



## Sigmoid Colon Carcinoma-Associated with an Inguinal Hernia

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### Abstract

**Introduction:** Inguinal hernias are common diseases in the population, and the prevalence of colorectal cancer has increased significantly in recent decades. However, the concomitant association of these two entities is rarely described in the literature. In most cases, due to the complex diagnosis, patients are treated in emergencies with obstruction or perforation. Nowadays, there is no established consensus on the best surgical approach when this association exists.

**Case Presentation:** We report a case of an 84-year-old patient admitted to the emergency room with a chronic inguinoscrotal hernia, with signs of intestinal obstruction, being diagnosed in the preoperative period by computed tomography, a neoplasm of the sigmoid colon incarcerated in the hernial sac. The patient underwent radical oncologic surgical treatment and inguinal herniorrhaphy through two access routes, with good postoperative evolution and outpatient follow-up after sixteen months.

**Conclusions:** The association between CRC and inguinal hernia is unusual, but the surgeons should keep this possibility in mind because the treatment must be aimed to accomplish a safe oncologic outcome and as optimal as possible hernia repair.

**Keywords:** Inguinal hernia, Sigmoid neoplasms, Colectomy, Herniorrhaphy

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### Introduction

Inguinal hernia is a prevalent disease and presents with incarceration in approximately 10% of cases (1). About 2-3% of all patients need an urgent surgical procedure (2). A malignant tumor within

the inguinal hernia sac is very rare. The prevalence of this condition has been reported in about 0.4% of all cases, with sigmoid cancer as the most common finding (3). There is no standard surgical approach, and the operation can be performed open or laparoscopically (4, 5). We present a case of a

sigmoid carcinoma associated with an incarcerated left inguinal hernia, treated by the open technique.

### Case Presentation

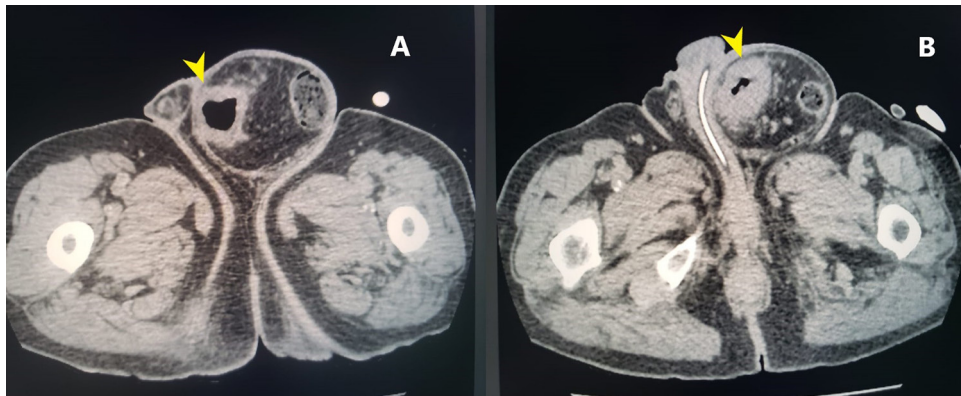
An 84-year-old man presented to the emergency room of the University Hospital of the Federal University of Santa Catarina in May 2020, complaining of abdominal pain, distension, lack of defecation, and an irreducible left inguinoscrotal hernia for five days. The symptoms were relieved by gas passing. The left inguinal bulge had been first noticed two years earlier. The physical examination revealed a soft abdomen, normal bowel sounds, and a left-sided, painless, irreducible inguinoscrotal hernia measuring 20 cm with no inflammatory or ischemic signs (Figure 1). Blood test results showed normal hemoglobin (11 g/L), hematocrit (38%), and white cell count (6500) levels. Serum tumor markers CEA (1.5 mcg/L) and Ca19-9 (5.50 mcg/L) were normal. The serum albumin and C-reactive protein concentrations were 3.8 g/L and 12 mg/dL, respectively. Plain radiography of the abdomen revealed no signs of intestinal obstruction. Because there was no evidence of acute obstruction, a CT scan was indicated. It showed the presence of an indirect left inguinoscrotal hernia containing a sigmoid colon inside the sac and wall thickness of up to 1.6 cm, as well as a heterogeneous mass measuring approximately 6 cm in diameter, suspicious for

neoplasm (Figure 2). Flexible sigmoidoscopy was performed before the surgery and demonstrated a large invasive neoplastic lesion.

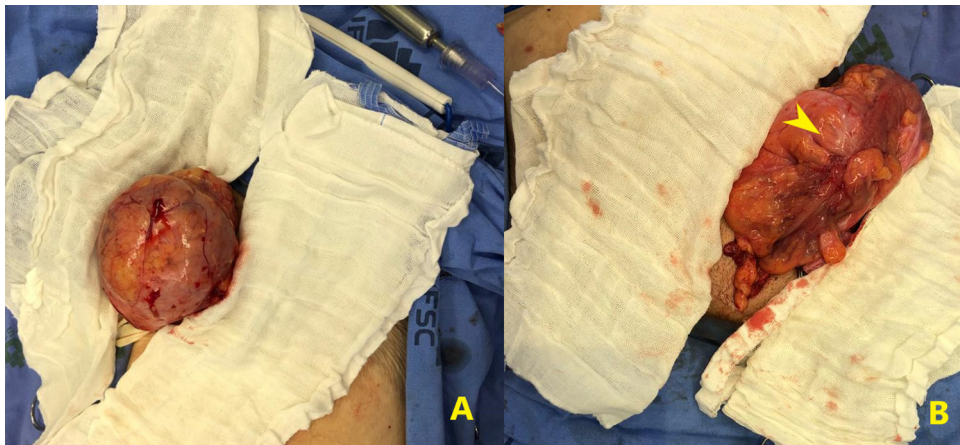
An exploratory laparotomy was performed through a midline incision; the sigmoid colon was incarcerated in the hernia sac and could not be reduced by this incision. An additional standard oblique incision was made in the left inguinal region to complete the hernia content reduction (Figure 3). A sigmoidectomy and lymphadenectomy with high ligation of the inferior mesenteric artery were performed, followed by a double stapling colorectal anastomosis (33 mm diameter). The hernia sac was entirely removed by the inguinal incision and repaired using the Lichtenstein tension-free technique. Two number 3 Penrose drains were placed in the peritoneal cavity.



**Figure 1:** Preoperative view. Irreducible left inguinoscrotal hernia (red arrow).



**Figure 2:** Computed tomography showing left inguinoscrotal hernia with wall thickened sigmoid colon (a) and heterogeneous complex mass (b), yellow arrows.



**Figure 3:** Hernial sac exposed through the inguinal incision (a), the segmental wall thickness of the sigmoid colon (b), yellow arrow.

There was no evidence of distant metastasis in the peritoneal cavity. There were no complications in the postoperative period; the drains were removed on the 7<sup>th</sup> day, and the patient was discharged on the 8<sup>th</sup> day.

Histopathological examination confirmed a moderately differentiated adenocarcinoma invading up to the muscular layer, showing free surgical margins, no metastasis in 36 resected lymph nodes, and no disease in the hernia sac (T2N0M0 – Stage I). The patient has not received adjuvant therapy and has been disease-free for sixteen months.

Ethical committee of Federal University of Santa Catarina approved this study after patient informed consent (protocol number: 42605520.1.0000.0121).

## Discussion

The incidence of colorectal cancer (CRC) has been increasing worldwide in recent years (6). Inguinal hernias also occur commonly, with an incidence rate of about 1.7% (7). The association between these two entities is not typical and not frequently reported in the literature. The first description involving a sigmoid cancer was published in 1938 (8). Due to the rarity of this association, there is no standard guideline for the surgical treatment yet.

CRC within an inguinal sac is often difficult to diagnose. In most cases, the patients need an emergency operation due to perforation or obstruction (4), and the surgical management can be performed via an open or laparoscopic approach. Traditionally, it has been described that an open approach must resect advanced tumors. However, some recent studies have shown no significant difference in the oncologic outcomes and the hernial repair between these techniques (9). We treated this patient via a midline incision because of the volume of the inguinoscrotal mass and the

suspicious findings of the CT scan. After accessing the peritoneal cavity, an additional incision on the inguinal ring and an additional oblique inguinal incision became necessary to complete the reduction of the substantial sigmoid tumor before radical segment resection. Despite no local invasion or perforation of the sigmoid colon, we performed a complete hernia sac resection. Resection of the hernia contents through the inguinal incision has been reported by some authors when the tumor could not be reduced into the abdominal cavity through the internal inguinal ring to avoid the risk of tumor cell implantation or infection (3, 4). However, we consider that the single approach can compromise the complete exposition of the mesocolon, leading to an inadequate radical resection.

Both oncological principles and safe hernia repair must be considered in these cases with optimal local infection control. There is still no standard consensus about the best hernia repair technique and the safety of primary anastomosis vs. colostomy. The choice of the surgical procedure depends on the clinical condition of the patient and the local features of the bowel (3, 5, 10-12). In our case, we performed a radical oncologic sigmoidectomy with a primary colorectal double-stapling anastomosis, and two Penrose drains were placed in the peritoneal cavity for seven days because there were neither signs of total obstruction nor bowel wall suffering. After that, the Lichtenstein tension-free technique was performed for hernial repair because there was no contamination or infection in the herniary site.

In conclusion, the association between CRC and inguinal hernia is unusual. Still, surgeons should keep this possibility in mind because the treatment must be aimed to accomplish a safe oncologic outcome and a hernia repair as optimal as possible.

**Conflicts of interest:** None declared.

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