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Colocolic Fistula: A Rare Consequential Presentation of Cecal Mucinous Adenocarcinoma

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Abstract

Colorectal cancer (CRC) is the second most common cause of cancer death in the United States. Relative to a 5-year survival rate, CRC patients diagnosed with localized disease accrue a 90% survival rate while those diagnosed with distant-stage disease maintain 14% survival. Mucinous adenocarcinoma (MAC) is a unique subtype of CRC characterized by the presence of extracellular mucin occupying 50% of tumor expansion. Fistula complications of colonic malignancy have rarely been reported and more commonly occur as complications of diverticulitis. Colocolic fistulae are atypical consequences of colon cancer, which have been rarely reported. We wish to report a unique case of malignant ceco-sigmoid fistula formation in an asymptomatic patient diagnosed with cecal MAC.

Keywords

colorectal cancer, colon cancer, fistula, colocolic fistula, fistulae, mutinous adenocarcinoma, MAC, fistula complications, colonic malignancy, colonoscopy

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CASE REPORT

Colocolic Fistula: A Rare Consequential Presentation of Cecal Mucinous Adenocarcinoma

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Abstract

Colorectal cancer (CRC) is the second most common cause of cancer death in the United States. Relative to a 5-year survival rate, CRC patients diagnosed with localized disease accrue a 90% survival rate while those diagnosed with distant-stage disease maintain 14% survival. Mucinous adenocarcinoma (MAC) is a unique subtype of CRC characterized by the presence of extracellular mucin occupying 50% of tumor expansion. Fistula complications of colonic malignancy have rarely been reported and more commonly occur as complications of diverticulitis. Colocolic fistulae are atypical consequences of colon cancer, which have been rarely reported. We wish to report a unique case of malignant ceco-sigmoid fistula formation in an asymptomatic patient diagnosed with cecal MAC.

Keywords: Colorectal cancer, Colon cancer, Fistula, Colocolic fistula, Fistulae, Mucinous adenocarcinoma, MAC, Fistula complications, Colonic malignancy, Colonoscopy

1. Introduction

Colorectal cancer (CRC) is the second most common cause of cancer death in the United States when combining cases discovered in both men and women.¹ The most common type of CRC are adenocarcinomas. The usual three subtypes of adenocarcinomas are as follows: classical adenocarcinoma, mucinous adenocarcinomas (MAC) and signet ring cell adenocarcinomas (SAC). The most common type is classic adenocarcinoma, followed by mucinous adenocarcinoma with a prevalence of 5–15% of all adenocarcinomas of the colon. Signet cell adenocarcinoma is the rarest.^{2,3}

Colocolic fistulae were first cited in the literature in 1950 by Mayo and Blunt.⁴ However, colocolic fistulae as a consequence of colon cancer are rarely reported.^{5,6} They are typically seen as a complication of the chronic inflammation associated with diverticulitis.⁶ The most prevalent fistulae formations due to malignancy reported include colocolic, colovesical, and colovaginal.^{5,6}

We report an unusual presentation of mucinous adenocarcinoma of the colon: an asymptomatic mucinous adenocarcinoma of the colon complicated by a ceco-sigmoid colocolic fistula.

2. Case presentation

A 68-year-old asymptomatic male underwent a routine colonoscopy for colon cancer screening. His colonoscopy 11 years before the current encounter revealed mild sigmoid diverticulosis and no polyps. The patient's current colonoscopy was remarkable for a flat polypoid sigmoid lesion measuring 20 mm (Fig. 1), along with a large friable irregular cecal mass measuring 30–35 mm (Fig. 2) and three polyps located in the hepatic flexure and proximal descending colon. During the patient's colonoscopy, biopsies were taken and lesions were inked for future reference. The cecal and sigmoid lesions were not resected because they were suspicious for invasive malignancy. The polyps from the other regions were removed using snare polypectomy.

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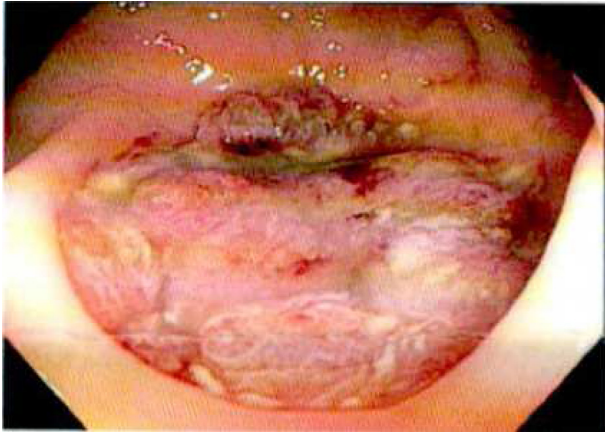


Fig. 1. Picture taken during colonoscopy showing the sigmoid lesion from which a biopsy was taken.

The cecal biopsy demonstrated high-grade dysplasia with atypia and extensive ulceration. The sigmoid biopsy revealed a tubulovillous adenoma with ulceration. The histology of the other polyps revealed tubular adenoma morphology. Given the colonoscopy findings, the patient was referred to colorectal surgery due to concern for malignancy. The patient underwent robotic synchronous colectomies for the management of cecal and sigmoid lesions. During the procedure, extensive adhesiolysis was required. Due to the presence of extensive adhesions between the omentum and bowel and in between bowel loops, there was a concern for either prior diverticulitis or perforated colon cancer. There was no presence of any pus or abscess. A mass involving the cecum, terminal ileum and the sigmoid colon was appreciated just proximal to the area inked during colonoscopy. These three regions were firmly adhered to one another, and given the concern of malignant desmoplastic attachment



Fig. 2. Picture taken during colonoscopy showing the cecal lesion from which a biopsy was taken.

between these three regions, en bloc resection was performed. Ileocolic and colo-rectal anastomosis were made. The gross specimen demonstrated cecal neoplasm with a patent fistula to the sigmoid.

Histopathological findings showed a well-differentiated invasive cecal mucinous adenocarcinoma with a probe patent fistula to the sigmoid. Multiple nodular pools of mucin were seen in the cecal wall and the pericolon soft tissue. Two nodular pools of mucin were observed in the muscularis propria of the sigmoid colon with deeply embedded tumor cells. Multiple mucin pools were surrounded by tumor cells suggestive of adenocarcinoma. Furthermore, adenomatous epithelium was seen in the fistula opening in the sigmoid colon. Fourteen lymph nodes were resected and sampled but lacked evidence of malignant spread. The malignancy was staged pT4N0 as per the American Joint Committee on Cancer (AJCC) staging guidelines and by the expert opinion of the pathologist.

The patient underwent 6 cycles of chemotherapy with 5-fluorouracil as per oncology recommendations. His 34 genetic panel tests did not show any variants of significance. He has remained in remission for 4 years, with no evidence of recurrence on follow-up colonoscopy and CT imaging.

3. Discussion

Adenocarcinomas are malignant tumors of the epithelial cells that line the intestinal tract. They typically start in the mucosal layer and invade deeper layers as they progress. MAC is a unique subtype of CRC characterized by the presence of extracellular mucin occupying at least 50% of the total tumor.^{2,7,8} MAC has two subtypes, low-grade and high-grade MAC.⁹

The genetic origins of colorectal cancer are by way of the two pathways: the conventional pathway, involving mutations in the APC, KRAS, and TP53, or the serrated pathway, in which there are mutations in BRAF, microsatellite instability or abnormalities with CpG island methylator phenotype. In the majority of the cases of MAC, the serrated pathway is responsible for the origin. A pertinent characteristic of MAC is the abnormal expression of mucins such as MUC1, MUC2 and MUC5AC, which results in tumorigenesis, local spread of tumor, and resistance to therapy.⁹

Compared to classical adenocarcinoma, MAC has a predilection for the right hemicolon.^{2,3,9} As per a meta-analysis and systematic review performed by Fadel MG et al., MAC has a higher risk of local recurrence.² MAC is often diagnosed at a later stage in the natural history of the disease as compared to

non-mucinous adenocarcinoma (NMAC).^{2,3,9} As with other types of CRC, MAC has targeted chemotherapeutic options in addition to immunotherapy, surgical resection and radiation therapies.⁹

One of the aims of this report is to highlight the rare presence of colocolic fistulae. Fistula formation due to colon cancer is rarely described in literature and are typically colocutaneous, colovesical or enterocutaneous.⁵ Colocolic fistulae are uncommon complications even in diverticulitis.⁶ Patients with these pathological findings typically present with abdominal complaints such as abdominal pain, hematochezia, weight loss or altered bowel movements. As per our literature review, there have been two reported cases of malignant fistulae from the right colon to sigmoid. In both those cases, the patients were symptomatic unlike our patient.^{5,10}

This report serves as an argument that the development of a colocolic fistula was formed in the context of colon cancer and not a result of possible progression of the patient's baseline of diverticulosis to diverticulitis. The distinctive characteristics of colon cancer play a pivotal role in initiating the formation of a fistula in this patient. Colon cancer involves the uncontrolled proliferation of malignant cells within the colon's lining. As a cancerous mass expands, it possesses the ability to infiltrate and invade neighboring tissues and structures, ultimately resulting in the creation of a fistula. This aggressive mode of cancerous growth is often accompanied by the erosion and degradation of the colonic wall, leading to an abnormal connection with adjacent organs. Intriguingly, the rapid growth potential of tumors enhances the likelihood of physical interaction with other structures within the body. The ensuing pressure exerted by these enlarging cancerous masses can effectively expedite the formation of a fistula.

Furthermore, the role of inflammatory responses triggered by cancer is crucial. The immune system's reaction to the presence of cancerous cells often triggers an inflammatory process. This inflammation contributes to the weakening of the colon wall, creating favorable conditions for the formation of a fistula. Per patient pathology, the colonization of tumor cells embedded in deeper layers of the mucin pool in addition to adenomatous epithelium at the fistula opening raised suspicion that the serosal surfaces of the cecum and terminal ileum were penetrated by the tumor.

It is noteworthy that diverticulitis-related inflammation typically remains localized with the formation of micro-perforations. There are reports that mucin from cancer cells, as in this patient, promotes fistulization through its adhesive properties, serving

as a critical piece of evidence supporting the theory that the colo-colic fistula formation was primarily driven by underlying malignancy.^{9,10} This comprehensive report underscores the importance of recognizing and attributing fistula formation to colon cancer, highlighting the distinctive pathological processes such as aggressive invasion, inflammatory response, rapid growth and pressure effects, at play in comparison to diverticulitis related fistula formation.

4. Conclusion

We would like to highlight a few learning points distinguishable from our case:

1. The importance of screening colonoscopies: This patient had a rare complication of asymptomatic fistulizing mucinous adenocarcinoma. Screening colonoscopy allowed for an earlier stage diagnosis which also led to improved patient outcome.
2. The importance of having a broad differential diagnosis, especially with an atypical presentation. In our patient, the differential for a malignancy involving both cecum and sigmoid included: a fistula from pre-existing diverticulosis, along with possible metastatic disease. Fortunately, this patient's malignancy was limited to the cecum and sigmoid, and confined within the colocolic fistula.

Conflicts of interest

None.

References

1. Siegel RL, Miller KD, Goding Sauer A, et al. Colorectal cancer statistics, 2020. *CA A Cancer J Clin*. 2020;70(3):145–164. <https://doi.org/10.3322/caac.21601>.
2. Fadel MG, Malietzis G, Constantinides V, Pellino G, Tekkis P, Kontovounisios C. Clinicopathological factors and survival outcomes of signet-ring cell and mucinous carcinoma versus adenocarcinoma of the colon and rectum: a systematic review and meta-analysis. *Discov Oncol*. 2021;12(1):5. <https://doi.org/10.1007/s12672-021-00398-6>. Published 2021 Feb 22.
3. Nitsche U, Zimmermann A, Späth C, et al. Mucinous and signet-ring cell colorectal cancers differ from classical adenocarcinomas in tumor biology and prognosis. *Ann Surg*. 2013;258(5):775–783. <https://doi.org/10.1097/SLA.0b013e3182a69f7e>.
4. Mayo CW, Blunt CP. The surgical management of the complications of diverticulitis of the large intestine; analysis of 202 cases. *Surg Clin*. 1950;30(4):1005–1012. [https://doi.org/10.1016/s0039-6109\(16\)33083-3](https://doi.org/10.1016/s0039-6109(16)33083-3).
5. ElGendy K, Salem A. Malignant caeco-sigmoid fistula. *BMJ Case Rep*. 2014;2014:bcr2014207106. <https://doi.org/10.1136/bcr-2014-207106>. Published 2014 Nov 14.
6. Strati TM, Sapalidis K, Koimtzi GD, et al. Sigmoido-cecal fistula: a rare case of complicated recurrent diverticulitis and

- a review of the literature. *Am J Case Rep.* 2018;19:1386–1392. <https://doi.org/10.12659/AJCR.911790>. Published 2018 Nov 22.
7. Neyaz A, Pankaj A, Crabbe A, et al. Correlation of clinical, pathologic, and genetic parameters with intratumoral immune milieu in mucinous adenocarcinoma of the colon. *Mod Pathol.* 2022;35(11):1723–1731. <https://doi.org/10.1038/s41379-022-01095-7>.
 8. Fleming M, Ravula S, Tatishchev SF, Wang HL. Colorectal carcinoma: pathologic aspects. *J Gastrointest Oncol.* 2012;3(3): 153–173. <https://doi.org/10.3978/j.issn.2078-6891.2012.030>.
 9. Huang A, Yang Y, Shi JY, et al. Mucinous adenocarcinoma: a unique clinicopathological subtype in colorectal cancer. *World J Gastrointest Surg.* 2021;13(12):1567–1583. <https://doi.org/10.4240/wjgs.v13.i12.1567>.
 10. Hakim S, Amin M, Cappell MS. Limited, local, extracolonic spread of mucinous appendiceal adenocarcinoma after perforation with formation of a malignant appendix-to-sigmoid fistula: case report and literature review. *World J Gastroenterol.* 2016;22(38):8624–8630. <https://doi.org/10.3748/wjg.v22.i38.8624>.