RESEARCH PAPER

Spontaneous Rupture of a Giant Mucinous Ovarian Carcinoma Manifesting as Acute Abdomen: A Case Report

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ABSTRACT

Giant mucinous ovarian carcinoma is a rare epithelial ovarian malignancy that may remain asymptomatic until complications occur. We report a 27-year-old woman presenting with acute abdomen after several months of progressive abdominal enlargement. Ultrasonography showed a large multilocular solid-cystic adnexal mass with thick septations and ascites, with a high risk of malignancy based on the IOTA criteria. Emergency laparotomy revealed a ruptured giant left ovarian tumor with mucinous intraperitoneal fluid. Left salpingo-oophorectomy with conservative surgical staging was performed. Histopathological examination confirmed mucinous ovarian carcinoma, expansile type, FIGO stage IC2. Considering the patient's young age, unilateral disease, favorable histology, and reproductive potential, close surveillance was chosen after multidisciplinary counseling. This case highlights the importance of prompt recognition, appropriate surgical staging, and individualized management in young patients with suspected ovarian malignancy.

Keywords: mucinous ovarian carcinoma, acute abdomen, ovarian tumor rupture, expansile type, fertility-sparing surgery

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INTRODUCTION

Mucinous ovarian carcinoma (MOC) is a relatively uncommon subtype of epithelial ovarian cancer, accounting for approximately 3–5% of all ovarian malignancies.[1] These tumors are typically unilateral and characterized by slow growth, allowing them to reach a considerable size before clinical detection.[2] Consequently, patients may remain asymptomatic or present with nonspecific symptoms such as abdominal distension, pelvic discomfort, or gastrointestinal complaints. Although most mucinous ovarian carcinomas are diagnosed at an early stage, complications such as tumor rupture are rare but clinically significant, as they may lead to acute abdomen requiring urgent surgical intervention.[3] In addition, MOC demonstrates distinct biological behavior compared to other epithelial ovarian cancers, including limited responsiveness to standard platinum-based chemotherapy and generally favorable outcomes in expansile-type tumors.[4] We report a case of spontaneous rupture of a giant mucinous ovarian carcinoma presenting as acute abdomen in a young woman, highlighting the diagnostic challenges and management considerations in this uncommon clinical scenario.

CASE PRESENTATION

A 27-year-old woman was referred to our hospital with acute onset severe abdominal pain for 2 hours prior to admission. The pain was sudden, progressive, and associated with abdominal distension. There was no history of nausea, vomiting, or fever. The patient reported a history of progressive abdominal enlargement since mid-2025 but did not seek medical attention as the symptoms were initially mild.

On initial examination, the patient was alert with stable hemodynamics but appeared in significant pain. Vital signs revealed tachycardia and tachypnea. Abdominal examination showed marked distension, diffuse tenderness, guarding, and rebound tenderness. A large abdominal mass was palpable extending up to the xiphoid process. Pelvic examination was limited due to pain. Rectal examination revealed a smooth mucosal surface with a palpable mass consistent with an adnexal origin.

Ultrasonography was performed and suggested a multilocular solid–cystic adnexal mass exceeding the

probe size, with thick septations and associated ascites. The estimated measurable portion of the mass was approximately 28.2 × 12.2 cm. The IOTA assessment indicated a high risk of malignancy with a calculated risk of 99.8%. Laboratory investigations revealed hemoglobin of 12.0 g/dL, leukocyte count of 9,960/mm³, and platelet count of 473,000/mm³. Tumor markers showed elevated LDH 204, CA-125 (58.5 U/mL) and CEA (9.31 ng/mL), while β-hCG was negative.

Given the acute abdomen and suspicion of malignancy with possible tumor rupture, the patient underwent emergency exploratory laparotomy. Intraoperatively, approximately 1400 mL of thick mucinous fluid was found within the abdominal cavity. A large multilocular cystic mass measuring approximately 30 × 25 cm originating from the left ovary was identified, with evidence of posterior rupture and adhesions to the omentum, bowel, and abdominal wall. Left salpingo-oophorectomy with conservative surgical staging, including partial omentectomy, peritoneal biopsies, and cytological examination of the cyst fluid, was performed. The uterus and right adnexa appeared normal.

Histopathological examination confirmed mucinous ovarian carcinoma, expansile type, with tumor confined to the ovary and no lymphovascular invasion. Based on intraoperative rupture, the final diagnosis was FIGO stage IC2. Following multidisciplinary counseling, the patient was offered options of adjuvant chemotherapy or close surveillance. Considering the favorable histological subtype, absence of high-risk features, and the patient's preference, a decision was made for observation with regular follow-up.

DISCUSSION

Mucinous ovarian carcinoma is a rare histologic subtype of epithelial ovarian cancer, representing roughly 3%-5% of primary ovarian malignancies. Compared with serous ovarian carcinoma, it is more likely to appear as a large unilateral tumor and to behave as a separate clinicopathologic entity with its own treatment considerations[1].

One practical challenge in MOC is that the tumor may enlarge gradually for months before the patient seeks care. This pattern was evident in our patient, who noticed progressive abdominal enlargement but delayed evaluation because the symptoms were still tolerable. That clinical course matches prior reports describing giant mucinous tumors that remain relatively silent until they create mass effect or develop an acute complication[1,2].

Spontaneous rupture is uncommon, but once it occurs the presentation may change abruptly from chronic abdominal enlargement to an acute surgical abdomen. In our patient, severe abdominal pain together with guarding, rebound tenderness, intraperitoneal mucinous fluid, and a visible posterior defect in the tumor supported rupture as the immediate cause of peritoneal irritation. This event also changed the staging, because rupture in an otherwise localized mucinous ovarian carcinoma places the disease in FIGO stage IC2[3].

Preoperative assessment depended mainly on ultrasound morphology, tumor markers, and the acute clinical picture. Ultrasonography remains the first-line modality for adnexal masses, and mucinous malignancies are often seen as large multilocular cystic or mixed solid-cystic lesions with thick septa and, at times, ascites[4]. The mass in this case showed exactly those features, and the International Ovarian Tumor Analysis estimate of 99.8% strongly supported malignancy before surgery. CA-125 was only modestly elevated, which is not unusual in MOC, while the elevated CEA was also compatible with a mucinous neoplasm[1].

Definitive diagnosis, however, rested on histopathology. The distinction between expansile and infiltrative mucinous carcinoma is clinically relevant because expansile tumors usually show confluent glandular growth with limited destructive stromal invasion, whereas infiltrative tumors are associated with a more aggressive course[3,5]. In our patient, the lesion was unilateral, confined to one ovary, and showed no lymphovascular invasion, findings that favor a lower-risk profile despite rupture.

Surgery remains the cornerstone of treatment in MOC. For apparent stage I disease, management should include removal of the affected adnexa together with appropriate staging, whereas advanced disease generally requires cytoreductive surgery followed by systemic therapy[1]. Because our patient presented with acute abdomen and suspected rupture, emergency exploratory laparotomy was appropriate. Left salpingo-oophorectomy with conservative staging allowed definitive treatment of the ruptured ovary, established the stage, and preserved the uterus and contralateral ovary.

Postoperative management in early-stage MOC is less straightforward than in other epithelial ovarian cancers. Mucinous tumors appear to be less sensitive to platinum-based chemotherapy, and the benefit of adjuvant treatment in selected stage I cases remains uncertain[1,6]. For that reason, postoperative decisions should not rely on stage alone but should also consider

growth pattern, completeness of staging, and other pathological risk factors.

Fertility-sparing surgery was a key issue in this case because the patient was young, still within reproductive age, and had not yet started childbearing. A conservative approach was reasonable because the tumor was grossly unilateral, the uterus and right adnexa were normal, and comprehensive staging could be performed at the same operation. Published series suggest that fertility-sparing surgery can be acceptable in selected women with stage I mucinous ovarian carcinoma, particularly when the disease is unilateral and adequately staged [7-9].

Even so, fertility-sparing management should not be interpreted as limited treatment. Its safety depends on adequate staging and careful surveillance, especially in stage IC disease where recurrence risk is higher than in stage IA disease. In our patient, the choice of surveillance after surgery was based on the expansile histology, absence of lymphovascular invasion, unilateral involvement, complete conservative staging, and the patient's wish to preserve future fertility. Taken together, these factors made observation a defensible alternative to immediate adjuvant chemotherapy[6-9].

This case reinforces several practical points. Progressive abdominal enlargement in a young woman should not be dismissed even when early symptoms seem mild. Large mucinous ovarian tumors may first present as acute abdomen when rupture occurs. Ultrasound morphology and structured tools such as the International Ovarian Tumor Analysis model are highly useful before surgery, whereas tumor markers alone may be less informative. Most importantly, management of MOC should be individualized by integrating stage, histologic subtype, pathological risk factors, completeness of staging, and reproductive goals rather than by applying a uniform treatment pathway to all epithelial ovarian cancers [1,4,7].

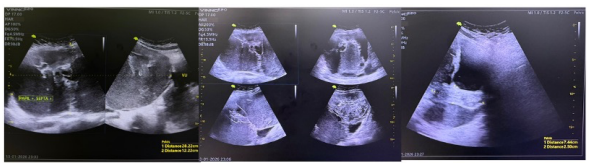

Figure 1. Preoperative ultrasonographic images showing a giant multilocular solid-cystic adnexal mass with thick septations and heterogeneous internal echoes, measuring approximately **28.22 × 12.22 cm** in its measurable portion. Free fluid was also identified in the pelvis and hepatorenal recess, findings suggestive of a malignant ovarian neoplasm with ascites.

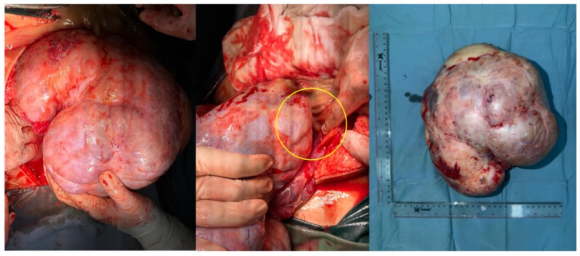

Figure 2. Intraoperative photographs demonstrating a giant multilobulated ovarian mass arising from the left adnexa. A focal area of rupture is visible on the tumor surface (middle panel, yellow circle). The right panel shows the gross specimen following left salpingo-oophorectomy.

CONCLUSION

Spontaneous rupture of a giant mucinous ovarian carcinoma presenting as acute abdomen is an exceedingly rare clinical event that poses significant diagnostic and surgical challenges, particularly in young women of reproductive age. This case demonstrates that large adnexal masses with complex morphological features on imaging should raise prompt suspicion for underlying malignancy, even in the absence of classic symptoms. The application of standardized risk stratification tools, such as the IOTA criteria, may facilitate early identification of high-risk lesions prior to surgical intervention. Emergency laparotomy with conservative surgical staging represents a feasible and oncologically appropriate approach in young patients when intraoperative findings are consistent with early-stage disease and fertility preservation is a clinical priority. Accurate histopathological characterization, including the distinction between expansile and infiltrative invasion patterns, is essential for prognostication and treatment planning, given the divergent biological behavior and chemotherapy responsiveness associated with each subtype. The management of ruptured mucinous ovarian carcinoma requires a multidisciplinary approach encompassing prompt surgical decision-making, thorough intraoperative assessment, and individualized postoperative planning. Increased clinical awareness of this uncommon presentation may contribute to earlier intervention and improved outcomes in affected patients.

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