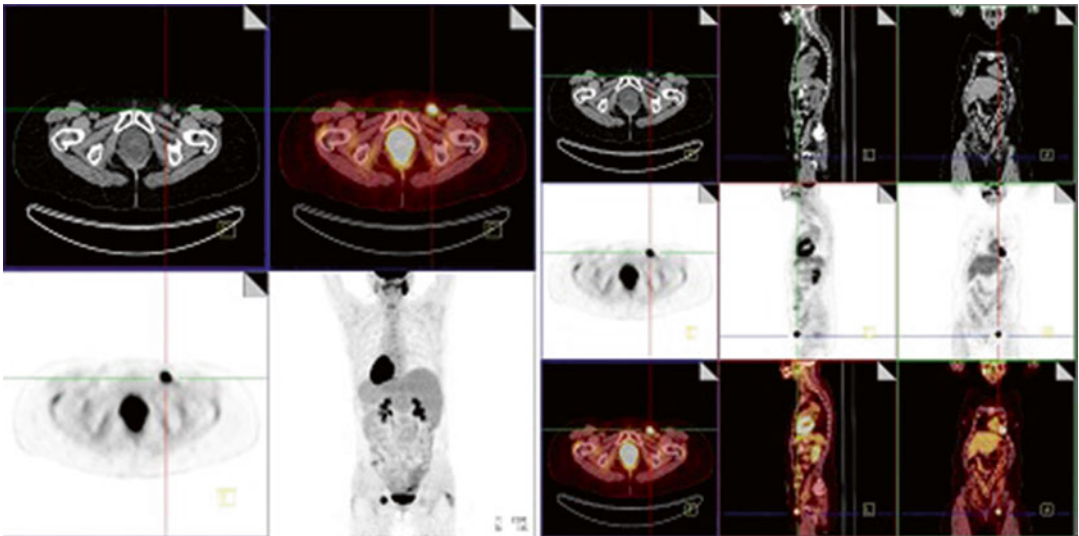


FIG. 6.4

Discussion

The usual pattern of regional lymph node metastasis in colorectal carcinoma follows the vascular distribution in the mesocolon. Tumors originating from the cecum spread to the ileocolic nodes, whereas tumors of the ascending and the proximal transverse colon drain in lymph nodes of the right colic and middle colic arteries reaching the superior mesenteric artery lymph nodes. Tumors originating from the descending colon spread to the left colic artery nodes, whereas those of the sigmoid colon reach the sigmoid artery nodes ending in the inferior mesenteric artery lymph nodes. Both the inferior and the superior mesenteric artery nodes belong to the preaortic nodes. Tumors in the rectum can spread by two different routes. The lymphatic drainage of tumors of the upper rectum reaches the inferior mesenteric artery lymph nodes via the superior rectal arteries. Metastases of tumors originating from the lower rectum reach the internal iliac nodes by following the pathway of the middle and the inferior rectal arteries and then the common iliac and the para-aortic nodes. Tumors of the anal region spread to the superficial inguinal lymph nodes ascending along the femoral vessels to the deep inguinal nodes and along the iliac vessels to the para-aortic nodes. After radical surgery for carcinoma of the rectum with interruption of the normal pathway of lymphatic drainage, recurrent disease may find an alternative retrograde route to the superficial and deep inguinal nodes.

Case 6.5: Psoas Muscle Metastasis from Colon Cancer

History

Patient is an 83-year-old female with appendiceal cancer (mucinous adenocarcinoma) with mass in the right iliopsoas muscle. Patient has radiation therapy in 2007 and is on chemotherapy, last dose in December 2010, with scan being done for restaging.

Findings

There is a peripherally enhancing hypermetabolic right distal psoas muscle mass with central photopenia (SUV max 6.2) (Fig. 6.5). On bone windows, there is no definite iliac bone involvement.

Pearls and Pitfalls

Skeletal muscles are an unusual site of blood-borne metastasis, but direct spread from adjacent tumor can occur.

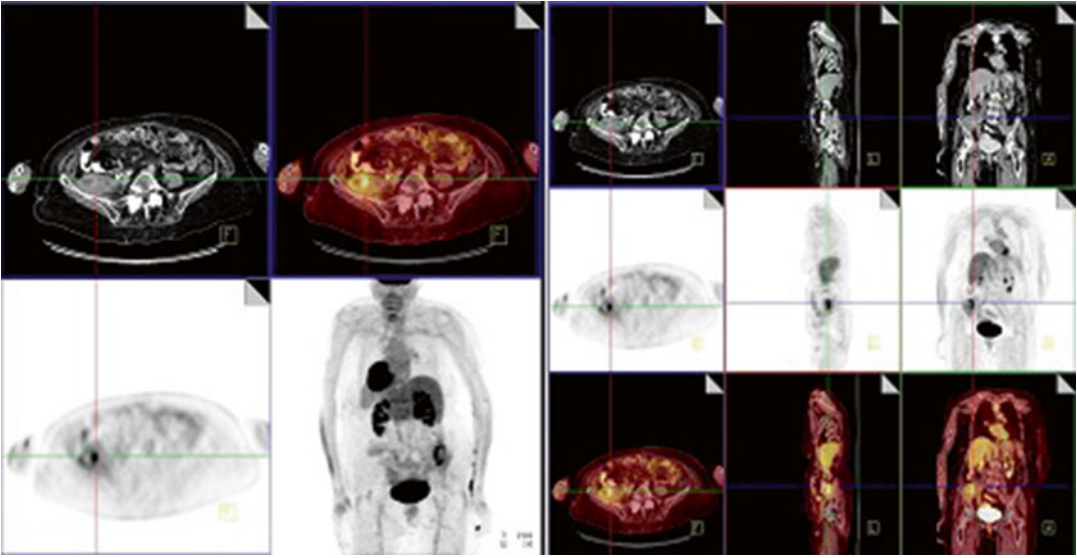


FIG. 6.5

Discussion

Skeletal muscle is an unusual site for blood-borne metastasis. The most common neoplasm metastasizing to the muscle is from the breast, lungs, or melanoma. The most common muscles involved are psoas and paravertebral muscles. The low incidence of muscular metastasis may be related to the anatomical characteristics and/or biochemical environment of the skeletal muscle. In this case, this is direct spread from appendiceal tumor to the psoas muscle.

Case 6.6: Colon Cancer with Hepatic Pulmonary and Nodal Involvement

History

The patient had moderately to poorly differentiated adenocarcinoma of the sigmoid status post sigmoidectomy and left oophorectomy. Patient has metastases to the left ovary, liver, and lung, with scan being done for evaluation with PET/CT.

Findings

There are panlobar hepatic metastases with central necrosis with SUV max up to 17.1 (Fig. 6.6). These are replacing almost half of the liver.

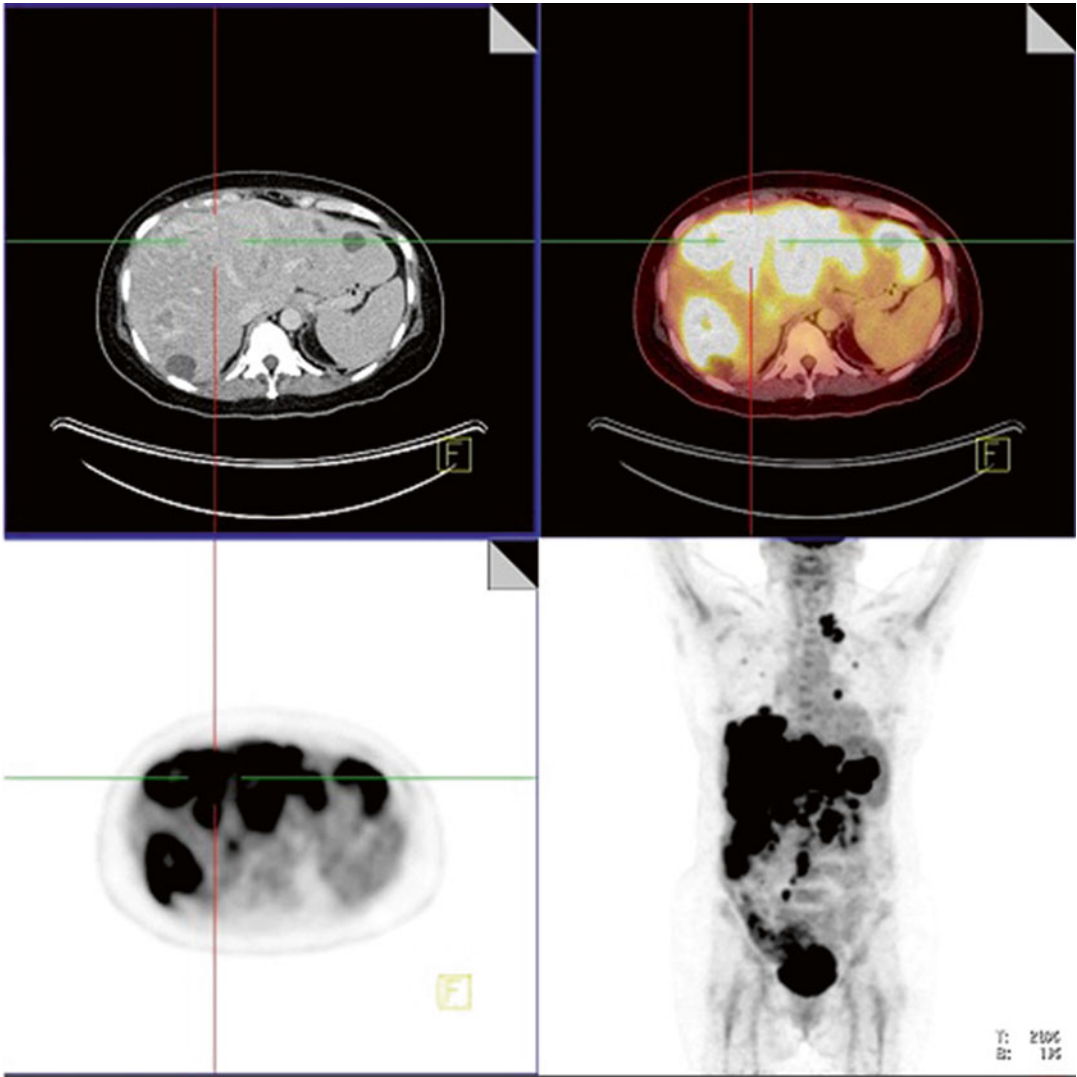


FIG. 6.6

There is continuous chain of hypermetabolic retroperitoneal adenopathy extending from the porta hepatis/gastrooduodenal level to beyond the bifurcation involving a right common iliac node with SUV max up to 8.8.

Pearls and Pitfalls

Tumors arising in the low rectum may metastasize initially to the lungs because the inferior rectal vein drains into the inferior vena cava rather than into the portal venous system.

Discussion

Because the venous drainage of the intestinal tract is via the portal system, the first site of hematogenous dissemination is usually liver, followed by the lungs, bone, and many other sites, including the brain. However, tumors arising in the distal rectum may metastasize initially to the lungs because the inferior rectal vein drains into the inferior vena cava rather than into the portal venous system. The true prevalence of metastatic disease is unknown, but approximately 20–25 % of patients with colorectal cancer have liver metastases at the time of diagnosis. Studies based on autopsy results showed that up to 70 % of colon cancer patients have liver metastases at autopsy.

Case 6.7: Cecal Cancer

History

Patient with moderately differentiated adenocarcinoma of the cecum for initial staging.

Findings

There is a hypermetabolic right internal mammary node with SUV max 3.3 (Fig. 6.7). There is extraordinarily intense hypermetabolic cecal mass with SUV max up to 75 likely the site of primary malignancy. There is a large complex hypermetabolic mass with both solid and cystic components in the left pelvis which could either be an ovarian metastasis (Krukenberg tumor) or a serosal implant of the sigmoid mesocolon SUV max 32.4.

There are hypermetabolic mesenteric nodules and pelvic nodes with SUV max up to 7.5. There were multiple hypermetabolic hepatic lesions too (not seen in images above).

Discussion

A Krukenberg tumor is a rare tumor of the ovary derived from metastatic tissue, most frequently from a tumor of gastrointestinal origin. Gastric cancer is the most frequent primary source, followed by the breast, colon, and appendix. For those carcinomas originating from the intestinal tract, about 80 % are found within either the sigmoid colon or rectum. Colorectal cancers can be found anywhere from the cecum to the rectum, in the following distribution: rectosigmoid, 55 %; cecum and ascending colon, 22 %; transverse colon, 11 %; and descending colon, 6 %.

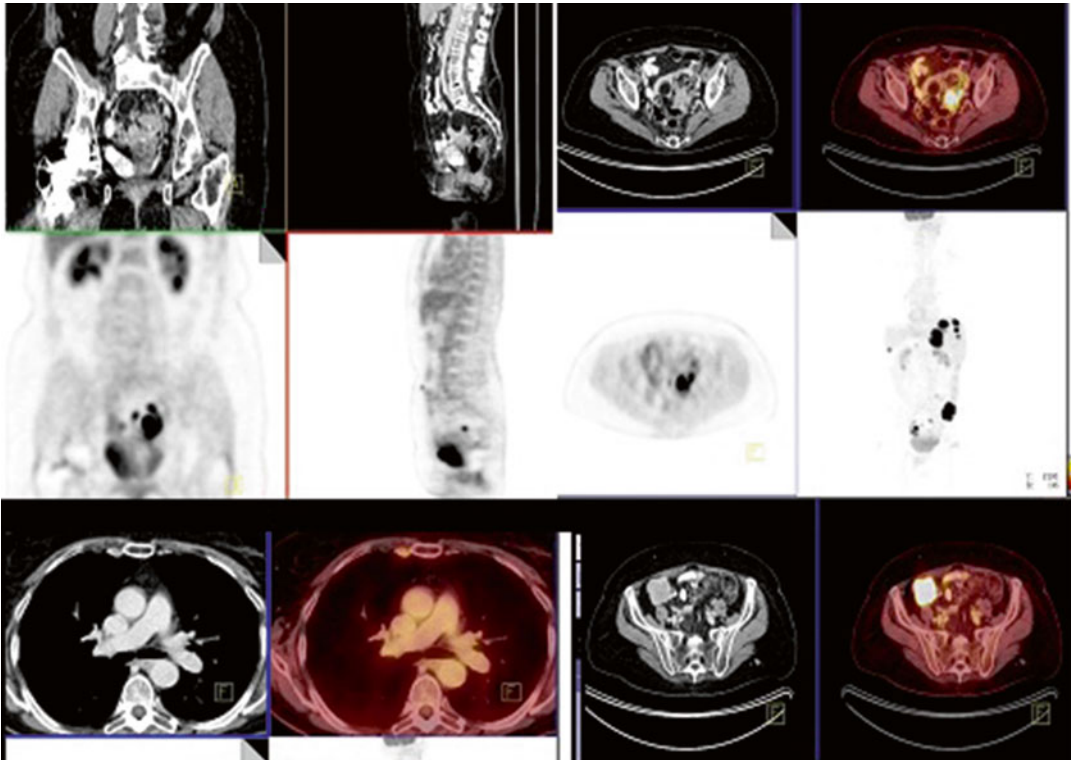


FIG. 6.7

Pearls and Pitfalls

A Krukenberg tumor is a rare tumor of the ovary derived from metastatic gastrointestinal tissue.

Case 6.8

Findings

Adenocarcinoma of the rectum, villous tumor of the cecum (situs inversus); ileal conduit to stoma s/p cystectomy (Fig. 6.8).

Pearls and Pitfalls

Normally, colon adenocarcinoma is relatively active with exceptions being villous and mucinous tumors.

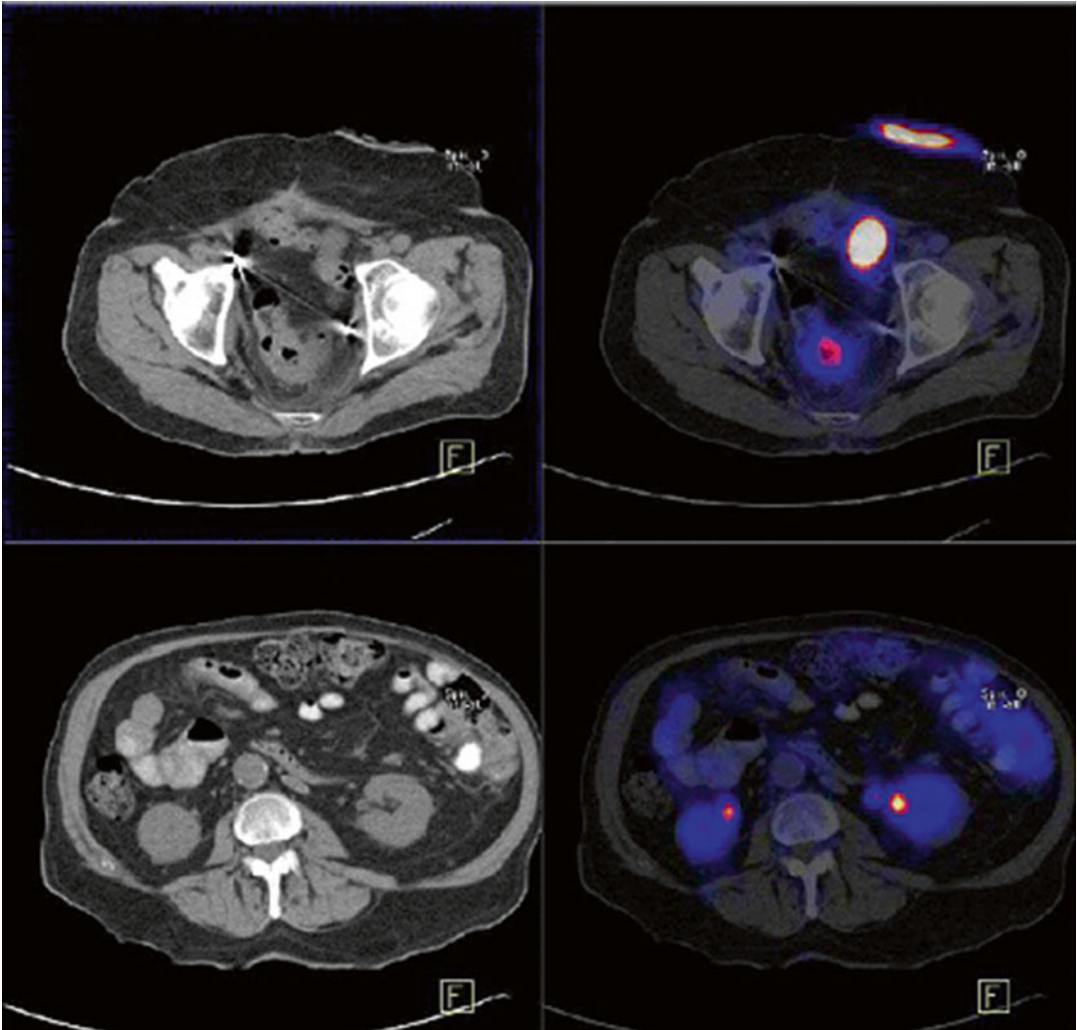


FIG. 6.8

Case 6.9: Anastomotic Recurrence

Findings

There is general wall thickening from radiation with one active focus suspect for anastomotic recurrence (Fig. 6.9).

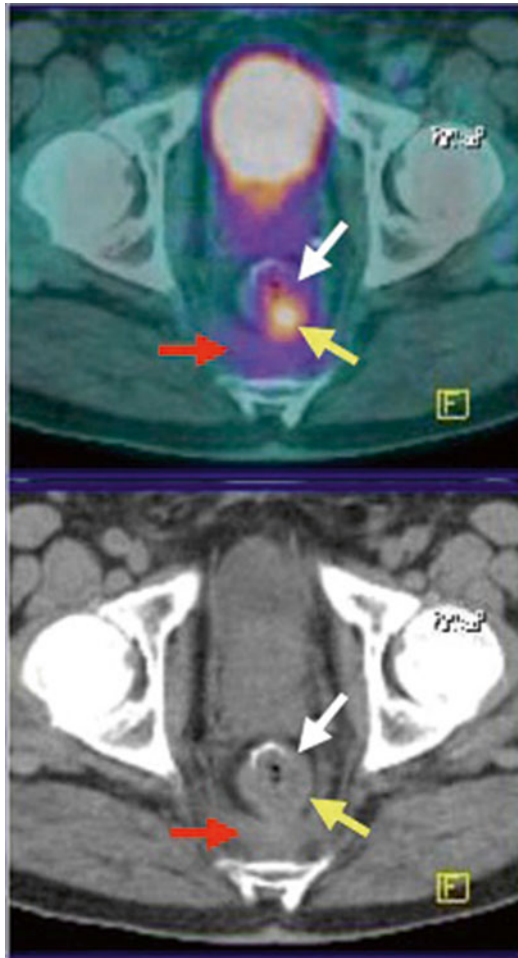


FIG. 6.9

Case 6.10 Findings

Perirectal space recurrence, 5 cm above the anal verge at 10 o' clock as viewed from below (Fig. 6.10).

Case 6.11 Findings

Presacral recurrence within postsurgical scar at 5 o' clock as viewed from below (Fig. 6.11).

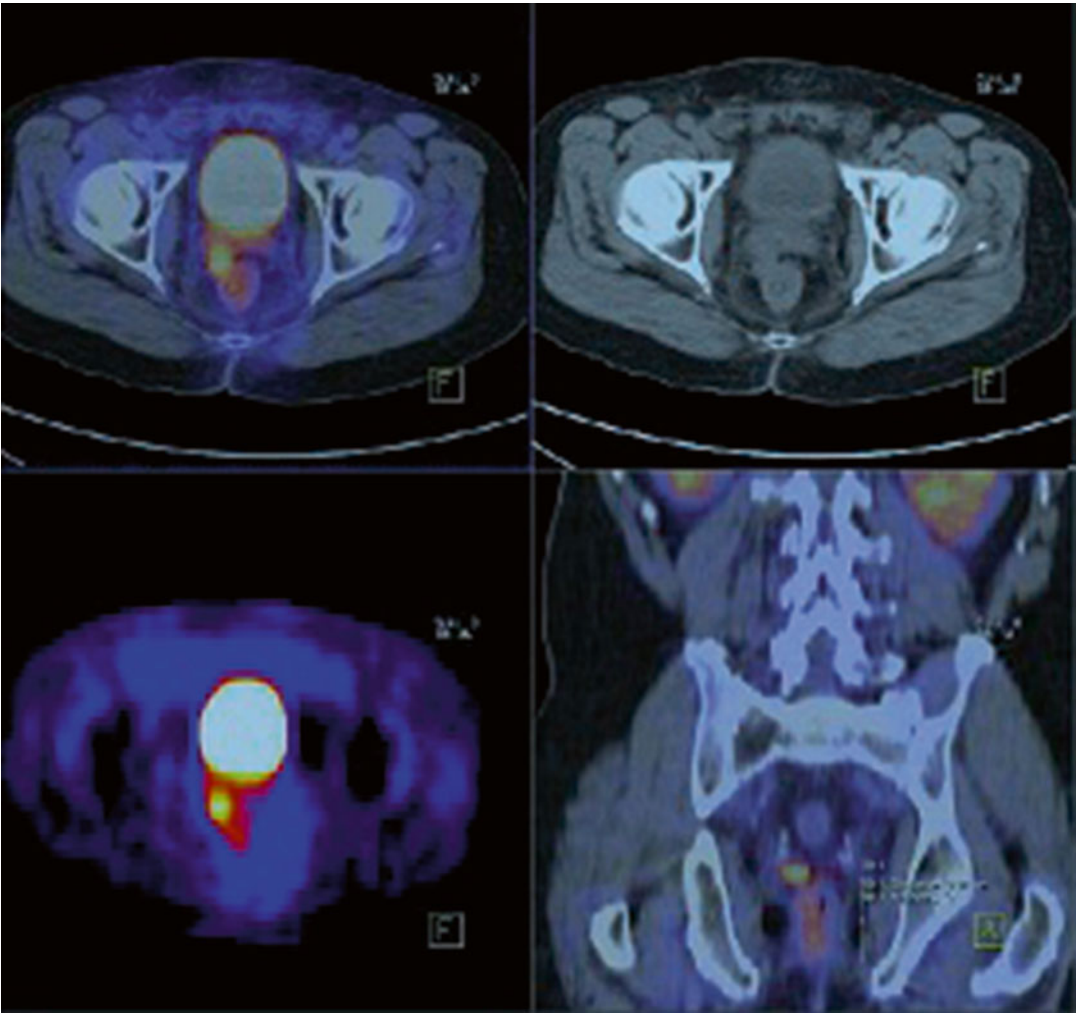


FIG. 6.10

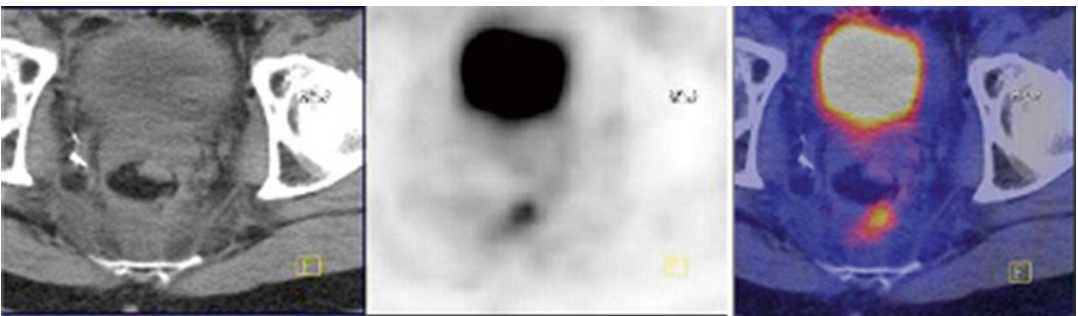


FIG. 6.11

Discussion

A considerable proportion of local failures is caused by anastomotic or suture line recurrence, which reportedly develops in 5–15 % of patients undergoing colorectal resection [1–3]. However, the true incidence of anastomotic recurrence, after restorative rectal cancer surgery, is unclear in the era of total mesorectal excision (TME). Although anastomotic recurrence could be rather easily controlled, compared to other types of local recurrence, curative-intent surgery is not always feasible, and reoperation itself is a significant burden to the patient, both physically and economically [4, 5]. Anastomotic recurrence may develop outside of the rectum and spread inside to the suture line. Conversely, tumor regrowth on the mucosal surface of the intestinal anastomosis may present along with a recurrence involving the suture line [8, 9]. Differentiation of these two possibilities is difficult in clinical practice.

Pearls and Pitfalls

1. Anastomotic recurrence may develop outside of the rectum and spread inside to the suture line.
2. Conversely, tumor regrowth on the mucosal surface of the intestinal anastomosis may present along with a recurrence involving the suture line [8, 9]. Differentiation of these two possibilities is difficult in clinical practice.

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