

e-ISSN: 2345-0592 <b>Online issue</b> Indexed in <i>Index Copernicus</i>	<b>Medical Sciences</b>  Official website: <a href="http://www.medicisciences.com">www.medicisciences.com</a>	
--	--	---

## Colon cancer complicated by intrabdominal abscess and necrotizing fasciitis – a case report

Linus Prapiestis<sup>1</sup>, Saulius Švagždys<sup>2</sup>

<sup>1</sup>*Faculty of Medicine, Lithuanian University of Health Sciences, Kaunas, Lithuania*

<sup>2</sup>*Lithuanian University of Health Sciences Kaunas Clinics, Department of Surgery Kaunas, Lithuania*

### Abstract

**Background.** Colorectal cancer (CRC) is the second-leading cause of cancer-related death worldwide. While complications like abscesses and fistulas are recognized in advanced disease, progression to necrotizing fasciitis (NF) remains exceedingly rare and life-threatening. Early detection and multidisciplinary intervention are critical for favorable outcomes.

**Case presentation.** We present a case of a 73-year-old woman initially evaluated for lower limb weakness, during which radiological imaging incidentally revealed an infiltrative mass in the cecal region. Further workup showed bowel obstruction and an intra-abdominal abscess extending into the iliopsoas muscle. Shortly after, she developed necrotizing fasciitis of the right thigh. Emergency debridement was performed, followed by a right hemicolectomy. Histology confirmed moderately differentiated adenocarcinoma of the ascending colon with local invasion.

**Conclusions.** This case highlights the potential for CRC to present with severe, atypical infectious complications such as necrotizing fasciitis. Rapid diagnosis, surgical intervention, and coordinated multidisciplinary care were essential in achieving clinical stabilization and enabling oncologic treatment. Awareness of such rare presentations is vital for timely management and improved prognosis in similar high-risk patients.

**Keywords:** colorectal cancer, necrotizing fasciitis, intra-abdominal abscess, fistula, ileopsoas infection, advanced colon cancer.

## 1. Introduction

Colorectal cancer remains the second-leading cause of cancer-related mortality worldwide, and its incidence continues to rise, particularly among aging populations (1). Multiple risk factors contribute to the development of colon cancer, including advanced age, a diet rich in red or processed meats, low dietary fiber, inflammatory bowel disease, family history, and physical inactivity (2). Early detection through screening modalities—such as colonoscopy, fecal immunochemical testing, and colonoscopy—plays a critical role in reducing mortality. When diagnosed early, patients benefit from a multimodal treatment approach involving surgery, chemotherapy, and in selected cases, targeted therapies, all of which improve survival and quality of life (3).

However, advanced-stage colon cancer presents a different clinical challenge. As the tumor progresses, it can lead to complex complications, including bowel obstruction, gastrointestinal bleeding, and perforation—each of which can precipitate life-threatening conditions such as peritonitis or sepsis. Fistula formation and abscesses are also common, often signaling local tissue destruction and invasion into adjacent structures. These complications not only worsen the prognosis but also necessitate urgent multidisciplinary intervention (3). Fistulas occur in approximately 20 % of colon cancer cases, frequently coexisting with intra-abdominal abscesses in up to 44 % of patients. These pathological connections typically result from direct tumor invasion into neighboring organs such as the bladder, small intestine, or abdominal wall. The pathophysiology involves initial inflammatory adhesion followed by transmural tumor infiltration and eventual breakdown of structural barriers (4). In rare cases, abscess

formation may extend into the psoas or iliopsoas muscles, driven by bacterial translocation from a perforated bowel segment. The fascial planes in these muscles act as conduits for infection spread into the retroperitoneum or thigh, complicating the clinical course and increasing morbidity (5,6).

Even more rarely, such infections may evolve into necrotizing fasciitis, a fulminant soft tissue infection characterized by rapid tissue destruction, systemic toxicity, and high mortality. This devastating condition has been reported in association with colorectal cancers—particularly cecal or sigmoid tumors—when tumor perforation introduces anaerobic enteric organisms into adjacent soft tissues (7). Necrotizing soft tissue infections (NSTIs), including necrotizing fasciitis, remain rare but deadly. Reported incidence ranges from 0.3 to 15 cases per 100,000 population (8). Mortality rates are high—often between 32 % and 50 %—primarily due to septic shock and multiorgan failure. Risk factors include advanced age, diabetes, immunosuppression, and delays in initiating surgical debridement (9–11). The cornerstone of NSTI management is prompt and extensive surgical debridement of necrotic tissue. Timely intervention improves outcomes by controlling infection, preventing systemic spread, and minimizing the need for limb amputation. Debridement must include all poorly perfused tissue, often requiring repeated surgeries for adequate source control (12,13).

This report presents a rare and complex case of necrotizing fasciitis secondary to advanced colon cancer, initially complicated by intra-abdominal abscess formation. The case highlights diagnostic and therapeutic challenges, underscores the importance of early recognition and multidisciplinary management, and serves to

enhance awareness of this potentially fatal complication in oncologic practice.

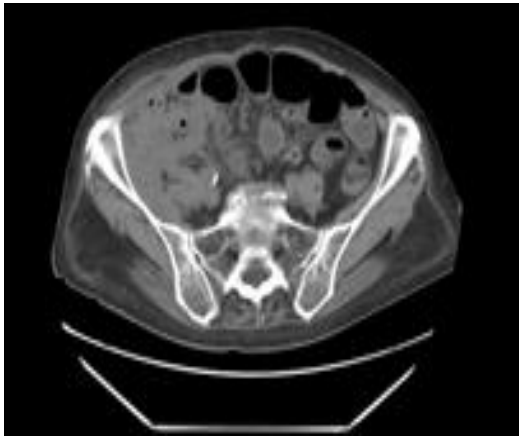
## 2. Clinical case

A 73-year-old woman presented with a 3-week history of worsening low back pain radiating into the right leg, accompanied by numbness. She has a long-standing history of lumbar spine issues with periods of exacerbation and remission. Due to the severity of current symptoms, lumbar spine MRI was performed, which revealed no significant spinal canal stenosis or disc protrusions, but showed abnormal findings in the right iliopsoas muscle, raising suspicion for a possible inflammatory or infiltrative process and prompting further pelvic imaging. Pelvic MRI demonstrated edema in the perimuscular fat surrounding the distal portion of the right iliopsoas muscle, more pronounced in the iliacus component, without clear fluid collections. These findings were considered reactive, with the center of the process located in the region of the cecum. Notably, the cecal wall, distal ileum, and particularly the ileocecal junction appeared thickened, with surrounding edematous fat containing small fluid pockets—features suggestive of an inflammatory or possibly neoplastic process. To further investigate, the patient underwent esophagogastroduodenoscopy, which showed no abnormalities, and colonoscopy, which revealed an infiltrated, edematous, erythematous, and stenotic mucosa in the proximal ascending colon, raising suspicion for either an inflammatory disease or malignancy. Biopsies were obtained; however, histological analysis showed preserved crypt and glandular architecture with subepithelial edema and mild mononuclear and granulocytic infiltration, but no evidence of ulceration, granulomas, dysplasia, or malignancy. Scattered

brown pigment granules, more prominent near the muscularis mucosa, were noted, suggesting possible melanosis. Overall, no neoplastic changes were identified in the biopsy.

Following the colonoscopy, the patient began experiencing cramping abdominal pain, particularly localized to the right iliac region, which persisted for several days. On physical examination, the abdomen was soft but tender in the right lower quadrant, where a palpable infiltrate was noted. There were no signs of peritoneal irritation or muscle guarding. Laboratory tests revealed elevated inflammatory markers with a C-reactive protein (CRP) of 72 mg/L, leukocytosis at  $10.5 \times 10^9/L$ , and neutrophilia (75%). Abdominal radiography showed no free air under the diaphragm, but small bowel loops were dilated up to 4.3 cm with several air-fluid levels and significant intestinal content, consistent with small bowel obstruction. A contrast-enhanced abdominal CT scan (figure 1) demonstrated a  $7.4 \times 5.5$  cm infiltrate with air inclusions in the right lower quadrant, associated with cecal wall edema (up to 1.1 cm thick) and multiple fluid collections with air pockets along the anterior abdominal wall (up to  $5.0 \times 2.0$  cm) and near the right iliacus muscle (up to  $1.1 \times 6.0$  cm), consistent with either a perforated cecal or appendiceal process with abscess formation, or necrotizing tumor-related changes. Additionally, small bowel loops were dilated up to 3.7 cm with focal mural thickening, indicating small bowel obstruction with the transition point in the cecal region. The patient was admitted to the Department of Surgery at the Hospital of Lithuanian University of Health Sciences Kaunas Clinics. Conservative management was initiated, including intravenous antibiotics, fluid resuscitation, proton pump inhibitors, and analgesics. During hospitalization, the patient's

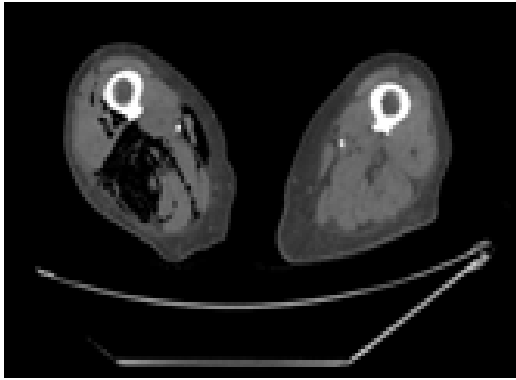
condition gradually improved—she remained afebrile, tolerated oral intake well, and resumed bowel movements. Inflammatory markers showed positive downward trends. The case was discussed in a multidisciplinary team meeting, and due to the complex and persistent pathology, a planned surgical intervention—laparoscopy with right hemicolectomy—was recommended.



**Figure 1.** *Right lower quadrant infiltrate with air, cecal wall edema and fluid collections, small bowel dilation.*

Less than a month after hospital discharge, the patient was brought to the emergency department by family members in a wheelchair due to a sudden onset of severe right leg weakness and immobility, which had progressed over two days. She reported an inability to walk or move the leg, which had become cold and discolored, with visible hematomas. On examination, the patient was unable to stand, transfer, or ambulate independently. The right lumbar and hip regions were tender on palpation, and no active movements were possible in the right leg, with passive movements eliciting pain. The right foot and lower leg below the mid-calf were cyanotic and cold, with severely prolonged capillary refill time (>8 seconds), absent distal pulses, impaired sensation, and no resistance or voluntary motion at the ankle joint. The limb was

flaccid, and palpation of the calf revealed complete numbness. In contrast, the left leg had intact circulation, palpable distal pulses, and preserved motor and sensory function. Spiral CT angiography of the abdominal aorta and lower extremities (figure 2) revealed a right-sided vascular occlusion: the external iliac artery was occluded proximally with only a brief segment of partial distal filling, followed by complete cessation of contrast flow. Thrombotic material extended into the common femoral artery, which only filled distally before bifurcation. The popliteal artery was completely occluded, with no contrast opacification of the lower leg arteries. Several fluid-gas collections and air pockets were also visualized in the right thigh and pelvis, consistent with necrotizing soft tissue infection. Based on the findings of critical limb ischemia with necrotizing fasciitis, the patient was urgently taken to the operating room for a high above-knee amputation. During surgery, an incision was made in the upper third of the right thigh. The femoral artery in the anterior-medial compartment was ligated, and neurolysis of the femoral and sciatic nerves was performed with lidocaine. The tissues proximal to the amputation site appeared viable with preserved perfusion; mild edema was noted in the posterior thigh, but no necrosis. Histological examination of the amputated limb confirmed necrotizing fasciitis, with findings including epidermal atrophy, obliterated and thrombosed small arteries, minor perineural thickening, skeletal muscle fiber atrophy with fibrosis, degenerative nuclear atypia without mitotic activity, and intramuscular air pockets. Postoperatively, the patient showed clinical improvement with declining inflammatory markers. With her condition stabilized, she was discharged for continued outpatient care.



**Figure 2.** CT angiography of lower extremities. Right-sided necrotizing fasciitis.

The patient reported no active complaints but noted that during rehabilitation, inflammatory markers were observed to be increasing, with redness and oozing at the stump site. Laboratory tests revealed a rising CRP (from 120 to 151 mg/L), decreasing hemoglobin levels (from 79 to 74 g/L), and malodorous discharge from the stump area. On examination, the abdomen was soft and non-tender. The right leg stump showed redness along the sutures, was mildly tender, but without significant swelling. A bedside ultrasound, revealed a localized fluid collection medially, though it was unclear whether this represented residual or new changes. A subsequent CT scan of the abdomen and pelvis, demonstrated a 3.0 x 3.8 cm infiltrate in the ileocecal region with thickened cecal and ascending colon walls (up to 1.5 cm), inflammatory changes in surrounding fat, and a fluid collection within the iliopsoas area (up to 3.0 cm thick and 9.1 cm long) in direct continuity with the cecal wall. Additional smaller fluid collections with air inclusions suggested localized perforation, with signs of involvement of the abdominal wall. Compared to prior imaging, the findings indicated disease progression, now with signs of perforation. Based on these findings, surgical intervention was deemed necessary. During laparoscopic

exploration, a firm, fixed mass was identified in the ileocecal area, prompting conversion to laparotomy. The mass had perforated into the abdominal wall and was adherent to the small intestine. A right hemicolectomy with segmental small bowel resection was performed. Further revision revealed adhesions in the right iliac fossa without macroscopic metastases. The mass was found to involve the right ovary, fallopian tube, and small bowel, with an additional mucosal defect 2 meters from the Treitz ligament and 1 meter from the ileocecal valve, suspected to be of neoplastic origin. A 15 cm segment of the distal ileum along with the right colon was resected. The resected segment was sent for histopathological analysis. Histology revealed an infiltrative, ulcerated adenocarcinoma of the colon (pT4b N0 Mx, LV10, R0, G2) extending into the resected ileal segment. The final diagnosis was malignant neoplasm of the ascending colon. The patient responded to treatment with meropenem, with decreasing inflammatory markers and good primary wound healing, albeit with some persistent wound discharge. She was discharged for further outpatient care in a stable condition.

Three weeks later the patient presented with complaints of general weakness and pain localized to the right iliac region. She reported the onset of fever up to 38°C, without associated nausea, vomiting, or changes in bowel or urinary habits. A contrast-enhanced CT scan revealed postoperative changes following a right hemicolectomy. In the right iliac fossa, a poorly defined fluid collection with air inclusions was identified, consistent with an abscess, accompanied by significant surrounding inflammation involving the adjacent iliopsoas muscle, right abdominal wall, and retracted right ureter, with upstream hydronephrosis. There was

also concern for a fistulous connection to the postoperative anastomosis. Fistulography demonstrated a non-homogeneous, air-containing fluid cavity in the right iliac region, draining into the collection bag, though no definitive communication with the intestinal tract could be visualized. Given the findings, the patient was taken to surgery, where a right-sided pararectal incision was made. The abscess was opened, yielding a large amount of purulent material, which was aspirated and sent for culture. The abscess cavity was thoroughly irrigated. Culture results confirmed the presence of *Bacteroides fragilis*, sensitive to metronidazole, and appropriate antimicrobial therapy was initiated. The patient later returned for follow-up evaluation after intra-abdominal abscess drainage. On examination, the abdomen was soft and non-tender. The transrectal incision had fully healed, and sutures were removed. The overall clinical trajectory was favorable, with clear improvement. With her postoperative recovery stabilized and inflammatory markers reduced, the patient was deemed fit to begin systemic oncological treatment. She has since commenced adjuvant chemotherapy with a Capecitabine-based regimen: Capecitabine 2500 mg/m<sup>2</sup>/day for 14 days, with cycles repeated every 21 days. Currently, the patient is tolerating chemotherapy well. Her clinical condition is stable, and she continues to show gradual improvement. There are no signs of recurrent infection or disease progression. Her wounds have healed appropriately, and she is under close oncological follow-up as outpatient.

### 3. Discussion

The present case illustrates an uncommon but clinically significant complication of colon cancer—necrotizing fasciitis arising from an

intra-abdominal abscess. While abscesses and fistulas are known complications of advanced CRC, their progression into necrotizing fasciitis is exceedingly rare (3). Most documented cases involve perforated tumors of the cecum or sigmoid colon, with bacterial contamination leading to fascial plane infection (14,15). In this case, the iliopsoas involvement and spread into surrounding tissue exemplify the aggressive nature of such infections.

The pathophysiology of NF in colorectal cancer involves tumor-induced necrosis or perforation creating a conduit for enteric microorganisms, particularly anaerobes like *Bacteroides fragilis*, to invade sterile tissue compartments. The presence of immunosuppression—whether cancer-related, treatment-induced, or due to age and comorbidities—further accelerates disease progression (8). The identification of *Bacteroides fragilis* in the intra-abdominal abscess supports the theory of enteric seeding, a common mechanism in cancer-associated NF.

Management hinges on early recognition and prompt, aggressive surgical debridement, which is essential to control the spread of infection and reduce mortality (16). In this case, timely surgical drainage of the abscess, removal of necrotic tissue, and the use of targeted antimicrobial therapy resulted in clinical improvement, allowing for subsequent chemotherapy initiation. Literature supports that the combination of early surgical intervention and appropriate antibiotics is crucial for patient survival (17).

While NF remains rare in colorectal cancer, this case emphasizes the need for vigilance when dealing with complex intra-abdominal infections in cancer patients. Delays in diagnosis or inadequate treatment can result in catastrophic outcomes. This report contributes to the limited

body of literature and encourages further documentation and study of such cases to better understand their pathogenesis, optimize management strategies, and improve prognostication.

#### 4. Conclusion

This case highlights a rare but life-threatening presentation of necrotizing fasciitis secondary to advanced colorectal cancer. Although colorectal cancer is a common malignancy, its progression to perforation, fistula formation, and necrotizing soft tissue infection is exceedingly uncommon and often underdiagnosed. The case underscores how tumor-related anatomical disruptions can provide a pathway for polymicrobial invasion into deep fascial planes, with devastating consequences if not swiftly addressed.

Successful management required prompt imaging, emergent surgical debridement, targeted antimicrobial therapy, and collaborative care involving surgeons, infectious disease specialists, and oncologists. This approach not only salvaged the patient from an otherwise fatal infection but also allowed for eventual oncologic treatment, demonstrating the potential for favorable outcomes even in complex clinical scenarios.

Clinicians must maintain a high index of suspicion when encountering soft tissue infections in patients with known or suspected malignancies, particularly when accompanied by atypical abdominal or musculoskeletal symptoms. This case contributes to a limited body of literature on cancer-associated necrotizing infections and advocates for early imaging, aggressive management, and enhanced vigilance in high-risk patients to improve survival and preserve long-term function.

#### References

1. Siegel R, Ma J, Zou Z et al. Cancer statistics, 2014. *CA Cancer J Clin* [Internet]. 2014 Jan [cited 2025 Apr 19];64(1):9–29. Available from: <https://pubmed.ncbi.nlm.nih.gov/24399786/>
2. Constantin VD, Silaghi A, Epistatu D et al. Diagnosis and management of colon cancer patients presenting in advanced stages of complications. *Journal of Mind and Medical Sciences*. 2023 Apr 25;10(1):51–65.
3. Dekker E, Tanis PJ, Vleugels JLA et al. Colorectal cancer. *The Lancet*. 2019 Oct 19;394(10207):1467–80.
4. Ishiyama Y, Ito M, Akuta S et al. Small bowel fistula with colorectal cancer and mesenteric lymph node metastasis: a report of two cases. *J Surg Case Rep* [Internet]. 2023 Dec 1 [cited 2025 Apr 19];2023(12):rjad675. Available from: <https://pmc.ncbi.nlm.nih.gov/articles/PMC10758223/>
5. Lahham EE, Alshouri MI, Ghweir AA et al. Lower extremity necrotizing fasciitis with iliopsoas abscess secondary to perforated colon cancer: a diagnosis not to miss. *J Surg Case Rep* [Internet]. 2023 Dec 1 [cited 2025 Apr 19];2023(12):rjad685. Available from: <https://pmc.ncbi.nlm.nih.gov/articles/PMC10758249/>
6. Zhou J, Wan S, Li C et al. Retroperitoneal abscess as a presentation of colon cancer: The largest case set analysis to date, which extracted from our unit and the literature. *Front Oncol*. 2023 Oct 24;13:1198592.
7. Brigham CD, Adamson TE. Permanent partial cervical spinal cord injury in a professional football player who had only congenital stenosis. A case report. *J Bone Joint*

- Surg Am [Internet]. 2003 Aug 1 [cited 2025 Apr 19];85(8):1553–6. Available from: <https://pubmed.ncbi.nlm.nih.gov/12925637/>
8. Stevens DL, Bryant AE. Necrotizing Soft-Tissue Infections. Longo DL, editor. N Engl J Med [Internet]. 2017 Dec 7 [cited 2025 Apr 19];377(23):2253–65. Available from: <https://pubmed.ncbi.nlm.nih.gov/29211672/>
9. Koch C, Hecker A, Grau V et al. Intravenous immunoglobulin in necrotizing fasciitis - A case report and review of recent literature. Annals of Medicine and Surgery [Internet]. 2015 Sep 1 [cited 2025 Apr 19];4(3):260–3. Available from: [https://journals.lww.com/annals-of-medicine-and-surgery/fulltext/2015/09000/intravenous\\_immunoglobulin\\_in\\_necrotizing.15.aspx](https://journals.lww.com/annals-of-medicine-and-surgery/fulltext/2015/09000/intravenous_immunoglobulin_in_necrotizing.15.aspx)
10. Arif N, Yousfi S, Vinnard C. Deaths from necrotizing fasciitis in the United States, 2003-2013. Epidemiol Infect [Internet]. 2016 Apr 1 [cited 2025 Apr 19];144(6):1338–44. Available from: <https://pubmed.ncbi.nlm.nih.gov/26548496/>
11. Misiakos EP, Bagias G, Patapis P et al. Current Concepts in the Management of Necrotizing Fasciitis. Front Surg [Internet]. 2014 Sep 29 [cited 2025 Apr 19];1. Available from: <https://pubmed.ncbi.nlm.nih.gov/25593960/>
12. Salati SA. Necrotizing fasciitis – a review. Polish Journal of Surgery. 2022 Feb 23;94(4):1–8.
13. Timo W Hakkarainen, Tam M Pham, Nicole M Kopari et al. Necrotizing soft tissue infections: Review and current concepts in treatment, systems of care, and outcomes. Curr Probl Surg. 2014 Aug 1;51(8):344–62.
14. Zachary S Neubert, R. Daniel Lawson, Jan Michael Van Gent. A Rare Case of Sigmoid Adenocarcinoma Presenting with Coloenteric, Colosubcutaneous, and Colovesicular Fistulas | ACS [Internet]. 2020 [cited 2025 Apr 19]. Available from: <https://www.facs.org/for-medical-professionals/news-publications/journals/case-reviews/issues/v2n6/neubert-sigmoid/>
15. Chin-Ho Wong, Lay-Wai Khin, Shanker Pasupathy et al. Necrotizing fasciitis: clinical presentation, microbiology, and determinants of mortality - PubMed [Internet]. 2003 [cited 2025 Apr 19]. Available from: <https://pubmed.ncbi.nlm.nih.gov/12925624/>
16. Anaya DA, Dellinger EP. Necrotizing soft-tissue infection: diagnosis and management. Clin Infect Dis [Internet]. 2007 Mar 1 [cited 2025 Apr 19];44(5):705–10. Available from: <https://pubmed.ncbi.nlm.nih.gov/17278065/>
17. May AK, Stafford RE, Bulger EM et al. Treatment of complicated skin and soft tissue infections. Surg Infect (Larchmt) [Internet]. 2009 Oct 1 [cited 2025 Apr 19];10(5):467–99. Available from: <https://pubmed.ncbi.nlm.nih.gov/19860574/>