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Case Report

Pseudomyxoma Peritonei Masquerading as Decompensated Cirrhosis: A Diagnostic Challenge with Surgical Management in a Resource-Limited Setting in Tanzania

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ABSTRACT

Pseudomyxoma peritonei (PMP) is a rare syndrome of mucinous ascites that often mimics common conditions such as decompensated cirrhosis. Diagnostic delays are frequent, especially in resource-limited settings where advanced imaging and histopathology are unavailable. A 62-year-old Tanzanian woman presented with six months of progressive abdominal distension, orthopnea, and weight loss. She had been treated for decompensated cirrhosis at a district hospital for three months without improvement. At our facility, a standard paracentesis catheter failed to drain fluid; subsequent needle aspiration yielded jelly-like mucinous material. Bedside ultrasound revealed a multiloculated left ovarian mass (15 × 10 × 12 cm) and extensive echogenic ascites with restricted movement, while the liver, spleen, and portal vein were normal, effectively excluding cirrhosis. Emergency laparotomy found 12 liters of mucinous fluid from a ruptured left ovarian mucinous cystadenoma. The appendix was grossly normal. A left oophorectomy was performed. Formal histopathology was not available because the facility lacks pathology services, and the patient could not afford a referral. Two months after surgery, the patient remained well with no clinical evidence of recurrent ascites. In resource-limited settings, a failed paracentesis yielding viscous, jelly-like fluid is a critical bedside clue to PMP. Ultrasound can confirm a pelvic mass and gelatinous ascites, guiding timely surgical intervention even when definitive therapies such as Hyperthermic Intraperitoneal Chemotherapy (HIPEC) and histopathology are inaccessible.

1. Introduction

Pseudomyxoma peritonei (PMP) is a rare clinical syndrome characterized by the progressive accumulation of gelatinous, mucinous ascites and mucin-producing tumor implants throughout the peritoneal cavity [1, 2]. Its estimated incidence is approximately 1-2 cases per million individuals per year [3]. While PMP most commonly arises from a ruptured appendiceal mucinous neoplasm, other primary sites, including the ovary, colon, pancreas, and urachus, have been reported [3–5]. Ovarian origin, though less common than appendiceal, is well documented, particularly in women over 50 years of age [6].

The clinical presentation of PMP is often non-specific and insidious, leading to diagnostic delays [4]. Patients typically present with increasing abdominal distension ("jelly belly"), abdominal discomfort, and vague gastrointestinal symptoms, which can mimic more common conditions like decompensated cirrhosis, congestive heart failure, or other causes of ascites [2, 4]. Because abdominal distension from PMP can resemble ascites due to chronic liver disease, patients are often erroneously treated for cirrhosis, delaying appropriate oncologic surgery. In resource-limited settings, where access to advanced imaging modalities such as Computed Tomography (CT) and Magnetic Resonance Imaging (MRI), as well as specialized pathology and oncology services, may be restricted, the accurate and timely diagnosis of PMP poses significant challenges [4].

This report describes a case of Pseudomyxoma peritonei arising from a suspected ruptured left ovarian mucinous cystadenoma in a Tanzanian patient, initially misdiagnosed as decompensated cirrhosis. It highlights the critical importance of maintaining a high index of suspicion and recognizing key clinical and ultrasound clues, particularly a failed paracentesis yielding jelly-like fluid, even when histopathological confirmation is not possible.

2. Case Presentation

2.1. History and physical examination

A 62-year-old female presented to our facility in Tanzania with a 6-month history of progressively increasing abdominal distension. This was accompanied by nausea, loss of appetite, significant weight loss, abdominal discomfort, and orthopnea (shortness of breath when lying flat, relieved by sitting up). She denied any history of abdominal pain, constipation, vomiting, diarrhea, or yellowish discoloration of the skin or eyes.

Her past medical history revealed she had attended a district hospital three months prior with the same complaint. At that time, she was

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diagnosed with decompensated cirrhosis with portal hypertension and was initiated on diuretic therapy and beta-blockers for a three-month course. Upon follow-up after completing the prescribed medication, her abdominal distension had worsened, significantly impairing her breathing and quality of life, prompting her referral to our facility.

Physical examination on arrival: The patient was conscious, dyspneic, and cachexic. Vital signs: blood pressure 120/80 mmHg, heart rate 98 beats per minute, respiratory rate 24 breaths per minute, oxygen saturation 94% on room air. She was anicteric and not pale, with a hugely distended abdomen but no lower limb edema. An abdominal examination demonstrated Grade 3 ascites with a positive fluid thrill. Notably, there was no caput medusae or distended abdominal veins. Due to the tense abdominal distension, no masses were palpable, and no tenderness was elicited. Percussion revealed dullness throughout the abdomen. Bowel sounds were normoactive.

2.2. Diagnostic evaluation

At our facility, baseline laboratory investigations were available, and all results were within normal limits. Serum liver biochemistry showed total bilirubin 12 μmol/L (normal <21), alanine aminotransferase 28 U/L (normal <40), aspartate aminotransferase 32 U/L (normal <40), alkaline phosphatase 85 U/L (normal 30 – 120), and serum albumin 38 g/L (normal 35 – 50). Coagulation profile: prothrombin time 12.5 seconds (INR 1.1), activated partial thromboplastin time 32 seconds. Platelet count was 250×10^9 L (normal 150 – 400). Hepatitis B surface antigen and anti-hepatitis C antibody were negative. These normal results effectively excluded significant liver disease or cirrhosis. A point-of-care haemoglobin was 11.2 g/dL.

Tumor markers (CA-125, CEA, and CA19-9) and formal histopathology were unavailable at our facility due to limited laboratory capacity and the patient's financial constraints. Ascitic fluid was not submitted for laboratory analysis due to its gelatinous nature and the immediate decision to proceed with imaging.

2.3. Paracentesis and ultrasound findings

An emergency therapeutic paracentesis was attempted using a standard 14-gauge catheter. No fluid drained through the catheter, a finding highly suspicious for viscous ascites. Subsequent fine-needle aspiration (22-gauge) yielded 5 mL of deep yellow, mucinous, jelly-like fluid.

An abdominopelvic ultrasound was then performed. The liver was normal in size, with a smooth contour and homogenous echotexture; there was no nodularity, ascites-related scalloping, or signs of portal hypertension (portal vein diameter 9 mm, normal flow). The spleen was normal in size (9 cm). The ascites was extensive, containing diffuse echogenic particulate matter and demonstrating restricted movement on patient repositioning consistent with gelatinous (mucinous) ascites. No free-flowing anechoic fluid was seen. In the left adnexa, a large multiloculated cystic mass measuring approximately $15 \times 10 \times 12$ cm contained thin internal septations and low-level internal echoes (mucin). The right adnexa and uterus were unremarkable. The appendix was not visualized due to overlying ascites and bowel gas.

These sonographic findings (normal liver, spleen, and portal vein, along with the absence of typical cirrhotic ascites) effectively ruled out portal hypertension and decompensated liver disease. The combination of a multiloculated ovarian mass and gelatinous ascites was highly suggestive of a mucinous cystadenoma with associated pseudomyxoma peritonei **(Figure 1)**.

2.4. Intraoperative findings

Given the patient's deteriorating condition (worsening dyspnea and tense ascites), an emergency open exploratory laparotomy was performed. Intraoperative findings included approximately 12 liters of thick, jelly-like mucinous fluid filling the entire peritoneal cavity. The left ovary was replaced by a ruptured cystic mass measuring 13×8 cm (the discrepancy with the ultrasound estimate of $15 \times 10 \times 12$ cm is attributed to compression and mucin evacuation during surgery). Mucin distribution involved the omentum, parietal peritoneum, both paracolic gutters, the pelvic peritoneum, and the surfaces of the small bowel, liver, and diaphragm, which were covered by a thin mucinous film. The omentum was thickened but without a solid omental cake. The right ovary, uterus, and fallopian tubes appeared grossly normal. The appendix was visualized and appeared grossly normal, with no mucocele, adhesions, or tumor. After evacuation of mucin and left oophorectomy, residual mucinous implants remained on the peritoneum and omentum. No further debulking was attempted because of the emergency setting, lack of HIPEC capability, and the patient's poor financial status. A left oophorectomy was performed to excise the ruptured ovarian mass; no appendectomy or hysterectomy was performed. The patient tolerated the procedure well **(Figure 2)**.

2.5. Postoperative course and follow-up

The patient was monitored for four days. Early postoperative mobilization was achieved, with the patient ambulating eight hours after surgery. The postoperative course was uneventful, and she was discharged home in stable clinical condition on day 5 after admission. On day 10, she returned to the surgical outpatient clinic for suture removal. The wound was clean and healing well, and she remained clinically stable, with no abdominal distension or fever.

Two-month follow-up: The patient returned to the outpatient clinic two months after surgery. She reported being progressively well, with no abdominal distension, orthopnea, weight loss, or any other symptoms. On examination, the abdomen was soft, non-tender, and without detectable ascites or palpable masses. No further imaging or tumor markers were obtained because of financial constraints. There was no clinical evidence of recurrent pseudomyxoma peritonei. The patient was counseled about the possibility of late recurrence and advised to return if symptoms recur. No adjuvant chemotherapy or Hyperthermic Intraperitoneal Chemotherapy (HIPEC) was offered because these are unavailable in our setting. This structured diagnostic and surgical sequence from failed paracentesis to ultrasound to emergency laparotomy with left oophorectomy enabled timely source control, relieved the patient's symptoms, and minimized the risk of further clinical deterioration. **(Table 1)** summarizes the clinical timeline and therapeutic sequence followed by the treating team.

3. Discussion

This case makes several contributions to the limited literature on PMP diagnosis in resource-constrained environments. First, it documents a reproducible bedside diagnostic pathway for failed paracentesis followed by ultrasound that does not rely on CT, MRI, or histopathology. Second, it provides a detailed account of the intraoperative findings and surgical decision-making when HIPEC is unavailable. Third, it reports a two-month clinical outcome following limited surgery, offering real-world data from a setting where most PMP literature assumes access to comprehensive oncologic resources.

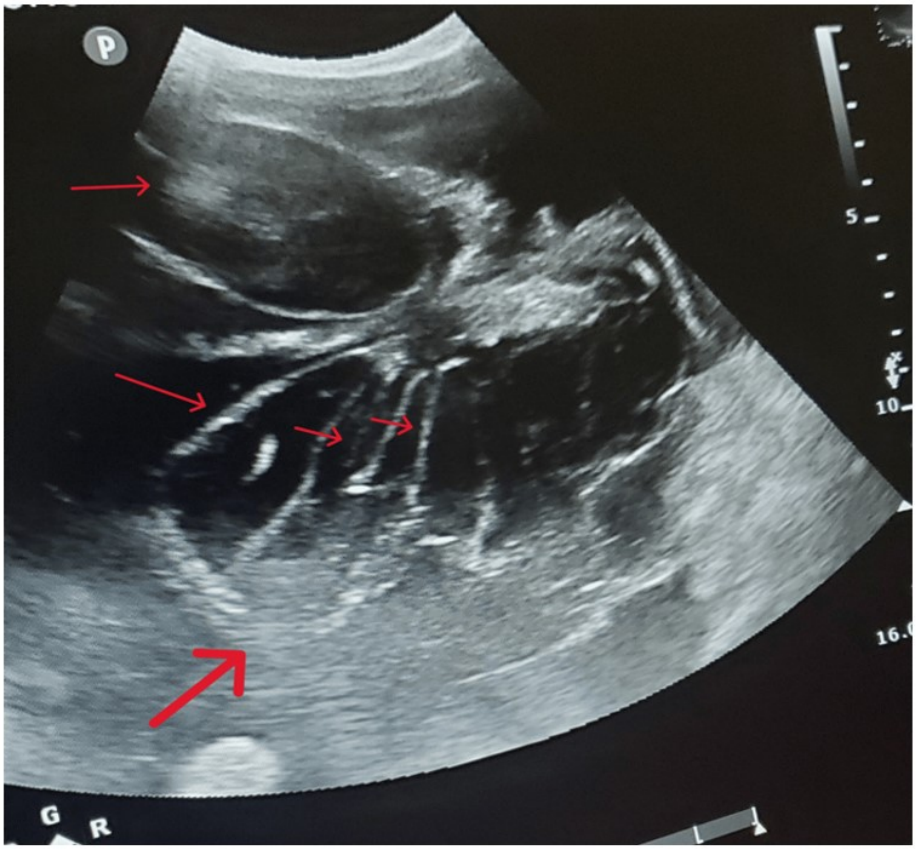

Figure 1: Ultrasound image of the left adnexa showing a multiloculated ovarian mass. The mass is divided into multiple compartments (locules) by numerous thin septa (indicated by red arrows). Internal mixed echoes are present, consistent with mucinous content. These sonographic features are highly suggestive of a mucinous cystadenoma.

3.1. Diagnostic delay and the role of failed paracentesis

The patient's three-month course of diuretics and beta-blockers for presumed cirrhosis, without improvement, exemplifies a common diagnostic trap [2, 4]. The absence of typical stigmata of chronic liver disease (jaundice, caput medusae, lower limb edema) and a normal liver on ultrasound argued strongly against cirrhosis. The pivotal diagnostic clue was the failed paracentesis, inability to drain fluid through a standard catheter, followed by aspiration of viscous, jelly-like mucin. This finding is distinctly different from the clear, free-flowing ascites of cirrhosis. Recognizing this sign, even in a resource-limited setting, enabled prompt ultrasound evaluation and accurate surgical planning. While isolated case reports have noted viscous ascites as a clue [2], our report emphasizes that this observation alone can be sufficient to alter management when more advanced tests are unavailable.

3.2. Ultrasound as a decisive tool

Ultrasound, often considered a basic imaging modality, provided critical information: a multiloculated ovarian mass, gelatinous ascites with particulate matter, and a normal liver with no portal hypertension. These findings effectively excluded cirrhosis and pointed toward a mucinous peritoneal process. Visceral scalloping, a late sign of PMP described in CT studies [4], was absent, consistent with the absence of long-standing organized mucin. In settings without CT or MRI, a careful ultrasound examination can be sufficient to raise suspicion of PMP. To our knowledge, this is one of the few reports that systematically describes the sonographic features of PMP in a low-resource setting, including the specific negative findings (normal liver, spleen, portal vein) that help rule out the more common misdiagnosis.

3.3. Differential diagnosis

The differential diagnosis of massive abdominal distension with a pelvic mass and gelatinous ascites includes pseudomyxoma peritonei, advanced epithelial ovarian cancer, tuberculous peritonitis, and metastatic mucinous adenocarcinoma [2, 4]. Advanced epithelial ovarian cancer typically presents with serous or clear cell histology. Ascites is usually free-flowing, not mucinous, and the ovarian mass is often solid or complex with papillary projections [6]. Tuberculous peritonitis commonly causes fever, night sweats, and loculated ascites, but the ascitic fluid is not mucinous [4]. Metastatic mucinous adenocarcinoma from the colon or pancreas is unlikely without a detectable gastrointestinal primary on palpation or ultrasound. The character of the ascitic fluid (jelly-like) and the ultrasound appearance of a multiloculated ovarian mass strongly favored PMP of suspected ovarian origin. This practical bedside differential is rarely presented in PMP case reports and may be particularly useful to clinicians in district hospitals.

3.4. Ovarian versus Appendiceal origin

There is ongoing debate regarding whether ovarian mucinous tumors associated with PMP are primary or secondary to an occult appendiceal neoplasm [3, 6]. In this case, the appendix was visualized intraoperatively and appeared grossly normal, with no mucocele or tumor. However, without histopathological examination of the appendix, an occult appendiceal primary cannot be completely excluded [6]. Therefore, we describe this as PMP with a suspected

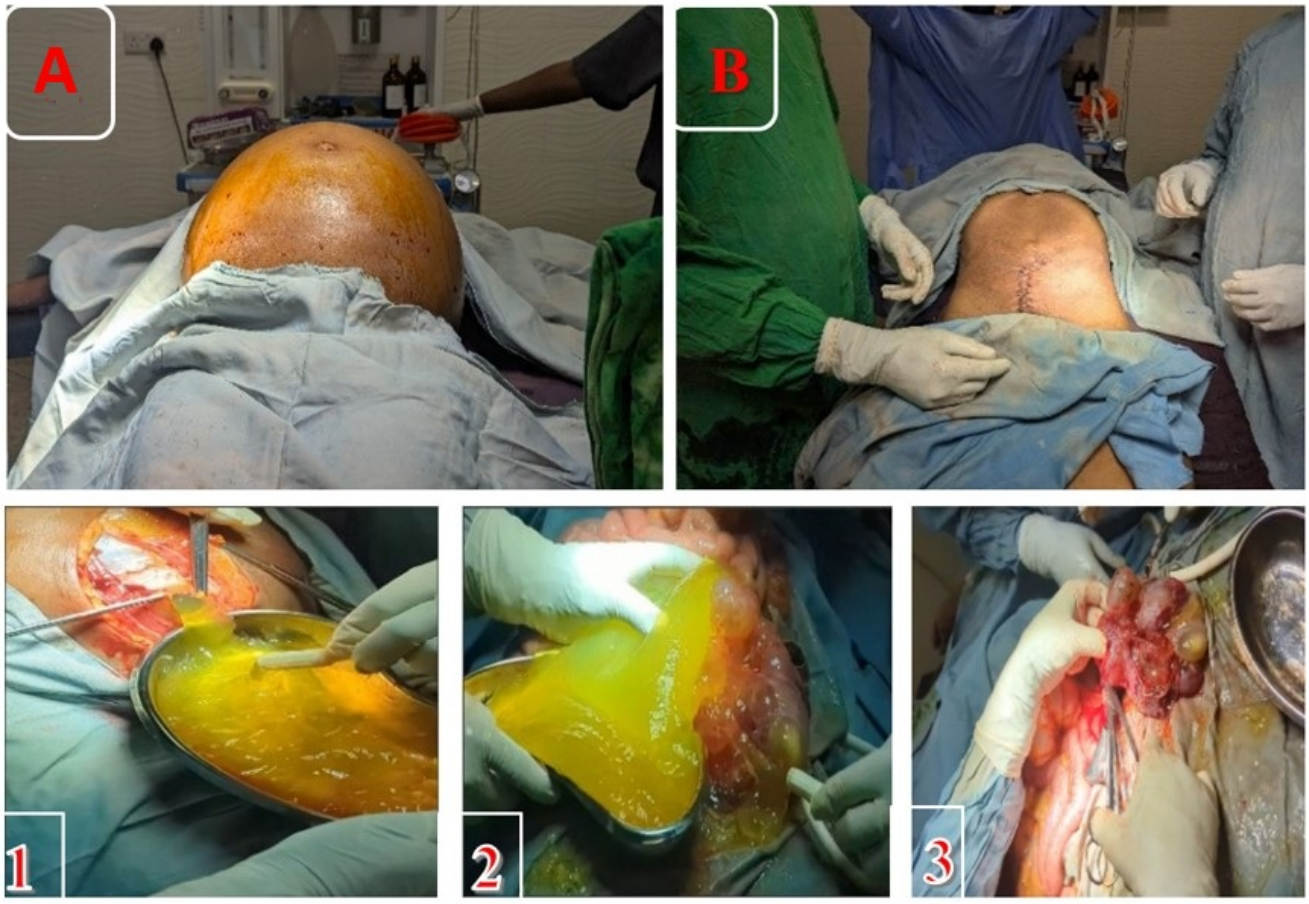

Figure 2: Clinical and intraoperative images of the patient. Panel A shows marked abdominal distension before surgery. Panel B demonstrates the scaphoid abdominal contour after successful open exploratory laparotomy. Images 1, 2, and 3 depict sequential intraoperative findings: evacuation of gelatinous, jelly like mucinous fluid (1 and 2) and the excised suspected ruptured left ovarian mucinous cystadenoma (3).

Table 1: CARE timeline of the patient's clinical course from symptom onset to two-month follow-up.

Time	Event	Findings / Investigations	Intervention
6 months before presentation	Symptom onset	Progressive abdominal distension, nausea, and weight loss	None
3 months before presentation	District hospital visit	Diagnosed with decompensated cirrhosis	Diuretics, beta-blockers for 3 months (no improvement)
Day 0 (referral)	Presentation to our facility	Tense ascites, orthopnea, no stigmata of cirrhosis	Failed paracentesis (catheter), then needle aspiration of jelly-like fluid
Day 0 (same day)	Bedside ultrasound	Multiloculated left ovarian mass (15×10×12 cm), gelatinous ascites, and normal liver	–
Day 1	Emergency laparotomy	12 L mucinous fluid, ruptured left ovarian cyst (13×8 cm); normal appendix, residual peritoneal implants	Left oophorectomy and mucin evacuation
Day 5	Postoperative recovery	Ambulatory, no complications	Discharged home
Day 10	Surgical clinic review	Clean wound, sutures removed, clinically stable, no distension or fever	Wound care and counseling
2 months after surgery	Outpatient follow up	No abdominal distension, no ascites on exam, and well clinically	Counseling about recurrence risk

cm, centimeter; L, liter; – , no intervention performed.

ovarian source (ruptured mucinous cystadenoma), acknowledging that definitive attribution would require histopathology. Because formal histopathology was not available, no grading (e.g., DPAM vs PMCA) was possible. This honest acknowledgment of diagnostic uncertainty is itself a learning point for clinicians working without pathology support.

3.5. Management and resource limitations

Ideal management of PMP involves comprehensive Cytoreductive Surgery (CRS) combined with Hyperthermic Intraperitoneal Chemotherapy (HIPEC). For low-grade PMP, 5- and 10-year overall survival rates after CRS+HIPEC can reach 75% and 68%, respectively [1, 5]. In our resource-limited setting, HIPEC is not available, and complete cytoreduction was not feasible. Nevertheless, emergency left oophorectomy with mucin evacuation relieved the patient's respiratory symptoms, allowed early ambulation, and resulted in no clinical recurrence at twomonths. This case demonstrates that even palliative-intent surgery can provide meaningful benefit when definitive therapy is inaccessible. It also highlights the ethical and practical reality that treatment algorithms from high-income countries often cannot be applied directly; instead, clinicians must adapt by focusing on symptom control and prevention of acute complications.

3.6. What this case adds to the literature

Unlike most published PMP case reports that originate from centers with full pathology, imaging, and HIPEC access [1, 3, 5, 7, 8], our report documents the disease in a setting without these services. The novelty lies not in a new biological insight but in the demonstration of a reproducible diagnostic pathway using only a paracentesis needle and a basic ultrasound machine. Furthermore, the detailed intraoperative description of residual disease and the two-month follow-up provide a benchmark for what can be achieved with limited surgery alone. We explicitly avoid overstating the outcomes; the patient remains at risk of late recurrence, but the immediate clinical improvement is undeniable.

3.7. Limitations of this case

This case report has several important limitations, most of which stem from the resource-constrained setting. First, no histopathological examination was performed because the treating facility lacks on-site pathology services, and the patient could not afford transport and specimen processing at a tertiary center. Therefore, the diagnosis rests on intraoperative and clinical findings (characteristic mucinous ascites, ruptured ovarian cyst, absence of other primary tumors on visual inspection). Grading of PMP (DPAM vs PMCA) and definitive exclusion of an appendiceal primary were not possible. Second, although the appendix appeared grossly normal, microscopic disease cannot be ruled out. Third, no advanced imaging (CT/MRI) or tumor markers were available. Fourth, only two months of clinical follow-up are available; the late recurrence remains possible. Fifth, no adjuvant therapy (HIPEC or chemotherapy) is available in our region. Despite these limitations, the case provides a practical diagnostic lesson directly applicable to similar low-resource settings.

4. Conclusion

This case report from Tanzania highlights the diagnostic challenge of pseudomyxoma peritonei in a resource-limited setting where histopathology and advanced imaging are unavailable. The initial misdiagnosis of cirrhosis underscores the need for a high index of suspicion when stigmata of chronic liver disease do not accompany abdominal distension. A simple bedside observation – failure to drain ascitic fluid during paracentesis, yielding jelly-like material – can change the diagnostic pathway. Clinicians in similar environments should recognize that ultrasound can identify a pelvic mass and gelatinous ascites, guiding timely surgical intervention. Even without HIPEC or complete cytoreduction, symptom-relieving surgery can improve quality of life. This case illustrates practical clinical clues and management constraints, not definitive proof of outcome benefit.

Conflicts of Interest

The authors declare no competing interests that could have influenced the objectivity or outcome of this research.

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Informed Consent

Institutional and international research regulations were observed during patient interaction and manuscript preparation. Both verbal and written informed consent were obtained from the patient for publication of this case report.

Large Language Model

The authors declare that generative artificial intelligence (AI) tools (ChatGPT, OpenAI) were used solely to assist in language refinement, grammatical editing, and structural organization during manuscript preparation. All clinical content, interpretations, and conclusions were developed and verified by the authors, who take full responsibility for the integrity and accuracy of the work.

Author Contributions

AM contributed to conceptualization, methodology, investigation, data curation, formal analysis, writing – original draft; writing – review and editing of the manuscript, and project administration. JM, LS, SH, and GG contributed equally to investigation, data curation, and manuscript review and editing. PS and EM contributed to supervision, validation, and critically reviewed and edited the manuscript. All authors read and approved the final manuscript before submission.

Data Availability

All relevant data supporting the findings of this case report are included within the article. Additional data are not publicly available due to patient confidentiality and privacy considerations, but may be obtained from the corresponding author upon reasonable request.

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