Case Report

# High-grade serous carcinoma of the ovary presenting as a complex cystic mass at 10 weeks of gestation: A case report

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## ABSTRACT

**Background: Ovarian cancer during pregnancy is rare and presents diagnostic and therapeutic challenges due to symptom overlap and the need to balance maternal and fetal outcomes.**

**Case Presentation: A 35-year-old pregnant woman at 10 weeks' gestation presented with abdominal pain and progressive abdominal distension. Ultrasonography revealed a 10 × 13 cm complex solid-cystic adnexal mass with ascites and omental nodularity. Serum CA-125 was elevated to 332 U/mL. After multidisciplinary discussion and detailed counselling regarding maternal risk, the patient underwent staging laparotomy with total abdominal hysterectomy, bilateral salpingo-oophorectomy, and infracolic omentectomy. Intraoperative frozen section suggested epithelial ovarian malignancy. Final histopathology confirmed high-grade serous carcinoma (HGSC), FIGO stage IIIb. WT1 immunohistochemistry showed strong nuclear positivity supporting serous histology. The patient received adjuvant chemotherapy and remains disease-free at one-year follow-up.**

**Conclusions: This case emphasizes the importance of early evaluation of suspicious adnexal masses during pregnancy and highlights the role of multidisciplinary decision-making in managing ovarian malignancy diagnosed during early gestation.**

## INTRODUCTION

Ovarian malignancy during pregnancy is rare, with an estimated incidence ranging from 1 in 12,000 to 1 in 47,000 pregnancies [1]. Among epithelial ovarian cancers, high-grade serous carcinoma (HGSC) is the most common and aggressive histological subtype [2]. HGSC is characterized by rapid progression, frequent TP53 mutations, and a tendency to present at advanced stages [3].

Diagnosing HGSC during pregnancy can be challenging because symptoms such as abdominal bloating, nausea, and abdominal discomfort often overlap with normal pregnancy-related symptoms [4].

Ultrasonography is the first-line imaging modality for evaluation of adnexal masses in pregnancy, although differentiating benign from malignant lesions may be difficult. Additionally, serum tumor markers such as CA-125 may be physiologically elevated during early pregnancy, limiting their diagnostic specificity [4, 5].

Management of ovarian malignancy during pregnancy requires balancing maternal oncologic safety with fetal considerations. Elective surgery is generally deferred until the second trimester when feasible; however, urgent surgical intervention may be required when malignancy is strongly suspected and maternal health is at risk [5, 6].

Here we report a case of high-grade serous ovarian carcinoma diagnosed during early pregnancy, highlighting the diagnostic challenges and management considerations.

## CASE PRESENTATION

A 35-year-old pregnant woman, gravida 3 para 2, presented at 10 weeks of gestation with complaints

of lower abdominal pain and progressive abdominal distension for two weeks. She had two previous full-term vaginal deliveries and had completed her reproductive plans. There was no personal or family history of malignancy. On physical examination, the abdomen was mildly distended with a palpable pelvic mass. Per-vaginal examination revealed a uterus corresponding to approximately 10 weeks' gestational size with fullness in the left fornix.

Laboratory investigations revealed an elevated serum CA-125 level of 332 U/mL. Obstetric ultrasonography confirmed a viable intrauterine pregnancy and demonstrated a 10 × 13 cm complex solid-cystic mass in the left adnexa with internal septations and solid components, along with ascites and omental nodularity, raising suspicion of ovarian malignancy.

Considering the possibility of advanced disease, contrast-enhanced computed tomography (CECT) was performed after detailed counselling and written informed consent regarding potential maternal benefit and fetal risks. Imaging demonstrated a large complex adnexal mass with ascites and peritoneal nodularity, suggestive of advanced ovarian malignancy.

The case was discussed in a multidisciplinary team including gynecologic oncology, radiology, and anesthesia specialists. Given the imaging findings suggestive of advanced malignancy with possible peritoneal involvement, the potential risk to maternal life, and the fact that the patient had completed her family, the patient and her relatives were counselled regarding treatment options, including the implications for the ongoing pregnancy. After detailed discussion and informed consent, the patient opted for definitive surgical management.

The patient subsequently underwent staging laparotomy. Intraoperative findings revealed a large solid-cystic mass arising from the left ovary (Figure 1), with cut section showing solid and cystic areas (Figure 2), along with ascites and multiple omental nodules, the largest measuring 3 × 3 cm, along with peritoneal nodules. Intraoperative frozen section examination suggested epithelial ovarian carcinoma, following which total abdominal hysterectomy, bilateral salpingo-oophorectomy, and infracolic omentectomy were performed.

Histopathological examination revealed features consistent with high-grade serous carcinoma, including marked nuclear pleomorphism, coarse chromatin, prominent nucleoli, and frequent atypical mitotic figures (Figure 3). Immunohistochemistry showed strong diffuse nuclear positivity for WT1 (Figure 4), supporting the diagnosis of serous carcinoma.

The postoperative period was uneventful. The patient subsequently received platinum-based adjuvant chemotherapy with paclitaxel and carboplatin following multidisciplinary tumour board discussion. She was advised strict follow-up and remains under regular surveillance. At one-year follow-up, she remains disease-free and on regular surveillance.

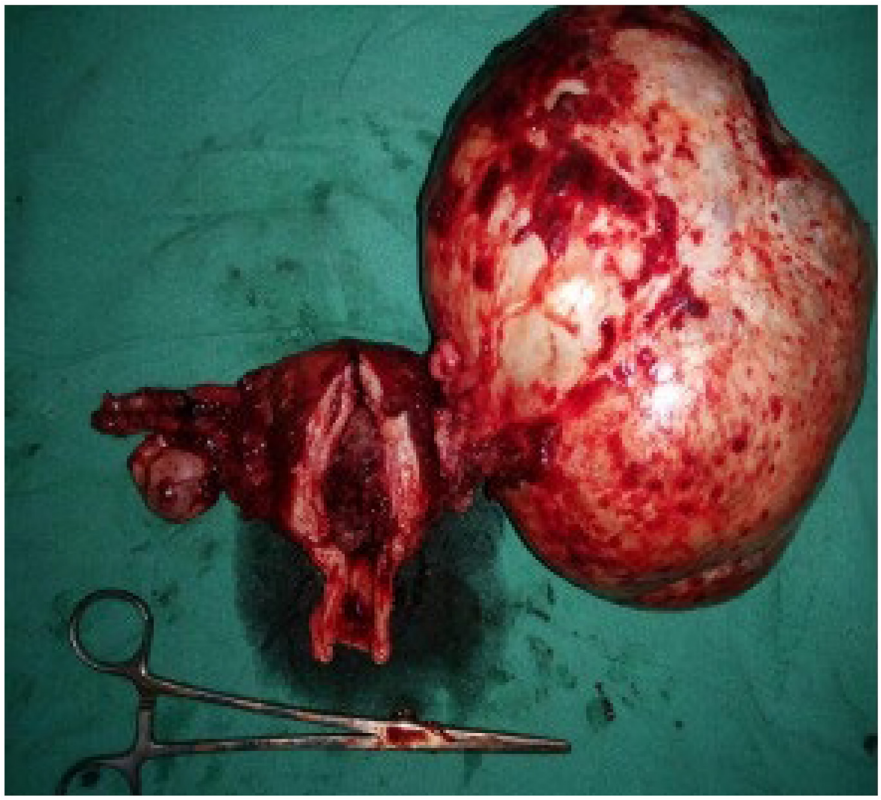


**Figure 1: Intra op image of left ovary.**

## DISCUSSION

Ovarian cancer during pregnancy is uncommon, and high-grade serous carcinoma diagnosed during early gestation is particularly rare [1, 4]. HGSC is typically aggressive and often diagnosed at advanced stages due to nonspecific symptoms and rapid tumor progression. Reported cases of epithelial ovarian carcinoma diagnosed during pregnancy are summarized in Table 1.

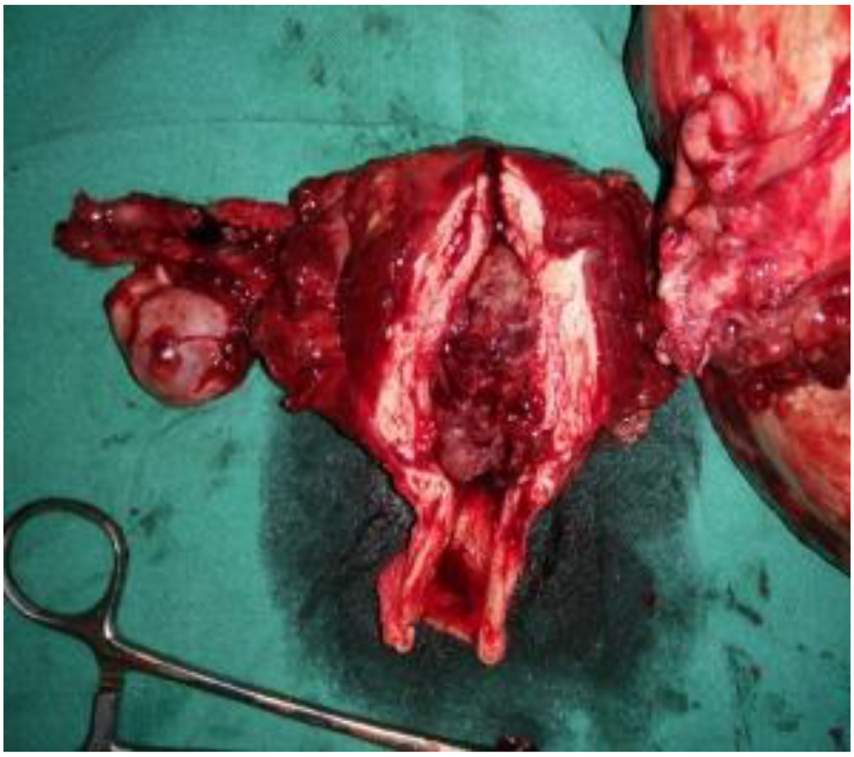


**Figure 2: Cut section.**

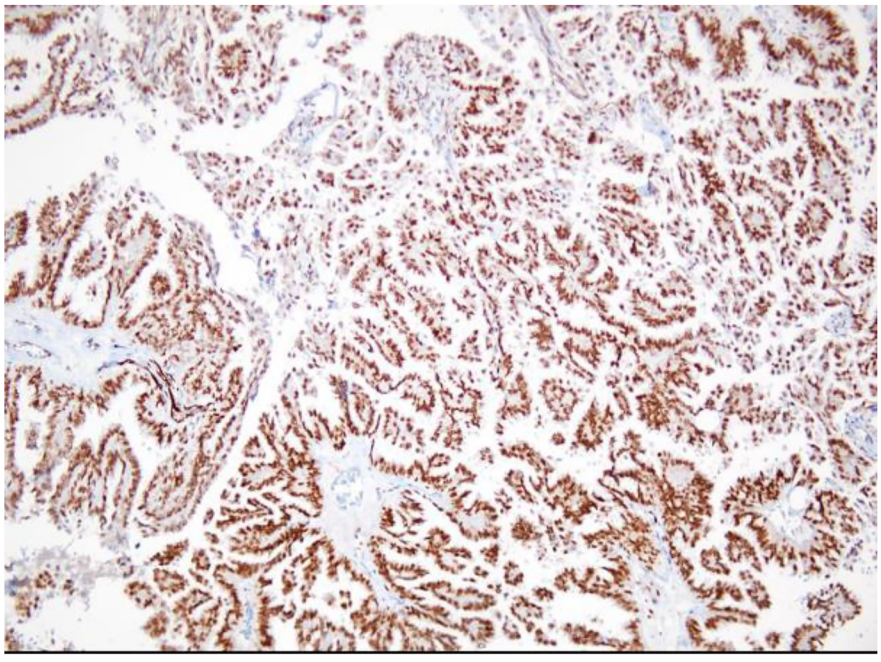


**Figure 3: WT1 immunohistochemistry showing diffuse and strong nuclear positivity in tumor cells, supporting the diagnosis of serous carcinoma.**

**Table 1: Reported cases/series of epithelial ovarian carcinoma during pregnancy**

| Author (Year) | Histology | Gestational age at diagnosis | Management | Outcome |
|---|---|---|---|---|
| Amant et al. (2012) | Epithelial ovarian carcinoma (mixed) | Various trimesters | Surgery t chemotherapy during pregnancy based on stage | Overall favorable maternal-fetal outcomes with individualized management |
| Nasioudis et al. (2018) | High-grade serous carcinoma | First-second trimester | Cytoreductive surgery followed by platinum-based chemotherapy | Maternal disease control achieved |
| Xu et al. (2019) | Ovarian carcinoma (advanced stage) | Second trimester | Multidisciplinary approach with surgery + chemotherapy | Successful maternal treatment with continuation of pregnancy |
| Vivod et al. (2024) | High-grade serous carcinoma | Early pregnancy | Surgical staging followed by adjuvant chemotherapy | Good maternal outcome with oncologic treatment |
| Present case | High-grade serous carcinoma (FIGO IIIb) | 10 weeks | Staging laparotomy + TAH-BSO omentectomy + adjuvant chemotherapy | Disease-free at 1 year follow-up |

In this case, the presence of a large complex adnexal mass with ascites and markedly elevated CA-125 raised strong suspicion for malignancy. Although CA-125 levels may be elevated during early pregnancy, markedly elevated levels in association with suspicious imaging findings warrant further evaluation [4, 5].

Management of ovarian malignancy during pregnancy depends on gestational age, tumor stage, and maternal prognosis. Surgical intervention is usually postponed until the second trimester when possible; however, urgent surgery may be necessary in the first trimester when advanced malignancy is suspected and maternal health is at risk [5, 6].

In our case, imaging findings suggested peritoneal involvement, and intraoperative frozen section confirmed epithelial ovarian malignancy, allowing appropriate staging surgery to be completed in the same procedure.

HGSC is strongly associated with TP53 mutations and may also be associated with germline BRCA mutations in approximately 15–20% of cases [3, 7, 8]. Genetic counselling and BRCA testing are therefore recommended when available, as they have important

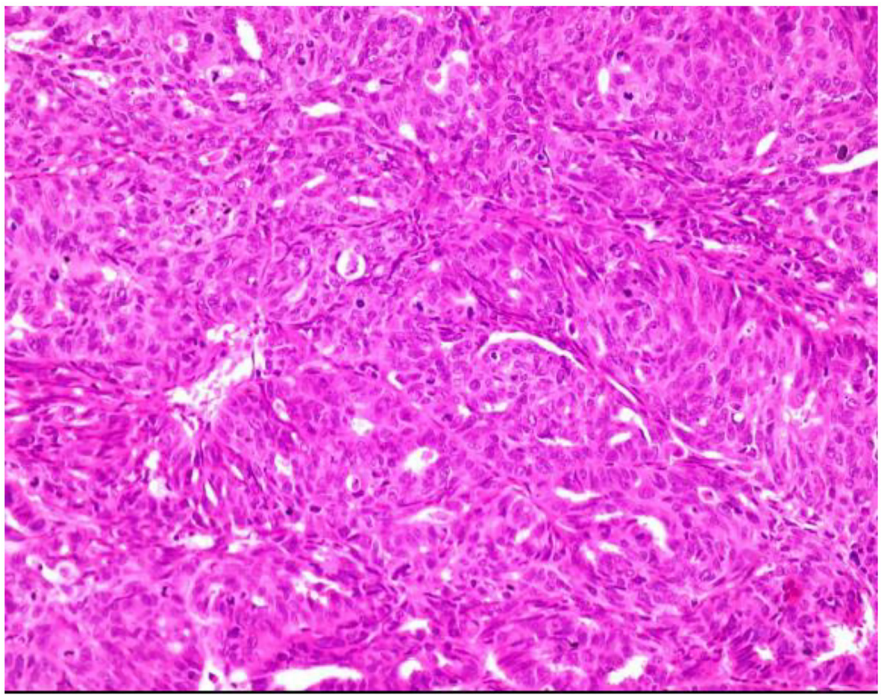


**Figure 4: High-power view of high-grade serous carcinoma, demonstrating marked nuclear pleomorphism, coarse chromatin, prominent nucleoli, and frequent atypical mitotic figures (Hematoxylin and Eosin stain, 400X magnification).**

therapeutic implications including the potential use of PARP inhibitors. Given the diagnosis of high-grade serous carcinoma at a young age, genetic counselling and BRCA mutation testing were advised. However, BRCA testing could not be performed due to logistical constraints.

## CONCLUSIONS

This case illustrates the importance of maintaining a high index of suspicion in the evaluation of adnexal masses during pregnancy. Early imaging, appropriate surgical planning, and multidisciplinary decision-making are essential for optimal maternal outcomes. In selected cases where advanced malignancy is suspected, timely surgical intervention may be necessary to prioritize maternal survival, even during early pregnancy.

## AUTHOR CONTRIBUTIONS

All authors contributed to the conception, design, data collection, analysis, and drafting of the manuscript. All authors reviewed and approved the final version.

## CONFLICTS OF INTEREST

Authors have no conflicts of interest to declare.

## ETHICAL STATEMENT

As per the Institution's policy for case reports, ethical approval was waived.

## CONSENT

Written informed consent was obtained.


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