

Case Series

A Case Series on Pregnant Patients with Ovarian Cysts and Management of Potential Complications

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Abstract

Objective: This case series aims to present and analyze three cases of pregnant patients with ovarian cysts, highlighting different complications that arose during their pregnancies and discussing management approaches.

Methods: We present three cases of pregnant patients with ovarian cysts diagnosed at different trimesters of gestational age. Patients included in this case series were shown to have cysts at the time of sonographic examination.

Case: Each case displayed different complications which includes constipation, urinary hesitancy, ovarian cyst torsion, and arrest of descent during in labor, which underwent specific management for each complication which includes elective cystectomy, emergency laparotomy and emergency cesarean section, respectively. All patients were discharged in clinically stable conditions and the mass was evaluated for further histopathologic examination. Follow up for histopathologic examinations revealed benign ovarian cysts (ovarian mature teratoma and serous cystadenoma) in all cases. This case series will also discuss possible complications of pregnancy with ovarian cysts, and the prevalence of each complication based on the gestational age. Due to its potential complications, ovarian cysts in pregnancy must be accurately evaluated and given appropriate management.

Conclusion: Ovarian cysts in pregnancy must be evaluated accurately so that appropriate management is carried out. Clinicians should be aware of cyst complications during pregnancy.

Keywords: Ovarian Cysts, Pregnancy, Potential Complications.

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INTRODUCTION

Ovarian cysts are liquid-filled structures that might be simple or complex. They are normal discoveries typically found unexpectedly on actual assessment or imaging. Ovarian cysts may result in rupture, hemorrhage, and torsion, which are viewed as gynecological emergencies. Accordingly, it is fundamental to immediately diagnose and manage it to avoid patient mortality.¹

There are several variants of ovarian cysts in pregnancy, theca-lutein cyst is one of the most common ovarian cysts in pregnancy resulting from the increase in human chorionic gonadotrophin (hCG) hormone in the cases of molar pregnancy or fetal hydrops.² Hyperreactive luteinialis (HL) is the

second most common ovarian cyst in pregnancy, which is often associated with the trophoblastic disease.³ In addition, there is luteoma which is a mass in the ovaries and is associated with the condition of ovarian hyperstimulation and polycystic ovaries should be suspected in cases with a previous history of infertility. Other ovarian cysts variants including dermoid cysts, adenoma cysts, functional corpus luteal cysts, and endometrioma are the most common benign causes of ovarian cysts in pregnancies.^{4,6}

Ovarian masses or cysts during pregnancy should be further evaluated for indications of surgical intervention. Ultrasonography (USG) and Magnetic Resonance Imaging (MRI) are preferable diagnostic modalities to distinguish benign or malignant conditions. Laparoscopic

interventions or open surgery can be performed based on tumor diameter, gestational age, and operator skill level.⁵

Most adnexal masses are diagnosed accidentally in the first trimester. It is estimated that 65-80% of cases are asymptomatic and almost 75% recover spontaneously. Borderline ovarian tumors and mature ovarian teratoma are most commonly diagnosed with histopathological examination.⁶

CASE 1

A 35-year-old pregnant woman (5-gravida, 3-para, 1-abortus), with a previous history of cesarean section in 2017 due to Fetal bradycardia and 1 day history premature ruptured of

membranes, came to our clinic with a chief complaint of an enlarged abdomen and epigastric pain in the past 2 months before admission. Patient complaints are accompanied by difficulty defecating and urinating. Ultrasonography examination (Figure 1) revealed a singleton living intrauterine fetus at 11-12 weeks of gestational and a multiloculated hypoechoic mass originated from the adnexa with a solid part measuring 13.86 x 10.06 cm, suspected to be mixed solid-cystic ovarian neoplasms. The patient is educated on pregnancy conservation, follow-up tumor marker analysis, and routine sonography examinations. Elective laparotomy cystectomy was planned at 18-20 weeks of gestation. Histopathologic examination revealed ovarian mature teratoma.

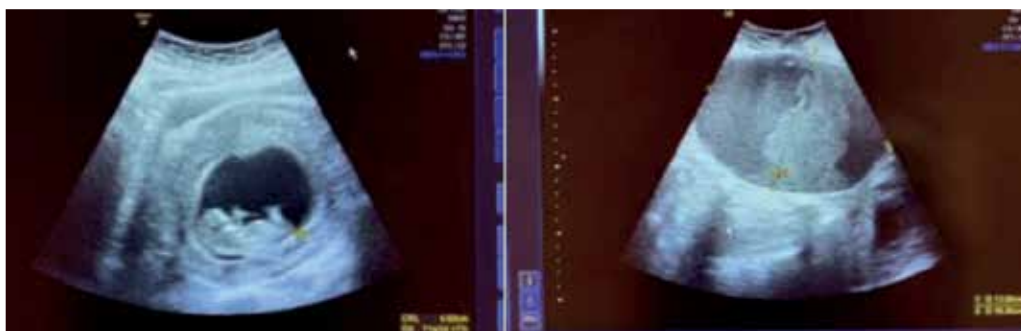


Figure 1. Ultrasonography from Case 1 revealed a singleton living intrauterine fetus at 11-12 weeks of gestation with a multilocular hypoechoic mass

CASE 2

A 19-year-old primigravida woman at 38-39 weeks of gestation came to our clinic with a complaint of persistent labor pain and bloody show on the past 1 day before admission, she also felt a decrease in fetal movement. The patient was further diagnosed with the dystocia of labor (prolonged active phase) and fetal tachycardia due to persistent 4-5 cm of cervical dilatation in observed 4 hours and an increase in fetal heart rate of 170-175 beats per minute respectively. The patient has no previous history of antenatal care during the first and second trimesters, and has no previous medical history. The vital signs of the patient were unremarkable. Abdominal examinations revealed a large fundal height of 37 cm, despite only having a singleton living intrauterine fetus with relatively smaller

estimated fetal weight of 2900-3000 grams in ultrasonography. Ultrasonography (Figure 2) also revealed an uninoculated hypoechoic mass, measured 14.2 cm x 9.4 cm originating from the right adnexa. Consequently, the patient was managed with intrauterine resuscitation and prepared for emergency cesarean section with unilateral salpingo-oophorectomy. During the procedure, a female baby was born with a birthweight of 2950 grams and an APGAR of 5-6, a cystic ovarian mass sized approximately 14 x 9 cm was also evacuated and sent for a histopathologic examination (Figure 2). The left ovary and fallopian tube are visibly within normal appearance. The patient's postoperative condition and recovery were stable and within normal limits. Histopathologic examination revealed ovarian mature teratoma.



Figure 2. Ultrasonography and Gross Appearance of Ovarian Mass from Case 2

CASE 3

A 32-year-old pregnant woman (4-gravida, 3-para, 0-abortion) at 25-26 weeks of gestation came to our clinic with an acute episode of abdominal pain that radiates through the lower left abdomen 6 hours before admission (Visual Analogue Pain Scale 8-9). The patient has been diagnosed with an ovarian cyst 3 months before admission at the previous clinic. The vital signs of the patient were within normal limits. Ultrasonography examination (Figure 3) revealed a singleton living intrauterine pregnancy with

a multiloculated hypoechoic mass sized with visible abdominal free fluid in the rectovaginal space with color doppler examination revealing a positive whirlpool sign suggesting ovarian cyst torsion. Emergency laparotomy-unilateral salpingo-oophorectomy was performed for the patient, and a cystic ovarian mass sized approximately 15 x 12 cm was evacuated and sent for histopathologic examination (Figure 3). The left ovary and fallopian tube are normal. Histopathology examinations revealed ovarian serous cystadenoma.



Figure 3. Ultrasonography and Gross Appearance of Ovarian Mass and Torsion from Case 3

Table 1. Summary of all three cases with patient and case characteristics, and treatment

Case No.	Patient Characteristics	Case Characteristics	Treatment
Case 1	1. 35-year-old 2. G5, P3, A1 3. Gestational Age 11-12 weeks	1. Cyst Discovery: 1 st Trimester 2. USG Mass Characteristics: multiloculated hypoechoic mass, 13.86 x 10.06 cm suspected to be mixed solid-cystic ovarian neoplasm 3. Potential Complication: Spontaneous Abortion	Routine USG Elective Laparotomy Cystectomy At 18-20 weeks Of Gestation
Case 2	1. 19-year-old 2. G1, P0, A0 3. Gestational Age 37-38 weeks	1. Cyst Discovery: 3 rd Trimester 2. USG Mass Characteristics: uninoculated hypoechoic mass, 14.2 cm x 9.4 cm 3. Potential Complication: Uterine Inertia (as occurred in the case)	Emergency Cesarean section With Salpingo-Oophorectomy
Case 3	1. 32-year-old 2. G4, P3, A0 3. Gestational Age 25-26 weeks	1. Cyst Discovery: 2nd Trimester 2. USG Mass Characteristics: multiloculated hypoechoic mass, 15,5 x 12,5 cm with visible abdominal free fluid in the rectovaginal space suggesting ovarian cyst torsion. 3. Potential Complications: Ovarian Cyst Torsion (as occurred in the case)	Emergency Laparotomy Salpingo-Oophorectomy

Table 2. Incidence of Potential Complications of Ovarian Cysts in Pregnancy^{7,8}

Potential Complications	Incidence
Torsion	• 5% of pregnant women with mass • 20% of pregnant woman with mass > 6 cm
Rupture	• 0,5%
Malignancy	• 0,02 to 1% • Ovarian Cancer 1 : 12.500 pregnancy
Preterm Delivery	• 5,8% - 10,4%
Abortion	• 0 - 6%

DISCUSSION

In general, ovarian mass in pregnancy is diagnosed accidentally during a routine sonographic examination. Ovarian mass detection has been significantly reciprocal with routine sonographic pregnancy screening. It was roughly estimated that ovarian mass was discovered in 1 per 76 to 2328 pregnancies, most often discovered during the second trimester, and spontaneously regress in 65-80% of cases. Resection of persistent ovarian mass is carried out to prevent potential complications such as torsion, rupture, birth obstruction, and malignancy.^{5,8,9}

Ovarian cysts are the most abundant ovarian mass in pregnancy. Corpus luteal cysts incidence reaches 13 to 17% of cases in pregnancy, it produces progesterone and usually lasts 8-9 weeks of gestation before spontaneously resolving. Other types of ovarian cysts in pregnancy may include hemorrhagic cysts or endometrioma and dermoid cysts, which are most likely to form after 16 weeks of gestation. The incidence of ovarian malignancy in pregnancy reaches to one in every 12,000 to 47,000 cases and is considered the second most common mass after benign gynecological masses, and dysgerminoma is the most common malignancy found in pregnancies^{5,9}.

Potential complications of ovarian cysts in pregnancy include spontaneous abortion, ovarian cyst torsion, cyst rupture, malignancy, and preterm delivery (Table 2).^{7,8} Spontaneous abortion in pregnancy may occur due to hemorrhagic cysts or endometrioma/endometriosis, this condition occurs as the quality of the embryo decreases due to maternal immunity factors, thereby reducing the embryonic clinical outcomes.^{10,11,12}

Ovarian cyst torsion in pregnancy occurs in an estimated five cases per 10,000 pregnancies

and has both high mortality and morbidity rate. Torsion more commonly occurs in the left tubal-ovarian side as opposed to the right side with an incidence ratio of 3:2, and most commonly occurs at approximately 6-14 weeks of gestation due to corpus luteal cysts.¹³

Cyst rupture in pregnancy commonly occurs during the delivery process in corpus luteal cysts and endometrial cysts due to their thinner wall structure. During labor, abdominal-fetal pressure, uterine contractions after childbirth, adhesion between tumor and uterus, external fundal pressure (*Kristeller maneuver*), and postpartum fundal massage also increases the risk of cyst rupture. Decidualization during pregnancy can affect endometrial cysts resulting in softening making them more likely to rupture. The diagnostic process of is often complicated due to overlapping labor pain and further signs of postpartum ileus. Bleeding in the corpus luteum is a rare complication that occurs more frequently in younger women, especially when associated with pregnancy.^{14,15}

The existence of pelvic mass/cyst can also be responsible for labor dystocia through obstruction the descent of the presenting fetal part. Several studies of mass size in adnexa obstructed the labor process, thus inhibiting delivery.¹⁶

The decision to perform surgical or conservative management has to consider both maternal and fetal factors. Surgical procedures in pregnant patients with cysts may carry its own intraoperative and perioperative risks. Acute conditions such as torsion, rupture, and obstruction of childbirth require immediate surgical management. Prevoiously showed that women who underwent emergency surgery had a much higher risk of preterm labor (22% vs. 3.8%). Conservative management of ovarian mass during pregnancy may be an acceptable option in some cases. It is estimated that 71% of

the ovarian mass is benign and spontaneously regresses, while the incidence of malignant ovarian mass in pregnancy is very low (0-3% cases). Therefore, surgical management can be postponed in favor of conservative management in simple ovarian mass (< 5 cm diameter) or in complex asymptomatic ovarian mass. If the mass discovered during the first-trimester ultrasonography does not show malignancy, therefore it is necessary to carry out a further evaluation at 18-22 weeks of gestation. If the mass is discovered during the second trimester then a re-examination is carried out at 32-36 weeks gestation.^{7,17,18}

In cases of complex ovarian masses that cannot be ascertained to be benign in origin by imaging, surgical management can be performed. Ultrasound features of malignant ovarian masses such as the presence of pelvic free fluid, solid components, papillary appearance, large multiloculated tumors, internal septa, and vascular nodules, should be suspected as malignancies and require surgical intervention.⁷

CONCLUSION

Ovarian cysts in pregnancy must be evaluated accurately so that appropriate management is carried out. Ultrasound examination can further evaluate diagnosis. The surgical management which includes open laparotomy or laparoscopic surgery must be performed as indicated. Clinicians should be aware of cyst complications during pregnancy such as spontaneous abortion, rupture, bleeding, and ovarian cyst torsion.

Data Availability

The data is collected from medical records and is not available for readers due to patient security.

Conflict of interest statement

The authors declare that they have no conflict of interest regarding the publication of this article.

Funding Statement

No funding from an external source supported the publication of this case report.

Ethical Approval

This study was approved in accordance with

the Declaration of Helsinki (1964) by the Ethical Review Agency in Sam Ratulangi University, Manado, Indonesia. Verbal and written consent to publish the data was obtained from the patients.

Authors' Contributions:

Gezta N. Hermawan as the primary author collected the data on all cases. Bismarck J. Laihad analyzed all the patient findings together and revised the manuscript. All authors approved the final version.

ACKNOWLEDGMENTS

The authors would like to thank the patients for the participation in this case report, and written consent was obtained from all patients. The authors would also like to acknowledge (with permission) all obstetrics and gynecology physicians of Kandou Central General Hospital involved in care of the patients included in this case series.

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