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# Case 48

## Focal Colonic Activity

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### History

A 79-year-old male with head and neck cancer presenting for restaging (Fig. 48.1).

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### Diagnosis

Benign focal colonic activity

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### Findings

- Prominent hypermetabolic focus in the right colon.
- MRI demonstrates no corresponding abnormality within the right colon.
- No evidence of mesenteric metastases.
- No pathology encountered on colonoscopy.

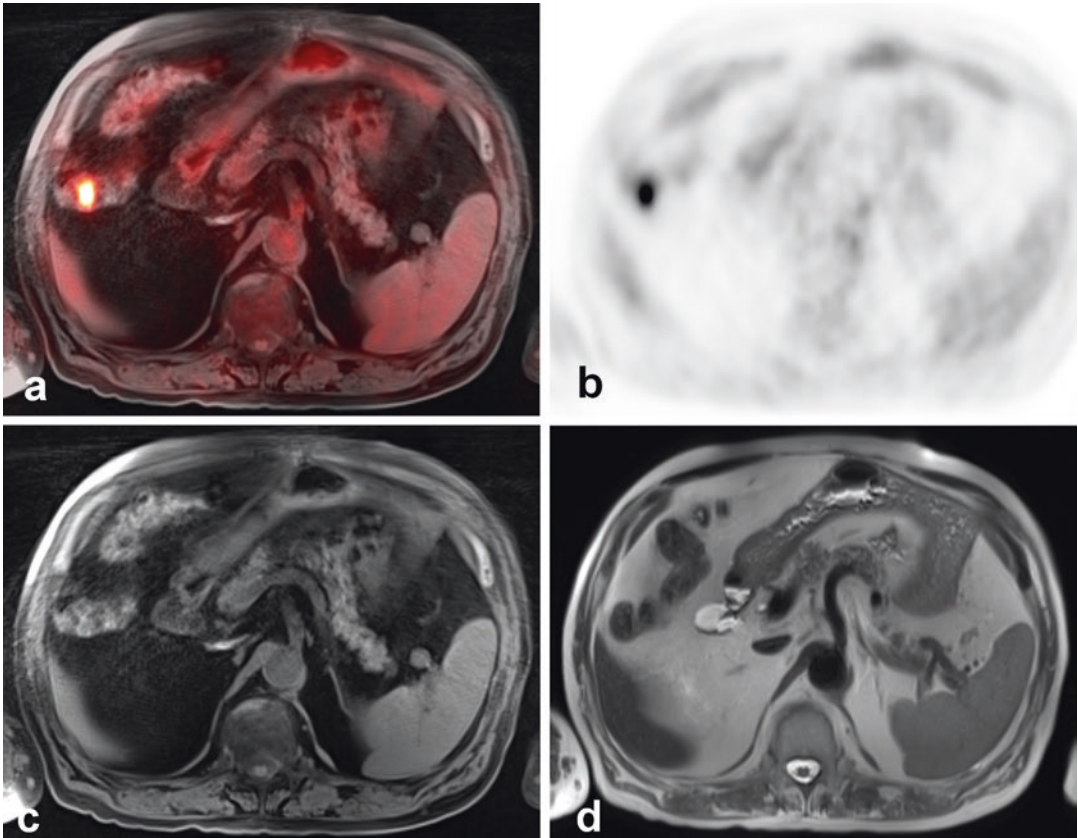
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### Discussion

Within the upper and lower gastrointestinal tracts, there can be highly variable radiotracer uptake especially in the colon. The uptake can be diffuse, focal, or segmental in distribution. There are many causes of focal uptake in bowel includ-

ing lymphatic tissue, infection, microbacteria uptake, swallowed secretions, inflammatory polyps, and benign or malignant tumors. An incidental focus of FDG uptake in the colon or rectum has an approximately 50% chance of representing an underlying adenoma or malignant lesion on colonoscopy. Overall, only 10% of focal uptake is due to colonic malignancy. Although malignancies usually have a higher SUV value compared with other lesions, there is no SUV cutoff value that can reliably distinguish between benign and malignant lesions.

In the post-surgical patient, colonic staples or sutures following bowel resection can elicit an inflammatory or granulomatous reaction with scar formation that can mimic the appearance of local recurrence. These changes can persist months after surgery. In addition, highly dense material such as metal, IV contrast, or barium can artificially increase signal on PET. Variable gas in the colon or rectum will produce an attenuation artifact with increased PET signal. Chemotherapy and radiation can also produce inflammatory change in the bowel as well as the mesentery with lymphadenopathy. All these changes may be difficult for PET/MRI to interpret when focal colonic uptake is encountered. Usually definite diagnosis requires colonoscopy.



**Fig. 48.1** PET/MR T1 radial VIBE with fat suppression axial fusion (a), PET axial (b), T1 radial VIBE with fat suppression axial (c), and T2 HASTE axial (d)

### Suggested Reading

Corrigan AJ, Schleyer PJ, Cook GJ. Pitfalls and artifacts

in the use of PET/CT in oncology imaging. *Semin Nucl Med.* 2015;45:481–99.

Safaie E, Matthews R, Bergamaschi R. PET scan findings can be false positive. *Tech Coloproctol.* 2015;19:329–30.