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The Controversial Role of Prophylactic Drainage: Case Report

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ABSTRACT: We present the case of a 72-year-old diabetic and hypertensive female patient who underwent colorectal resection for adenocarcinoma, with mechanical anastomosis and prophylactic pre-anastomotic drainage.

The postoperative course was marked by diabetic ketoacidosis, thrombocytopenia, and a deterioration of the general condition.

On the second postoperative day, the drain yielded blackish fluid, accompanied by fever, abdominal distension, and a significant increase in CRP and procalcitonin levels.

A CT scan of the abdomen and pelvis revealed peritoneal infiltration, a large amount of pneumoperitoneum, peri-anastomotic air bubbles, and an intra-luminal drain, prompting urgent surgical re-intervention.

Exploration confirmed an anastomotic leak with the presence of the drain inside the anastomosis. A Hartmann's colostomy was performed.

This case highlights the controversial role of prophylactic drainage, which may contribute to the occurrence of anastomotic fistulas.

INTRODUCTION

Colorectal anastomosis is a critical step in digestive surgery, particularly in the management of colon and rectal diseases.

Despite technical advances and optimized perioperative care, postoperative complications—especially anastomotic fistula—remain a major concern.

This complication is associated with high morbidity, prolonged hospitalization, increased healthcare costs, and sometimes life-threatening consequences.

To reduce the incidence of fistulas, various strategies have been explored. Among them, prophylactic drainage is widely used but remains controversial within the surgical community.

This case report underscores the potential role of drainage in the development of anastomotic fistulas.

CASE OBSERVATION

A 72-year-old woman with a medical history of diabetes, hypertension, and hyperthyroidism was admitted for treatment of adenocarcinoma of the upper and middle rectum.

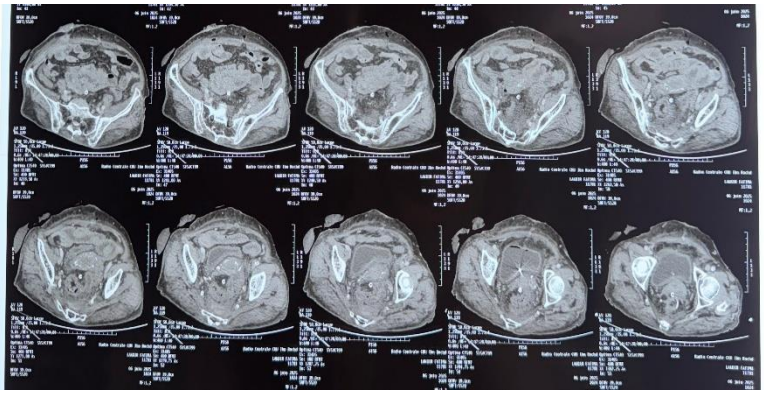
She underwent colorectal resection with mechanical anastomosis and pre-anastomotic drainage using a Salem tube.

The postoperative course was complicated, and the patient was transferred to the intensive care unit due to delayed awakening and neurological distress (with a normal brain CT scan).

She was diagnosed with diabetic ketoacidosis, which was managed with insulin, potassium supplementation, and rehydration.

The patient developed progressive thrombocytopenia, with platelet count dropping from 91,000/mm³ on postoperative day 1 to 39,000/mm³ on day 2. Additionally, the drain yielded blackish fluid, accompanied by the onset of fever and abdominal distension.

An abdominopelvic CT scan showed intense flame-like infiltration of the peritoneal fat, especially around the anastomosis, with air bubbles and an intra-anastomotic drain suggesting a leak. There was also abundant pneumoperitoneum and moderate ascites.



Given this abnormal clinical, biological evolution and CT scan data, urgent reoperation was performed.

Surgical exploration showed no free fluid but false membranes between loops and an anterior leak at the anastomosis with the drain protruding into the lumen.

Surgical management included resection of the anastomosis, colonic segmental resection, rectal stump closure, peritoneal lavage, and Hartmann's colostomy.

Postoperative recovery was marked by clinical and biological improvement. The patient remained a few days in intensive care before being transferred to the surgical ward and later discharged, with plans for eventual colostomy reversal.

Discussion

This case illustrates the complexity of managing colorectal anastomoses and the debated role of prophylactic drainage.

Anastomotic fistula remains a feared complication, with incidence rates ranging from 3% to 20% depending on the site and study [1].It is associated with high morbidity and mortality, prolonged hospital stays, and increased healthcare costs.

Proponents of drainage argue it allows early leak detection, limits infection spread, and may reduce the need for reoperation [2]. It can also provide diagnostic clues based on the nature of the drainage fluid.

However, opponents cite lack of evidence for reduced leak rates, risk of drain-related infections, and potential delay in clinical detection of leaks

[3]. Some studies even suggest drainage may increase fistula risk by promoting inflammation or bacterial entry [4].In fact, scientific literature presents a nuanced view on its role in anastomotic leakage. According to Emile et al. (2017) [5], some studies suggest that drains may not significantly reduce the incidence of anastomotic leakage and, in certain scenarios, could even contribute to it. The proposed mechanisms for this include the potential for drains to act as a conduit for bacterial contamination from the skin or external environment into the surgical site, increasing the risk of infection. Furthermore, the presence of a drain can induce a foreign body reaction, leading to local inflammation and potentially impairing the healing process of the anastomosis. Mechanical irritation from the drain itself, or its removal, could also compromise the integrity of the newly formed anastomosis.

Additionally, drains might create a pathway for intestinal contents to escape into the abdominal cavity, even in the absence of a true leak, potentially delaying the diagnosis of a contained leak or leading to a more widespread peritonitis. Therefore, while drains can be beneficial in managing existing collections, their routine use for preventing AL remains a subject of debate, with some evidence suggesting a potential for harm [6].In this observation, the intra-abdominal drainage might have directly contributed to the fistula, in conjunction with the patient's comorbidities.

Conclusion

This case is developing an anastomotic leak following colorectal surgery illustrates the controversial role of prophylactic drainage. This intra-abdominal drainage may have precipitated the complication. Nevertheless, it enabled early detection of abnormal drainage, contributing to a prompt surgical decision.

This timely intervention likely helped contain peritonitis and improve the patient's outcome.

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