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Unraveling the Diagnostic Complexity of Abnormal Uterine Bleeding: A Case Report on the Role of Sigmoid Cancer with Uterine Infiltration

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ABSTRACT

Abnormal Uterine Bleeding (AUB) can sometimes arise from extragynecologic causes, as demonstrated in this case of a 44-year-old woman who presented with persistent lower abdominal pain, AUB, and fecal vaginal discharge. Initially suspected to be a gynecologic condition, further imaging revealed advanced sigmoid colon cancer infiltrating the uterus and forming a fistula. Surgical management involved sigmoid colectomy, hysterectomy, and bladder repair. Histopathological analysis confirmed invasive adenocarcinoma, and postoperative chemotherapy was initiated. This case underscores the importance of considering non-gynecologic sources in patients with AUB, particularly when accompanied by atypical symptoms. Early imaging played a pivotal role in identifying the true origin of symptoms, highlighting the value of prompt diagnostic evaluation. Multidisciplinary collaboration ensured timely and effective treatment, optimizing patient outcomes. Recognizing rare presentations, such as colorectal cancer invading the uterus, is essential to prevent delays in diagnosis and management. Vigilance for such unusual causes can significantly improve prognosis in complex clinical scenarios.

Keywords: Abnormal uterine bleeding, Colorectal neoplasms, Fistula, Sigmoid neoplasms, Uterine diseases

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1. Introduction

Abnormal Uterine Bleeding (AUB) is a common gynecological concern characterized by irregular menstrual patterns in women of reproductive age, with a prevalence ranging from 10% to 30% **(1)**. The International Federation of Gynecology and Obstetrics (FIGO) classifies AUB under the PALM-COEIN system, which distinguishes structural causes-polyp (P), adenomyosis (A), leiomyoma (L), malignancy/hyperplasia (M) from non-structural causes, including coagulopathy (C), ovulatory dysfunction (O), endometrial disorders (E), iatrogenic factors (I), and cases not yet classified (N) **(2)**. While structural abnormalities such as leiomyoma are among the most common causes, AUB can also arise due to malignancies, including those originating outside the reproductive system **(3)**.

Given its anatomical proximity to the sigmoid colon and bladder, the uterus can be secondarily affected by malignancies arising from these organs **(4-6)**. Colorectal cancer, particularly sigmoid colon carcinoma, is among the most frequently diagnosed gastrointestinal malignancies worldwide. In advanced cases, tumor infiltration into adjacent organs may lead to fistula formation **(7)**. Approximately, 20% of patients with sigmoid cancer develop fistulas, with colovesical, colocolic, and colovaginal being the most frequently reported types **(8)**. However, direct invasion into the uterus, leading to the formation of a sigmoid-uterine fistula, remains exceptionally rare.

Here, we present a rare case of advanced sigmoid colon cancer invading the uterus, resulting in AUB, fecal vaginal discharge, and complex fistulization, highlighting the importance of thorough diagnostic evaluation in patients with atypical gynecological symptoms.

2. Case Presentation

A 44-year-old woman with persistent lower abdominal pain and fecal discharge per vagina was admitted to our hospital. She reported progressive worsening of symptoms over several weeks, accompanied by an increasingly foul odor. Additionally, she had experienced prolonged Abnormal Uterine Bleeding (AUB) for several months, initially suspected to be gynecological origin. A week before admission, she underwent diagnostic curettage, but her symptoms persisted, prompting further evaluation. On examination, she was hemodynamically stable with normal vital signs. The abdomen was

mildly distended with localized tenderness in the lower quadrant, but without signs of acute peritonitis. Gynecological examination revealed malodorous vaginal discharge (Figure 1), raising suspicion of a possible fistulous tract or an underlying infectious process.

Abdominopelvic Computed Tomography (CT) revealed a sigmoid colon mass infiltrating the uterine fundus and posterior bladder wall, with a fistulous connection between the sigmoid colon, uterus, and bladder (Figure 2). These findings were indicative of an advanced malignancy with extensive local invasion. Given the complexity of the case, a multidisciplinary team-including specialists from gynecology, general surgery, and oncology was involved to determine the optimal management strategy. The patient was scheduled for an exploratory laparotomy to assess the extent of disease spread and perform necessary surgical interventions.

Intraoperatively, a firm, well-defined 2×2 cm mass was identified in the sigmoid colon, with multiple peritoneal nodules. The tumor had invaded the uterus and bladder, consistent with preoperative imaging. (Figure 3), A complex fistulous tract extended from the sigmoid colon to the anterior uterine corpus and bladder wall. Given the extensive organ involvement, an en bloc resection was performed, including sigmoid colectomy, total abdominal hysterectomy with bilateral salpingo-oophorectomy (TAH-BSO), and primary bladder repair.

Histopathological analysis confirmed invasive adenocarcinoma originating from the sigmoid colon, with direct extension into the uterus and bladder. The final diagnosis was stage IV sigmoid colon cancer with extensive pelvic involvement.

Postoperatively, the patient had an uneventful recovery and chemotherapy was initiated with the FOLFOX regimen, consisting of 5-fluorouracil (5-FU), leucovorin, and oxaliplatin. Despite the advanced disease stage, she tolerated the treatment well and was scheduled for regular follow-ups.

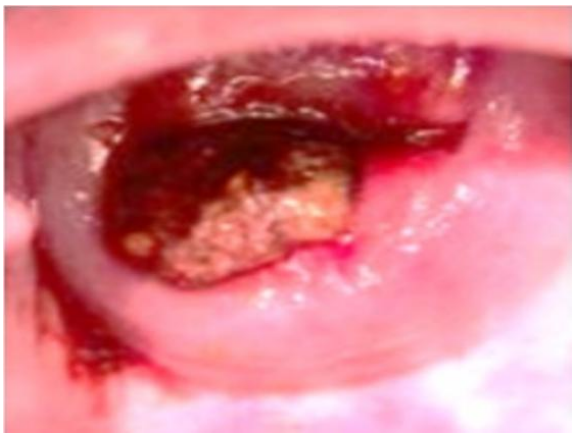


Figure 1. Speculum examination finding

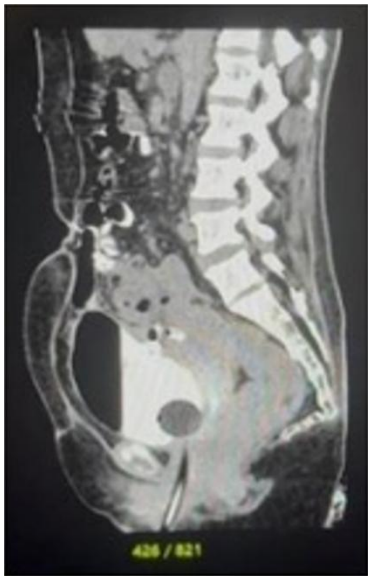


Figure 2. CT Scan result

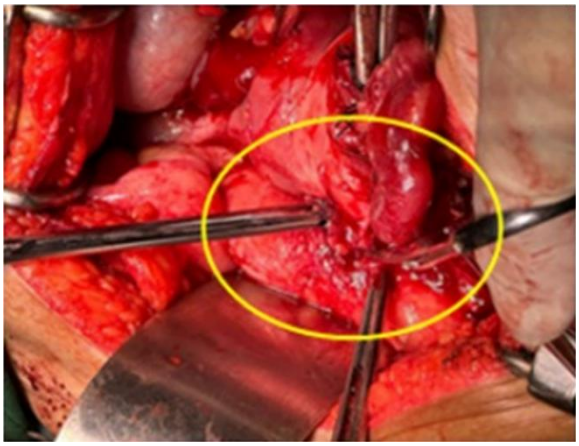


Figure 3. Laparatomy finding

3. Discussion

This case highlights the considerable challenges in diagnosing Abnormal Uterine Bleeding (AUB) caused by non-gynecological malignancies. The patient initially presented with symptoms suggestive of a gynecological disorder, but further investigation revealed a rare sigmoid-uterine fistula secondary to invasive sigmoid cancer. This complexity emphasizes the importance of considering extragynecological causes in cases of AUB, especially when routine gynecological evaluations fail to identify a clear cause.

Colorectal malignancies, particularly sigmoid colon cancer, are common worldwide and are known for ability to invade adjacent organs through direct extension, ischemia-induced necrosis, and inflammatory processes **(10,11)**. Fistula formation is a recognized complication of advanced colorectal cancer, occurring in approximately 20% of cases where the tumor invades neighboring structures. The most commonly reported colorectal fistulae include

colovesical, colocolic, and colovaginal fistulas **(8)**. However, a fistulous connection between the sigmoid colon and the uterus is an exceptionally rare occurrence.

The uterus, being a thick muscular organ, is generally resistant to malignant infiltration **(12,13)**. However, certain predisposing factors, such as prior obstetric trauma (e.g., curettage, intrauterine device placement), radiation therapy, or surgical interventions, may weaken the uterine wall and increase susceptibility to fistulization **(14)**. In the current case, the diagnostic curettage performed a week before admission may have played a role in the development of the fistula by disrupting endometrial integrity and facilitating malignant infiltration from the adjacent sigmoid tumor. This aligns with previous reports suggesting that neoplastic adhesion, followed by tissue necrosis, can lead to rare fistulous connections between the colon and the uterus **(8)**.

The clinical presentation of a sigmoid-uterine fistula varies depending on the underlying condition, but common symptoms include foul-smelling vaginal discharge, fecal leakage, and intermittent fever **(15)**. In this case, the patient reported abdominal pain and fecal vaginal discharge, strongly indicating a fistulous connection. Although AUB is frequently seen in gynecological disorders, its occurrence in this patient underscores the potential for colorectal malignancies presenting in an unusual manner, mimicking gynecological conditions. Such atypical presentations create significant diagnostic challenges, highlighting the need for a thorough multidisciplinary evaluation.

Diagnosing a sigmoid-uterine fistula accurately requires collaboration among gynecologists, gastroenterologists, and surgeons. Currently, there is no universally accepted gold-standard diagnostic protocol for detecting these fistulas. Imaging plays a key role, and Computed Tomography (CT) and contrast-enhanced Multidetector Computed Tomography (MDCT) providing crucial insights into tumor extension and fistulous pathways **(16)**. In this case, abdominal and pelvic CT scans revealed a sigmoid mass infiltrating the uterine fundus and bladder wall, confirming the presence of a fistula. These imaging findings were instrumental in planning the appropriate surgical intervention.

Other imaging techniques, such as Magnetic Resonance Imaging (MRI) and sonohysterography, can further delineate the extent of fistula involvement **(17)**. While colonoscopy and barium enema studies are useful for detecting colonic abnormalities, they are often insufficient for definitively diagnosing a sigmoid-uterine fistula **(18,19)**. In some cases, microbiological analysis of vaginal discharge cultures may assist to identify enteric bacteria, helping guide antibiotic therapy before definitive surgical management **(20)**.

Surgical intervention is necessary to treat sigmoid-uterine fistulae, with the goal of removing the septic focus and restoring anatomical integrity. The surgical approach depends on several factors, including tumor stage, patient's overall health, and the extent of organ involvement **(8,19,21)**. In this case, a multidisciplinary surgical team performed a sigmoid colon resection, total abdominal hysterectomy with bilateral salpingo-oophorectomy (TAH-BSO), and bladder repair using a primary closure technique. These procedures were crucial in eliminating malignancy and preventing further complications.

The choice of surgical techniques depends on intraoperative findings. The Hartmann's procedure, which involves resection of the affected bowel segment with a temporary colostomy, is commonly performed in emergency settings where primary anastomosis carries a high risk. In cases where complete tumor resection is feasible, an en-bloc resection of the uterus and sigmoid colon may be preferred to ensure total removal of the affected tissue **(22,23)**. In this patient, given the diagnosis of stage IV sigmoid adenocarcinoma, postoperative chemotherapy with the FOLFOX regimen (5-fluorouracil, leucovorin, and oxaliplatin) was initiated to improve disease control and overall survival.

The prognosis of sigmoid-uterine fistula secondary to malignancy largely depends on the stage of the cancer at diagnosis and the extent of metastatic spread. Patients diagnosed at an advanced stage, as in the current case, generally have a poor prognosis due to widespread disease involvement. Early surgical intervention is critical in preventing life-threatening complications such as sepsis and peritonitis **(8,24)**. However, it is also essential to consider the psychological impact of hysterectomy, particularly in premenopausal women. The loss of reproductive function can have profound emotional and psychological consequences, necessitating thorough preoperative counseling and ongoing postoperative support. A multidisciplinary approach is vital in managing complex cases like the present patient. Close collaboration among oncologists, gynecologists, gastrointestinal surgeons, and radiologists ensures optimal treatment planning and improved patient outcomes. Additionally, personalized patient care plays a crucial role in enhancing the quality of life for individuals with advanced malignancies.

This case underscores several key implications for clinical practice. It highlights the importance of maintaining a high index of suspicion for extragynecological malignancies in patients presenting with atypical AUB. It also demonstrates the value of multidisciplinary collaboration among gynecologists, gastrointestinal surgeons, oncologists, and radiologists in managing rare and complex presentations. Without coordinated care and shared expertise, such cases risk delayed diagnosis and suboptimal outcomes.

From a broader perspective, this case reveals significant gaps in standardized diagnostic approaches for malignancy-associated fistulas. Future research should aim to develop evidence-based protocols for the early detection and management of enterouterine fistulas, incorporating advanced imaging, clinical indicators, and multidisciplinary evaluation frameworks. Such efforts could improve timely diagnosis, reduce mismanagement, and ultimately enhance survival and quality of life for affected patients.

4. Conclusion

This case emphasizes the importance of considering extragynecological causes in patients presenting with AUB, particularly when atypical symptoms such as fecal vaginal discharge are present. The rare occurrence of a sigmoid-uterine fistula secondary to sigmoid cancer highlights the need for a high index of suspicion and a comprehensive diagnostic workup. Advanced imaging techniques, interdisciplinary collaboration, and timely surgical intervention are key to optimizing the patient outcomes. However, the generalizability of this case is limited due to its rarity, and similar cases may be difficult to diagnose early due to overlapping presentations. Future research should focus on refining diagnostic protocols and exploring innovative therapeutic approaches to improve outcomes for patients with malignancy-associated fistulas.

5. Declarations

Acknowledgments

None.

Ethical Considerations

All procedures performed in this study are under the ethical standards of the institutional and national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards.

Authors' Contributions

Muhammad Dading Aji Wicaksono performed conceptualization, conceived and designed the analysis, collected the data, performed the analysis, and wrote the paper. Hari Nugroho contributed to the conceptualization, writing and reviewing the paper.

Conflict of Interest

The authors declare no conflict of interest.

Fund or Financial Support

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