Management of Ovarian Cancer in the Second Trimester of Pregnancy: A Case Report and Literature Review

Sri Dewi Rahmawati Syarief, Mulyanusa Amarullah Ritonga, Ruswana Anwar, Dodi Suardi

Department of Obstetrics and Gynecology, Faculty of Medicine, Universitas Padjadjaran-Dr. Hasan Sadikin Hospital, Bandung, Indonesia

Corresponding Author: Sri Dewi rahmawati Syarief, Email sri22004@mail.unpad.ac.id

Abstract

Introduction: Ovarian carcinoma during pregnancy is a rare but clinically significant condition that requires swift and precise management to optimize maternal and fetal outcomes. This case report highlights the successful conservative surgical management of malignant mucinous ovarian cancer diagnosed in the second trimester. It provides insights into the feasibility and safety of surgical intervention during pregnancy, contributing valuable evidence to the existing literature on oncologic care during pregnancy.

Case Illustration: A 21-year-old woman, G1P0A0, presented at 17-18 weeks of gestation with no complaints related to her pregnancy but reported abdominal enlargement over the past three months. At 6 weeks gestation, the patient was diagnosed with an ovarian cyst, later confirmed as a large cystic mass on the right ovary with papillary components through ultrasound. The IOTA simple rules indicate that the mass was suspected to be malignant. The provisional diagnosis was suspected ovarian malignancy with a differential diagnosis of multilocular ovarian cyst. The patient underwent a planned right oophorectomy at 18 weeks gestation. Histopathology revealed a mucinous malignant tumor of the right ovary that had not invaded the right fallopian tube. The pregnancy was continued, and the patient was closely monitored, with plans for further evaluation postpartum.

Conclusion: This case highlights the feasibility and safety of conservative surgical management of ovarian cancer in the second trimester, demonstrating that timely intervention can optimize both maternal and fetal outcomes. The successful continuation of pregnancy after surgery reinforces the importance of individualized, multidisciplinary approaches to oncologic care during pregnancy.

Keywords: ovarian carcinoma, pregnancy, conservative surgical staging

Penatalaksanaan Kanker Ovarium pada Kehamilan Trimester Kedua: Sebuah Laporan Kasus dan Tinjauan Pustaka

Abstrak

Pendahuluan: Karsinoma ovarium pada kehamilan merupakan kondisi yang jarang terjadi tetapi, memiliki implikasi klinis yang signifikan. Penatalaksanaannya memerlukan keputusan yang cepat dan tepat untuk mengoptimalkan hasil bagi ibu dan janin. Laporan kasus ini menyoroti keberhasilan manajemen bedah konservatif pada kanker ovarium mucinous ganas yang terdiagnosis pada trimester kedua kehamilan. Kasus ini memberikan wawasan mengenai kelayakan dan keamanan tindakan bedah selama kehamilan, serta berkontribusi terhadap literatur ilmiah terkait onkologi kehamilan.

Ilustrasi Kasus: Seorang wanita berusia 21 tahun, G1P0A0, datang pada usia kehamilan 17 – 18 minggu tanpa keluhan, namun melaporkan pembesaran perut selama tiga bulan terakhir. Pada usia kehamilan 6 minggu, pasien didiagnosis dengan kista ovarium yang kemudian dikonfirmasi sebagai massa kistik besar pada ovarium kanan dengan komponen papiler melalui pemeriksaan ultrasonografi. Berdasarkan IOTA simple rules, massa tersebut dicurigai ganas. Diagnosis sementara adalah dugaan keganasan ovarium dengan diagnosis banding kista ovarium multilokular. Pasien menjalani operasi ooforektomi kanan yang terencana pada usia kehamilan 18 minggu. Hasil histopatologi menunjukkan tumor mukinosa ganas pada ovarium kanan yang tidak menyerang tuba falopi kanan. Kehamilan dilanjutkan, dan pasien dipantau secara ketat dengan rencana evaluasi lebih lanjut setelah persalinan.

Kesimpulan: Kasus ini menyoroti kelayakan dan keamanan manajemen bedah konservatif pada kanker ovarium trimester kedua. Intervensi yang tepat dapat mengoptimalkan hasil bagi ibu dan janin. Keberhasilan kelanjutan kehamilan setelah tindakan bedah ini menegaskan pentingnya pendekatan multidisiplin yang disesuaikan dengan kondisi pasien dalam penatalaksanaan kanker pada kehamilan.

Kata kunci: kanker ovarium, kehamilan, kanker ovarium musinosum

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Introduction

Ovarian carcinoma is a rare gynecological malignancy during pregnancy, with an estimated incidence of 1:12,000 to 1:50,000 pregnancies.[1] Although uncommon, this condition poses significant clinical challenges as management decisions must balance the well-being of both mother and fetus. For malignant ovarian tumors, optimal management requires a multidisciplinary approach involving collaboration between obstetricians, oncologists, and surgeons to ensure that interventions are performed effectively without jeopardizing the pregnancy.[2] Approximately 2 to 5% of ovarian masses diagnosed during pregnancy are malignant, and accurate staging during surgery is crucial in determining appropriate treatment.[3] In advanced cases, ovarian malignancy during pregnancy may complicate diagnosis and management, where treatment often includes chemotherapy followed by surgery close to delivery.[3]

In this case, a patient presented with mucinous ovarian carcinoma during the second trimester of pregnancy, creating a unique clinical scenario. In addition to the detected malignancy, determining the appropriate timing of surgical intervention during pregnancy posed the primary challenge. This case report aims to add to the medical literature on the optimal management of malignant ovarian tumors during pregnancy, focusing on the appropriate timing and method of intervention, as well as pregnancy management following surgery.

Case

A 21-year-old woman, G1P0A0, presented at 17-18 weeks of gestation for a routine prenatal checkup. The patient reported no complaints related to her pregnancy but mentioned abdominal enlargement for the past three months. At 6 weeks of gestation, an ovarian cyst was detected, but the patient experienced no abdominal pain, weight loss, or changes in appetite. Vital signs were within normal limits. On abdominal examination, a large mass was palpable up to the xiphoid process, measuring approximately 30x30x30 cm, with a cystic consistency, while the uterus was difficult to assess. The vulva and vagina showed no abnormalities, and adnexal mass palpation was challenging.

An ultrasonography test revealed a healthy fetus at 18 weeks and 2 days gestation. Laboratory tests, including hematology, were normal, although tumor marker testing was not performed. Ultrasound imaging of the adnexa (Figure 1) revealed a well-defined

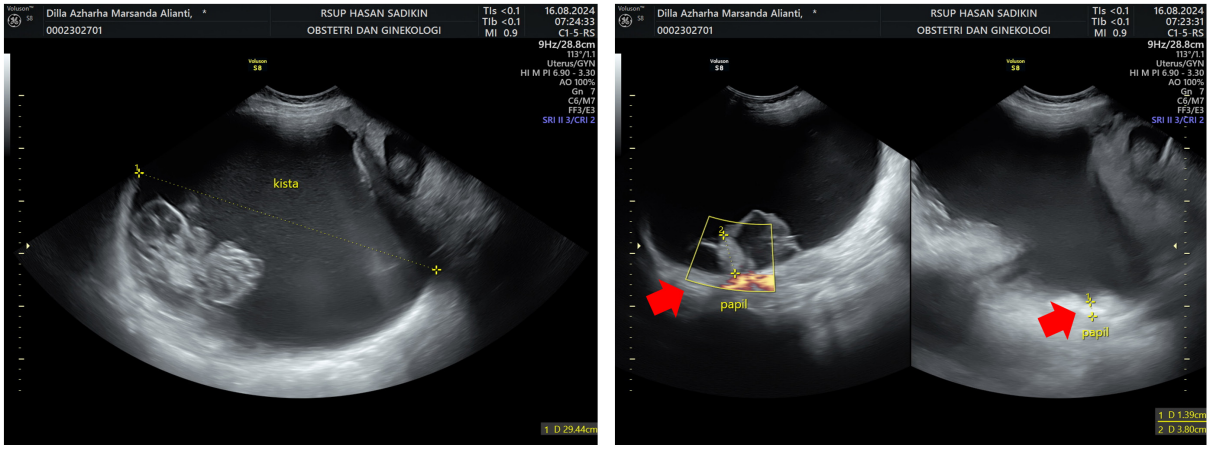

Figure 1 Ultrasound imaging of the adnexa

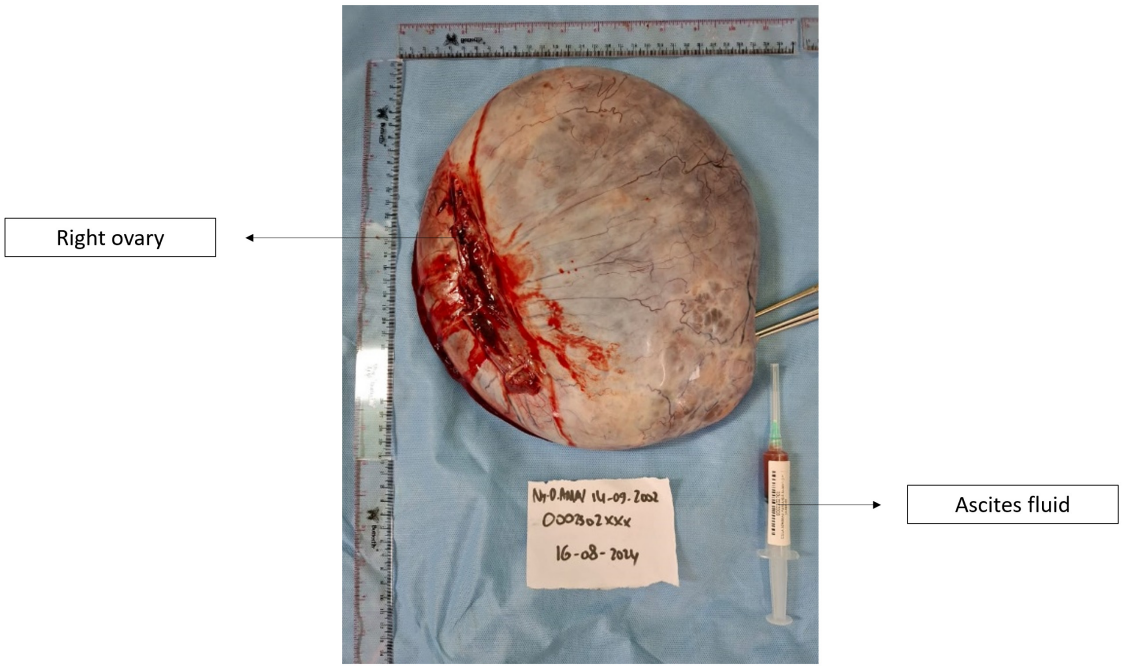

Figure 2. Gross anatomy of cystic mass

unilocular hypoechoic mass measuring 26.63 x 20.54 x 18.79 cm with positive papillary structures, no neovascularization, and no free fluid. Furthermore, the oncological ultrasound identified the ovarian mass as suspicious of malignancy referring to the IOTA simple rules (M3). A chest X-ray showed no evidence of intrapulmonary metastasis or cardiomegaly. The patient was diagnosed with suspected ovarian malignancy with a differential diagnosis of multilocular ovarian cyst at 17-18 weeks of gestation.

The patient underwent a right oophorectomy three days after the examination. The intraoperative findings showed 50 cc of yellowish ascites after opening the peritoneum. A cystic mass measuring 30x30x20 cm, with a smooth surface and grayish-white color, was identified, originating from the right ovary (Figure 2). The uterus was consistent with a gestational age of 16-18 weeks, and the left adnexa appeared normal. Furthermore, these findings indicated that the patient was suspected of having stage IA ovarian carcinoma, and a right salpingo-oophorectomy was performed. There were no intraoperative complications, with an estimated blood loss of 100 cc.

The patient was discharged on the third postoperative day without complications, including infection or bleeding. Histopathology results confirmed a malignant mucinous tumor of the right ovary with stromal invasion but without fallopian tube involvement. Moreover, ascites analysis revealed malignant adenocarcinoma cells. The patient was scheduled for observation and follow-up after delivery.

Discussion

The management of ovarian cancer during pregnancy presents a clinical challenge requiring a highly cautious approach. Although it is rare, this condition necessitates precise decisions regarding the timing of surgical intervention, safe treatment options for both the mother and fetus, and the choice between delaying or continuing pregnancy after intervention. This case illustrates how ovarian cancer can be diagnosed and treated without disrupting pregnancy, yielding

positive outcomes for both mother and fetus.

In this case, the patient was diagnosed with a cystic ovarian mass suspected of being malignant during pregnancy. According to the European Society for Medical Oncology (ESMO) and the European Society of Gynaecological Oncology (ESGO) guidelines, ultrasound is the recommended first-line imaging modality for evaluating adnexal masses during pregnancy.[4] Further investigation with Magnetic Resonance Imaging (MRI) may be used if ultrasound results are inconclusive. In this case, the ultrasound revealed a large ovarian mass that appeared suspicious, prompting a surgical referral. A similar case involved a 35-year-old woman whose ovarian mass was detected via ultrasound, later diagnosed as FIGO stage IIIC ovarian cancer after laparotomy.[5]

A multidisciplinary approach is essential in cases like this. The involvement of obstetricians, oncologists, and surgeons is necessary to ensure that all aspects of maternal and fetal health are concerned.[6] The management of ovarian tumors during pregnancy often involves close monitoring, delayed treatment, and planned surgical interventions such as oophorectomy, which has been proven safe in the second trimester.[7] ESGO-ESMO guidelines recommend surgical intervention before 22 weeks of gestation to minimize the risk of miscarriage and pregnancy-related complications. In this case, surgery was performed at 17-18 weeks, which aligns with the recommendation for second-trimester intervention. This is considered the optimal timing because the risk of teratogenicity in the fetus is lower after organogenesis is complete, and the risk of preterm delivery is minimized compared to surgery in the third trimester.[4] Referring to several case reports, surgical procedures performed in the second trimester carry minimal risk to both the mother and fetus. At the same time, more aggressive treatments, such as chemotherapy, are often deferred until after delivery.[8]

The surgical findings confirmed malignant mucinous ovarian carcinoma with stromal invasion but without fallopian tube involvement, classifying the patient with stage IA ovarian carcinoma. According to ESGO-ESMO guidelines, surgery is the primary treatment for early-stage epithelial ovarian carcinoma diagnosed during pregnancy. However, in cases of advanced-stage ovarian cancer diagnosed in the first trimester, termination of pregnancy should be considered, or if the patient opts to continue the pregnancy, platinum-based chemotherapy (e.g., paclitaxel) may be administered after the first trimester.[4] In this case, because the tumor was confined to the ovary and classified as early-stage, further chemotherapy was not required. However, strict observation and follow-up will be conducted postpartum.

The ESGO-ESMO guidelines also recommend that in high-risk malignancies during pregnancy, such as this case, a proactive surgical approach is necessary, and surgery should be performed with caution, considering pregnancy-specific physiological factors like increased coagulability and the need for appropriate incision placement to optimize pelvic organ exposure. Surgery at 17-18 weeks gestation is ideal, as, at this stage, the placenta has taken over the hormonal functions of the corpus luteum, reducing the risk of spontaneous miscarriage associated with fetal abnormalities.[9]

Postoperative management for the patient included progesterone administration to prevent preterm labor, which is a standard part of care for surgical procedures during pregnancy. In this case, the patient received progesterone as part of her postoperative care, consistent with guidelines to reduce the risk of uterine contractions and preterm delivery.[10] Additionally, patient education is crucial to explaining prognosis and postoperative follow-up, particularly regarding observation planned for the postpartum period.

Conclusion

This case underscores the importance of early diagnosis and timely surgical intervention for ovarian tumors during pregnancy to ensure the health of both mother and fetus. Moreover, surgical intervention performed during the second trimester proved to be safe and yielded positive outcomes for the patient.

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