Case 11612

Post-polypectomy electrocoagulation syndrome
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Section: Abdominal imaging
Area of Interest: Colon
Procedure: Laboratory tests
Procedure: Complications
Technique: Image manipulation / Reconstruction
Technique: CT
Technique: Ultrasound
Special Focus: Biological effects Dissection Case Type:
Clinical Cases
Authors: Tonolini Massimo
Patient: 54 years, female

Clinical History:

Middle-aged woman with unremarkable past medical history presented to the emergency department complaining of abdominal pain 48 hours after operative colonoscopy including random biopsies and polypectomy. Physical examination revealed distended, tender abdomen with poor peristalsis and questionable Blumberg’s sign. Laboratory assays revealed leukocytosis and markedly increased C-reactive protein.

Imaging Findings:

At admission, abdominal radiographs (Fig.1) and unenhanced CT (Fig.2) excluded subphrenic or extraluminal air collections. CT revealed segmental mural thickening of the distal transverse colon, with associated inflammatory-type stranding of adjacent perivisceral fat and minimal fluid in the peritoneal cul-de-sac. Due to absent signs of perforation, laparoscopic exploration was excluded. Conservative treatment including intravenous fluids and antibiotics was started. C-Reactive protein and neutrophil count progressively decreased during hospitalization, whereas blood loss stabilized after 5 days (Fig.3).

Follow-up radiographs (Fig.4) and serial CT studies confirmed absence of extraluminal air. Increased gaseous distension of the colon was noted proximally to the lesion, which appeared stable after 72 hours (Fig.5) and moderately reduced after 8 days (Fig.6).

The progressive clinical, laboratory (Fig.3) and imaging improvement is consistent with post-polypectomy electrocoagulation syndrome. A month later, ultrasound (Fig.7) showed distensible distal transverse colon with minimal residual eccentric mural thickening.

Discussion:

Optical colonoscopy currently represents the mainstay diagnostic and therapeutic tool for most diseases of the large bowel, including screening for colorectal cancer and removal of polyps. Although very limited compared to the widespread use of endoscopic procedures, colonoscopy is associated with a potential risk for morbidity and occasional mortality. Haemorrhage and perforation are the two commonest and most feared colonoscopy-related complications, particularly following therapeutic procedures such as polypectomy, mucosal resection, submucosal dissection and argon plasma coagulation [1, 2].

Post-polypectomy electrocoagulation syndrome (PPES) is a very rare complication after endoscopic polypectomy
with electrocautery, characterized by peritoneal inflammation (serositis) in absence of frank perforation. PPES occurs when the electrical current applied extends through the muscularis propria and serosa layers, thus resulting in a localized transmural “burn” injury at the site of polypectomy [1, 3, 4].

Patients with PPES typically present within 12 hours after the procedure, with signs and symptoms closely mimicking those of colonic perforation, including abdominal pain, distension and sometimes fever after colonoscopy. In such clinical situations, radiographs of thorax and abdomen (preferably in upright position) are usually obtained immediately in order to exclude free intraperitoneal air indicating perforation, and CT represents the imaging modality of choice to confirm perforation because of its excellent sensitivity for detection of even minimal extraluminal gas and fluid [1, 3, 4].

With PPES, plain films are usually unremarkable, although as in this case some retrograde bowel distension may be noted. The hallmark for the diagnosis of PPES is a segmental circumferential thickening of the colonic wall at the site of recent polypectomy, associated with pericolonic fluid and inflammatory-type fat stranding but without signs of extraluminal air and bloody collections [1, 3].

PPES is a self-limiting entity which is treated conservatively with supportive care including analgesia, intravenous fluids and bowel rest, and typically resolves within a few days. In conclusion, due to the widespread use of therapeutic colonoscopy in most busy hospitals radiologists should be aware of this uncommon entity. When clinical presentation suggests iatrogenic perforation, prompt imaging triage by means of CT is advised to allow differentiation of PPES from perforation and to avoid unnecessary surgical exploration [1, 3, 4].

**Differential Diagnosis List:** Post-polypectomy electrocoagulation syndrome, Iatrogenic colonic perforation, Colonoscopic haemorrhage, Haemoperitoneum, Acute pancreatitis, Splenic rupture

**Final Diagnosis:** Post-polypectomy electrocoagulation syndrome

**References:**


Description: Upright (a,b) and supine (c) plain abdominal radiographs did not detect subphrenic and abnormal extraluminal air collections indicating perforation. Moderate gaseous bowel content was noted with some ileocaecal air-fluid levels (arrowhead). Origin: Tonolini M, Radiology Department, "Luigi Sacco" University Hospital – Milan (Italy)
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**Description:** Upright (a,b) and supine (c) plain abdominal radiographs did not detect subphrenic and abnormal extraluminal air collections indicating perforation. Moderate gaseous bowel content was noted with some ileocaecal air-fluid levels (arrowhead). **Origin:** Tonolini M, Radiology Department, "Luigi Sacco" University Hospital – Milan (Italy)
Description: Abdomino-pelvic CT excluded extraluminal gas collections indicating bowel perforation. The distal transverse colon showed marked circumferential mural thickening (arrows) without stratification, associated with inflammatory-type stranding of perivisceral fat (*). **Origin:** Tonolini M, Radiology Department, “Luigi Sacco” University Hospital – Milan (Italy)
**Description:** Abdomino-pelvic CT excluded extraluminal gas collections indicating bowel perforation. The distal transverse colon showed marked circumferential mural thickening (arrows) without stratification, associated with inflammatory-type stranding of perivisceral fat (*). **Origin:** Tonolini M, Radiology Department, "Luigi Sacco" University Hospital – Milan (Italy)
Description: The distal transverse colon showed a 9 cm long segment with marked circumferential mural thickening (arrows) without stratification, associated with inflammatory-type stranding of perivisceral fat (*). Origin: Tonolini M, Radiology Department, “Luigi Sacco” University Hospital – Milan (Italy)
Description: Minimal non-haemorrhagic fluid (+) was present in the peritoneal cul-de-sac. Origin:
Tonolini M, Radiology Department, “Luigi Sacco” University Hospital – Milan (Italy)
**Description:** 48 hours after admission, repeat upright (a) and supine (b) radiographs did not detect appearance of extraluminal air. Increased gaseous distension was noted in the transverse and right-sided colon with a prominent caecal air-fluid level (arrowhead). **Origin:** Tonolini Massimo, Department of Radiology, “Luigi Sacco” University Hospital – Milan (Italy)
Description: 48 hours after admission, repeat upright (a) and supine (b) radiographs did not detect appearance of extraluminal air. Increased gaseous distension was noted in the transverse and right-sided colon with a prominent caecal air-fluid level (arrowhead). Origin: Tonolini Massimo, Department of Radiology, “Luigi Sacco,” University Hospital – Milan (Italy)
Description: 72 hours after admission repeat CT showed persistence of marked circumferential thickening (arrows) involving a segment of the distal transverse colon, still associated with inflammatory-type stranding of perivisceral fat (*). **Origin**: Tonolini Massimo, Department of Radiology, "Luigi Sacco" University Hospital – Milan (Italy)
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**Description:** 8 days after admission, contrast-enhanced CT showed moderately decreased colonic thickening (thin arrows) and perivisceral fat stranding, and disappearance of peritoneal fluid. **Origin:** Tonolli Massimo, Department of Radiology, “Luigi Sacco” University Hospital – Milan (Italy)
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**Figure 6**

**a**

![Graph showing trends of laboratory parameters including C-Reactive Protein (a), neutrophil count (b) and haemoglobin (c) over 11 days of hospitalization.](image)

**Description:** Graphs show trends of laboratory parameters including C-Reactive Protein (a), neutrophil count (b) and haemoglobin (c) over 11 days of hospitalization. **Origin:** Tonolini M, Radiology Department, “Luigi Sacco” University Hospital – Milan (Italy)

**b**

![Graph showing trends of laboratory parameters including C-Reactive Protein (a), neutrophil count (b) and haemoglobin (c) over 11 days of hospitalization.](image)

**Description:** Graphs show trends of laboratory parameters including C-Reactive Protein (a), neutrophil count (b) and haemoglobin (c) over 11 days of hospitalization. **Origin:** Tonolini M, Radiology Department, “Luigi Sacco” University Hospital – Milan (Italy)

**c**

![Graph showing trends of laboratory parameters including C-Reactive Protein (a), neutrophil count (b) and haemoglobin (c) over 11 days of hospitalization.](image)

**Description:** Graphs show trends of laboratory parameters including C-Reactive Protein (a), neutrophil count (b) and haemoglobin (c) over 11 days of hospitalization. **Origin:** Tonolini M, Radiology Department, “Luigi Sacco” University Hospital – Milan (Italy)
Description: A month later, focused longitudinal (a) and transverse (b) ultrasound images show good distensibility of the distal transverse colon (*) with minimal residual eccentric mural thickening (arrows in b). Origin: Tonolini M, Radiology Department, “Luigi Sacco” University Hospital – Milan (Italy)