



## Case report

# Management of inflamed sigmoid diverticulum inside an incarcerated right inguinal hernia: Case report of a rare discovery

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## ABSTRACT

**Introduction:** Incarcerated inguinal hernia is one of the most common emergencies in surgery. The diagnosis is usually made by physical examination, but the contents of the hernia sac may vary.

**Case presentation:** We present a rare case of inflamed diverticulum of the sigmoid colon found within an incarcerated right inguinal hernia sac in a 77-year-old man. The inflamed diverticulum was resected, and the hernia was repaired with synthetic mesh. No postoperative complication occurred. No previous study has reported a similar approach.

**Discussion:** It is most unusual for an uncomplicated inflamed sigmoid colon diverticulum to be found in the hernia sac when performing acute repair of an incarcerated inguinal hernia. Resection of the diverticulum and subsequent repair of the hernia with synthetic mesh is an attractive alternative.

**Conclusion:** Acute diverticulitis should always be considered in patients with an acute abdomen, this includes those with a painful hernia. Emergency surgery should not be delayed, and local resection of the inflamed diverticulum may be an option if no perforation is apparent, and the surrounding colon is unaffected.

## 1. Introduction and importance

Inguinal hernia is the usual diagnosis in patients presenting with a painful groin mass. However, the occurrence of an acutely inflamed diverticulum in a painful inguinal sac is rare [1]. This condition mimics Littre's hernia, where an inflamed Meckel's diverticulum is found in the hernia sac, or an Amyand's hernia containing an inflamed appendix [2,3]. Diverticulosis is common in developed countries [4], and diverticulitis can lead to bowel perforation, usually treated with a Hartmann's procedure.

We present a case of an acutely inflamed diverticulum found in the sac of an incarcerated inguinal hernia, that was treated by local resection of the diverticulum followed by open mesh hernia repair. To the best of our knowledge, this is the first reported case to use this surgical approach. The case report was structured according to the SCARE criteria [5].

## 2. Case presentation

A 77-year-old Swedish man with a history of stroke, hypertension,

and previous prostate surgery but no other surgical diagnoses presented at the emergency department with moderate abdominal pain that began 6 days earlier without a clear trigger. The patient was treated only with *N*-acetylcysteine and felodipine at that moment. The pain was constant, became worse with movement, and radiated to both iliac fossae. Nausea was present but the patient had passage of stool and flatus. All vital signs were stable. Physical examination revealed a moderately overweight male with a small inguinal hernia that was tender and irreducible. No overlying erythema was seen. The patient reported mild lower abdominal pain on palpation of the right iliac fossa but had no rebound tenderness or guarding. Laboratory tests showed mild leukocytosis. Abdominal CT revealed acute sigmoid diverticulitis with the inflamed diverticulum located in the right inguinal sac (Fig. 1). The patient was taken to surgery 6 h later, during the second shift, after intern discussion between two acute care surgeons that performed the surgery.

The procedure was carried out via a right inguinal incision. The sac of a direct hernia was opened revealing an ischemic and thickened diverticulum where the remaining colon was not affected or been necrotic. No perforation of the colonic wall was seen. After the reduction of the affected diverticulum from the hernia sac to its natural

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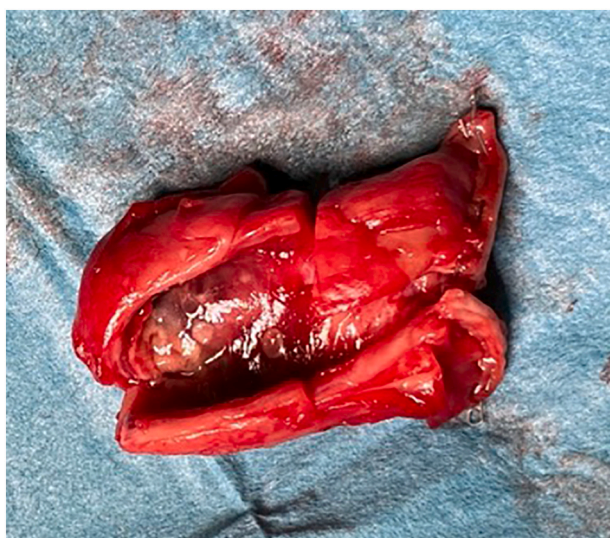
**Fig. 1.** Acute sigmoid diverticulitis caused by incarceration of a right inguinal hernia.

compartment, no alteration of the diverticulum was seen or signs of reperfusion. It was therefore assessed as nonviable, and resection was decided. The diverticulum was resected with a linear stapler and the staple line was reinforced with running, monofilament absorbable suture (PDS 4/0) (Figs. 2, 3). The operation was completed by reconstructing the abdominal wall with a Lichtenstein tension-free mesh hernia repair without any difficulties. Mesh that was used was Covidien Parietene™ Macroporous, Monofilament, Polypropylene- 10 × 15 cm. Single-dose perioperative antibiotic prophylaxis was used.

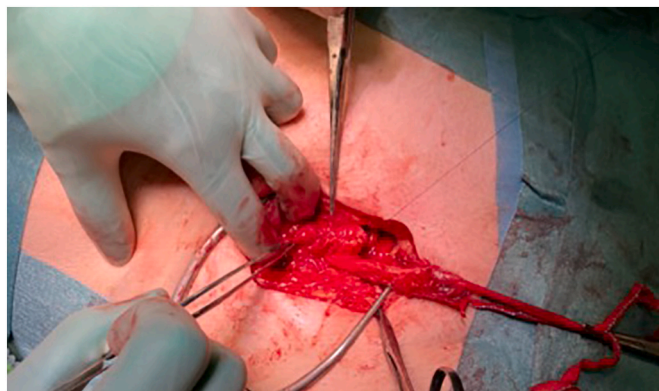
The patient recovered rapidly and was discharged from the hospital two days later. No wound infection or other postoperative complication was reported at a three-month follow-up. The histology report showed neutrophilic and lymphoplasmacytic inflammation in the surrounding mucosa with focal necrosis. Increased lymphoid infiltrate and lymphoglandular complexes were seen but no crypt architectural distortion.

### 3. Clinical discussion

It is very rare for a colonic diverticulum to herniate into an inguinal hernia. There are a few cases reporting perforated diverticulitis or a diverticular abscess presenting as an incarcerated inguinal hernia [6–9].



**Fig. 2.** Inflamed diverticulum with mucosal necrosis and bowel wall thickening.



**Fig. 3.** Intraoperative image showing stapling line reinforcement using continuous suture.

These cases were managed by resection of the colon involved with or without a stoma. We do not know any previous case report where acute diverticulitis presenting as incarceration of a hernia and it was treated by local resection of the inflamed diverticulum.

Acute diverticulitis caused by herniation into a hernia sac may be considered a different disease to normal colonic diverticulitis caused by microperforation of a diverticulum [10] where specific guidelines are suggested [11]. In the present case, incarceration of a colonic diverticulum that had migrated into the hernia sac did not affect the circulation of the surrounding sigmoid colon but caused local ischemia with necrosis. Since the patient was operated before the diverticulum had perforated, limited strangulation made it possible to carry out local resection rather than the more extensive Hartmann's procedure.

The wound was not contaminated by leakage of colonic content or purulent tissue, so synthetic mesh was used without any postoperative complication such as surgical site infection. This is in accordance with previous studies that have shown the safety of synthetic mesh in a similar surgical field [12,13]. Recurrence rates are moreover much lower compared to suture repair.

Another possibility is that the patient had developed a sac-like protrusion in the sigmoid colon due to chronic herniation through a rigid small defect in the abdominal wall. This would mimic a Richter hernia where only part of the circumference of the colonic ante-mesenteric border protrudes. Had that been the case, local resection of the colon could also have been performed if the staple line was secure.

### 4. Conclusion

We report a case of an acutely inflamed sigmoid colon diverticulum found during emergency repair of an incarcerated right-sided inguinal hernia. We consider this case as a different disease than the usual acute diverticulitis which is more commonly seen. This is the first case report of local resection of an inflamed diverticulum discovered within an incarcerated hernia, with subsequent hernia repair using a synthetic mesh.

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#### Provenance and peer review

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#### Ethics approval

Ethics approval was exempted by our institution since this was a case

report. No new study or technique was carried out.

### Consent

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available from the corresponding author on request.

### Author contribution

Christos Kollatos, MD: Case surgeon. Made substantial contribution to conception and design.

Gabriel Sandblom, MD, PhD: Participated in drafting of the article and critical revision.

### Registration of research studies

Not applicable.

### Guarantor

Christos Kollatos.

### Declaration of competing interest

The authors declare no conflict of interest regarding the publication of this paper.

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To the patient.

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