



Contrast Enema Examination: Technique and Essential Findings¹

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Barium enema studies continue to provide important and unique information to clinicians in an era of more advanced cross-sectional imaging. In this online presentation, foundational knowledge of appropriate technique, indications, and important anatomic landmarks are discussed. The reader can review the differential diagnoses for extraluminal and intraluminal masses, the typical appearance and complications of inflammatory bowel disease and diverticulitis, and common surgical procedures with associated postoperative complications. Deviation from normal anatomy, such as loss of haustral markings, prominence of the presacral space, and malrotation, can be a harbinger for a true pathologic condition, and correct identification is important.

The double-contrast barium enema study is most often used as a screening examination for colonic malignancy. As a radiologist, it is important to be accurate in the diagnosis and to recognize when to recommend additional follow-up. The appearance at double-contrast barium enema examination of colonic polyps, diverticulum, strictures, and annular lesions (Fig 1), as well as common mimics of pathologic findings, such as hemorrhoids and lymphoid tissue, is also described. Approximately 50% of polyps larger than 1 cm will progress to adenocarcinoma. As such, it is important to recognize the suspicious features of a colonic polyp and syndromes that predispose the patient to malignancy. Nonmalignant entities causing extraluminal narrowing with the “apple core” appearance are discussed, such

TEACHING POINTS

- Barium enema studies continue to provide important and unique information to clinicians in an era of more advanced cross-sectional imaging.
- The double-contrast barium enema study is most often ordered for cancer screening in patients who underwent failed colonoscopy; as such, it is important to distinguish between true pathologic conditions and normal anatomy.
- Postoperative and postinflammatory evaluations are performed to evaluate surgical anatomy and complications such as leak, fistula, and stricture.
- Radiologists must remain proficient in fluoroscopy to diagnose colonic pathologic conditions and to continue to inspire confidence in the referring physicians in our field.

as endometrial implants, adenopathy, and inflammatory strictures. Inflammatory bowel disease also has a predictable appearance at double-contrast barium enema examination, with inflammatory polyps, fissures, and fistulas.

Single-contrast enema studies provide unique real-time information regarding colonic leaks and fistulas for patients with inflammatory bowel disease or in the postoperative setting. Surgical indications and postoperative appearance after proctocolectomy with ileoanal reconstruction (Fig 2), low anterior resection, and the Hartmann procedure are described. The online presentation clarifies the clinical question and provides the appropriate views to answer the question satisfactorily. Detection of strictures, fistulas, leaks, and sinus tracts may provide an explanation for a patient's symptoms and may delay further intervention, such as closure of a colostomy. Risk factors for complications, such as smoking and diabetes, are extremely common and elevate the likelihood of seeing many of these cases in clinical practice. As such, it is important that the radiologist provides value to the surgeon through the study.

The barium enema study remains a relevant study in most clinical practices for practical real-time evaluation of surgical anastomosis and postoperative complications. It is also a reasonable alternative for patients who have undergone a failed colonoscopy. As such, it is important to be proficient at the study to provide the best information to clinicians and the best care for patients.

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Suggested Readings

Rollandi GA, Biscaldi E, DeCicco E. Double contrast barium enema: technique, indications, results and limitations of a conventional imaging methodology in the MDCT virtual endoscopy era. *Eur J Radiol* 2007;61(3):382–387.

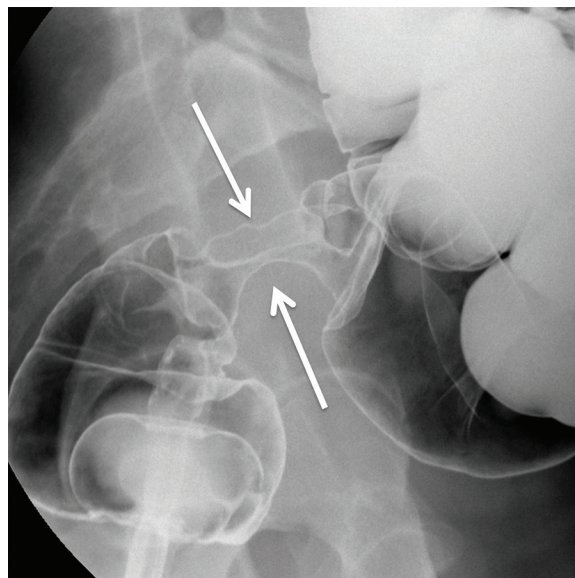


Figure 1. Lateral fluoroscopic image of the rectum in a 64-year-old man obtained during a double-contrast barium enema study demonstrates an “apple core” lesion (arrows) with sharply margined and irregular borders, a finding consistent with rectal adenocarcinoma.

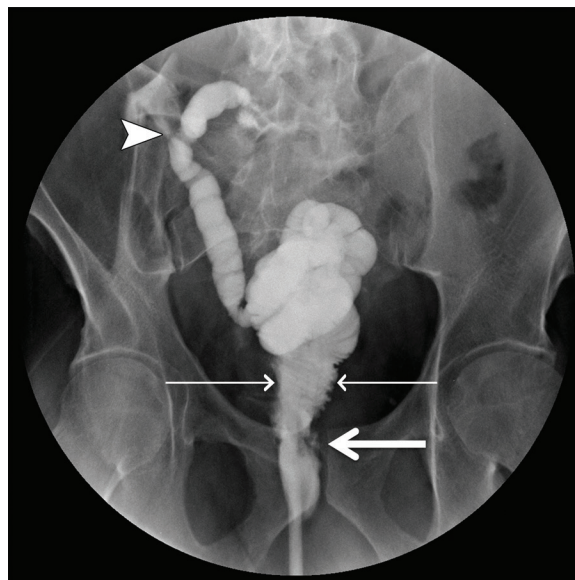


Figure 2. Anteroposterior fluoroscopic image in a 48-year-old woman obtained by using water-soluble contrast material shows the normal postoperative appearance after total proctocolectomy with J pouch reconstruction and ileoanal anastomosis. Multiple views are needed to exclude a leak. Arrowhead = diverting ileostomy, thin arrows = J pouch created from the ileum, thick arrow = ileoanal anastomosis.

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