

Radiodiagnostic examination of the colon

Anatomy of the large intestine

For more detailed information, see the [Large Intestine](#) page .

Native Abdominal Image

A native image of the abdomen is the basic examination method in acute conditions - to rule out **an ileus condition** , **pneumoperitoneum** (e.g. with perforation of a diverticulum), distension of the large intestine with pneumatosis, toxic megacolon. The image of edematous hausters (so-called "*thumbprinting*") can be found in inflammatory or ischemic changes. A serious symptom is **the finding of gas** in the intestinal wall, which is usually better visible on CT. The amount of formed stool is found in constipation.

Ultrasound

Ultrasound is a **first-line method** in acute conditions, but its informative value is often limited by the patient's ability to be examined (obese patients with pneumatosis are practically unexamined). Ultrasound can detect:

- **Inflammation of the wall of the large intestine** (colitis): expansion of the intestinal wall above 3-4 mm, seepage of the submucosa (hyperechoic layer), increased vascularization in the color recording.
- **Diverticulitis**: segmental edematous changes usually in the area of the sigmoid or aboral descendens. The inflamed diverticulum itself can also be displayed. with the reaction of the surrounding fat.
- **Epiploic appendicitis**: an area of hyperdense infiltrated fat on the antimesenteric side of the colon (usually sigmoid) at the point of maximum pain.
- **Appendicitis**: seepage of the wall of the appendix with its enlargement (diameter over 6 mm), seepage of the surrounding fat, pain under the probe.
- **Ileus**: it is only **sometimes** possible to visualize the distension of the colon with fluid - usually there is also a large amount of gas present and the colon cannot be examined well.
- **Tumors**: it is **rarely** possible to visualize ev. colon cancer , most colorectal cancers are located aborally (rectum, sigmoid) and beyond the reach of examination. However, ultrasound can clearly show e.g. liver metastases.

Irigography

Irigography is a **double-contrast examination of the colon** . The patient must be voided before the examination - preparation with Fortrans or MgSO 4 solution (as before colonoscopy).

After insertion of the rectal tube, **a barium suspension is applied and then air is insufflated** . It is necessary to position the patient during the examination - the BaSO 4 solution is liquid and "water flows downhill" - so that there is an even two-contrast filling of the entire colon. A sign of filling of the entire large intestine is the reflux of contrast material into the terminal ileum or filling of the appendix (if present).

The examination is suitable for **showing tumorous changes , polyps** , it can also be used to show post-inflammatory changes and extent of involvement in diverticulosis. The superior method is, of course, the classic (fibro-optic) colonoscopy, and the examination is therefore performed in patients who do not agree with the classic colonoscopy, or it cannot be performed completely due to unfavorable anatomical conditions (sharp bend, adhesion). In workplaces where CT colonography is available, CT colonography should be preferred because it has a higher yield.

Defecography

Defecography is a fluoroscopic examination of the defecation mechanism. The rectal tube is used to fill the rectal ampulla and part of the aboral sigmoid with contrast material, which is thickened.

During the examination, the following is observed:

- pelvic floor movements: pelvic floor drop,
- arching of the rectal wall during defecation: ventral and dorsal rectocele,
- prolapse of the rectal mucosa,
- anorectal angle: insufficient development with spasticity of the puborectalis muscle,
- Residuum after defecation: significant above 1/3 of the initial filling.

Defecography: second degree intussusception, pelvic floor drop
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CT colonography

This is a **CT scan of the abdomen and small pelvis with special preparation of the colon** . The patient must be emptied again (preparation with Fortrans, MgSO 4 solution or other laxative). In some workplaces, so-called "faecal tagging" is added, when the density of the residual contents of the colon is increased with an orally

administered contrast agent, which can be better distinguished from polyps. Before the actual examination, insufflation of the large intestine with air or CO₂ is performed by rectalizing the tube. The examination can be performed both natively (as a screening with the question of the presence of polyps) or with the **administration of an iodine contrast agent** even with other indications. A total of two scans are performed, first on the back, then on the stomach - there is usually some fluid left in the large intestine, which in a single position could cover ev. pathology. The evaluation is carried out by an experienced radiologist (plus at least 50 examinations performed under the supervision of another radiologist).

The basic method of evaluating CT colonography is the **virtual endoscopy** method (as if "flying through the colon"), the lesions found are further evaluated in 2D (multiplanar reconstruction, thin sections). **The disadvantage of CT colonography is the radiation load** (however, the second scan is usually performed in low-dose mode, in the case of a screening indication, both scans) and **the impossibility of performing a biopsy**. The advantage is the imaging of extraintestinal structures (mesentery, nodes, liver - staging), imaging of a slightly larger area of the intestinal wall than optical colonoscopy allows, and greater comfort during the examination (than optical colonoscopy).

CT colonography is not an acute examination. In case of suspicion of Crohn's disease and an incomplete colonoscopy, it is more appropriate to indicate CT enterography, which will show both the small intestine and, in many cases, the large intestine as well - however, it is not possible to evaluate whether polyps.

CT colonography should be performed no earlier than one and a half months after resolution of acute diverticulitis due to the increased risk of perforation during insufflation.

CT colonography: rectal tumor

CT abdomen, pelvis (routine)

Routine abdominal and pelvic CT is well suited for acute conditions. Before the examination, **a solution of iodine contrast material** (10–20 ml in 500–1000 ml) is administered per os. The following can be displayed during the examination:

- Even a minimal amount of free air (pneumoperitoneum).
- Distension of the large (but also small) intestine with fluid and gas in ileus conditions.
- Zone of transition between distended and non-distended bowel: site of obstruction.
- Permeation of the wall of the large intestine: colitis, ischemia.
- Larger tumors of the large intestine (but not smaller polyps, even flat lesions are difficult).
- Gas in the intestinal wall, absence of oxygenation of the intestinal wall, occlusion of arteries and veins (according to the phase of the examination) in intestinal ischemia.
- Diverticula: if they are more numerous or in the inflammatory infiltrate in **diverticulitis**.
- Appendicitis in otherwise healthy individuals.

Colon MRI

MRI is indicated for the staging of tumors of the rectum and rectosigmoid. There is also an examination similar to CT colonography - MR colonography, but it is not routinely performed.

Links

External links

- **Images on the topic at atlas.mudr.org**
 - X-ray native image of the abdomen: ileus on the large intestine
 - Abdominal CT: ileus on the colon
 - X-ray native image of the abdomen, CT abdomen: carcinoma of the lienal flexure, ileus on the large intestine
 - Abdominal CT: colonic perforation, peritonitis
 - Irrigography: sigmoid diverticulosis
 - Irrigography: Colitis in Crohn's disease
 - Irrigography: rectovaginal fistula
 - Irrigography: ulcerative colitis
 - Ultrasound: mild colitis
- Teaching portal 1. LF UK - Radiodiagnostics
 - Lecture Diagnostic imaging methods in the examination of the digestive tract