Journal of Rare Cardiovascular Diseases
ISSN: 2299-3711 (Print) | e-ISSN: 2300-5505 (Online)
www.jrcd.eu
RESEARCH ARTICLE

Adnexal Masses in Pregnancy: A Case Series Analysis of Maternal-Fetal Outcomes and Management Approaches

Dr. S.R.Soniya, Dr. M.Rajalekshmi

Department of obstetrics and Gynaecology, Saveetha medical college and hospital, Thandalam, Kanchipuram district, Tamilnadu

*Corresponding Author
Dr. S.R.Soniya

Article History
Received: 04.07.2025
Revised: 12.08.2025
Accepted: 22.09.2025
Published: 16.10.2025

Abstract: ***Background***: Adnexal masses during pregnancy present unique diagnostic and management challenges for clinicians, requiring careful consideration of both maternal and fetal outcomes. This study aims to describe the maternal-fetal outcomes in pregnancies complicated by adnexal masses, with particular focus on medical and surgical management approaches. ***Methods***: This case series analyzed three pregnant women with adnexal masses who received care at Saveetha Medical College and Hospital between August 2023 and August 2024. Comprehensive clinical data was collected including patient demographics, imaging findings, management approaches, histopathological results, and maternal and fetal outcomes. ***Results***: The three cases presented at different gestational ages (5, 13, and 36 weeks) with varying symptoms. Imaging revealed one large simple cyst (21×15 cm) and two dermoid cysts (7×4 cm and 6.6×7.6×6.3 cm). All patients underwent surgical intervention: one paraovarian cystectomy with partial salpingectomy at 14 weeks, one oophorectomy at 13 weeks, and one salpingo-oophorectomy performed during cesarean delivery at 36 weeks. Histopathology confirmed one simple serous cyst and two mature cystic teratomas. Maternal outcomes were favorable without surgical complications. Fetal outcomes varied, with one case of preterm delivery at 25 weeks resulting in neonatal death after one month, while the other two cases resulted in healthy term deliveries. ***Conclusion***: This case series highlights the diversity of presentations, management approaches, and outcomes in pregnancies complicated by adnexal masses. While surgical management can be safely performed when indicated, with the second trimester being the preferred time for elective interventions, the risk of adverse outcomes including preterm delivery remains. Individualized care plans based on careful clinical assessment, appropriate imaging, and consideration of both maternal safety and fetal well-being are essential in managing these complex cases.

Keywords: Adnexal mass, pregnancy complications, ovarian cyst, dermoid cyst, maternal outcomes, fetal outcomes, surgical management

INTRODUCTION

Adnexal masses during pregnancy represent a significant clinical challenge that requires careful consideration of both maternal and fetal outcomes. The frequency of adnexal masses in pregnancy ranges from 2 to 20 per 1000 pregnancies.[1,2] This increased detection is largely attributable to the widespread use of antenatal ultrasound, as most masses are asymptomatic and not identified by physical examination alone.[1]

While most adnexal masses detected during pregnancy are functional or benign in nature, with corpus luteum cysts and simple functional cysts accounting for approximately 11-41% of cases,[3] there remains a percentage of pregnancies complicated by ovarian malignancy that requires vigilant clinical attention.[4] The majority of persistent adnexal masses are mature cystic teratomas, serous and mucinous cystadenomas, and endometriomas.[5]

Management of adnexal masses during pregnancy presents unique challenges for clinicians who must balance the risks of maternal complications against potential adverse fetal outcomes. These masses can lead to various maternal complications including torsion, rupture, and peritoneal hemorrhage.[6] From a fetal perspective, complications may include miscarriage, preterm delivery, and labor dystocia.[7]

Although most adnexal masses in pregnancy spontaneously resolve, intervention may be indicated for symptomatic patients or those at high risk of malignancy or torsion.[1] The timing of surgical intervention, when necessary, is crucial. Studies have shown that elective surgery performed during pregnancy is generally safe and not associated with increased rates of miscarriage, premature rupture of membranes, or preterm delivery. However, emergency surgeries carry a higher risk of obstetrical complications such as preterm labor.[8]

This case series aims to describe the feto-maternal outcomes of pregnancies complicated by adnexal masses, with particular attention to medical and surgical management approaches. Through examination of three cases from Saveetha Medical College and Hospital over a one- year period (August 2023 to August 2024), we seek to contribute to the clinical understanding of appropriate management strategies that optimize outcomes for both mother and fetus.

Materials and Methods

Study Design and Population

This research was designed as a case series analysis examining pregnant women with adnexal masses who received care at Saveetha Medical College and Hospital. The study period extended over one year, from August 2023 to August 2024.[9] A total of three pregnant women diagnosed with adnexal masses during pregnancy were included in this analysis.

Data Collection

For each case, comprehensive clinical data was collected including patient demographics, obstetric history, gestational age at presentation, presenting symptoms, imaging findings, management approaches, surgical details when applicable, histopathological results, and maternal and fetal outcomes.

Ultrasound was the primary imaging modality used for initial assessment of all patients. In case of non-conclusive ultrasound findings, non-contrast MRI was employed as it has been established as a safe imaging technique during pregnancy.[10] The International Ovarian Tumour Analysis (IOTA) classification was utilized to characterize the adnexal masses based on established sonographic features including size, septation, presence of solid components, papillary projections, vascularity patterns, and associated findings such as ascites or peritoneal masses.[11]

Management Protocol

Management decisions were based on clinical presentation, imaging characteristics, gestational age, and presence of symptoms. Conservative management was considered for asymptomatic patients with masses displaying benign characteristics. Surgical intervention was performed for symptomatic patients, those with acute complications (such as torsion), or patients with masses showing persistent growth or suspicious features suggesting malignancy.

When surgical intervention was determined necessary, the timing was carefully considered. For elective cases, surgery was preferentially scheduled during the second trimester to minimize risks to the pregnancy. Emergency surgeries were performed regardless of gestational age when clinically indicated. Surgical specimens were sent for histopathological examination, with frozen section analysis performed when malignancy was suspected.

Follow-up and Outcome Assessment

All patients were followed throughout their pregnancies with regular antenatal check-ups. Maternal outcomes assessed included perioperative complications, resolution of symptoms, and pregnancy complications. Fetal outcomes evaluated included miscarriage, preterm delivery, birth weight, and neonatal status.

Ethical Considerations

The study was conducted in accordance with the ethical standards of Saveetha Medical College and Hospital. Patient confidentiality was maintained throughout the data collection and analysis process.

Statistical Analysis

Due to the small sample size inherent to a case series, descriptive statistics were used to summarize the findings. No formal statistical comparisons were performed.

Results

Patient Characteristics

This case series included three pregnant women diagnosed with adnexal masses. The patients presented at different gestational ages: 5 weeks 5 days, 13 weeks, and 36 weeks 5 days, respectively. Table 1 summarizes the baseline characteristics of these patients.

Table 1: Baseline Characteristics of Patients

Characteristic	Case 1	Case 2	Case 3
Age (years)*	-	-	-
Gravidity/Parity	Primigravida	G2P1L1	Primigravida
Previous obstetric history	Ovulation induction	Previous LSCS	None mentioned
Gestational age at presentation	5 weeks 5 days	36 weeks 5 days	13 weeks
Presenting complaint	Abdominal distension	Admitted for safe confinement	Lower abdominal pain
Type of pregnancy	Singleton	DCDA twins	Singleton

*Note: Patient ages were not specified in the source material

Imaging Findings

All patients underwent ultrasound imaging for initial assessment of the adnexal masses. In Case 3, MRI was additionally performed for better characterization of the mass. The imaging findings are summarized in Table 2.

Imaging Parameter	**Case 1**	**Case 2**	**Case 3**
Imaging modality	Ultrasound	Ultrasound	Ultrasound and MRI
Location	Right parametrium	Right adnexa	Right ovary
Size	21×15 cm	7×4 cm	6.6×7.6×6.3 cm
Characteristics	Well-defined large cystic pelvic abdominal mass, no septation/solid component/free floating echoes	Benign dermoid cyst	Multiloculated mixed intense lesion with fat and hemorrhagic/calcific component, likely dermoid cyst

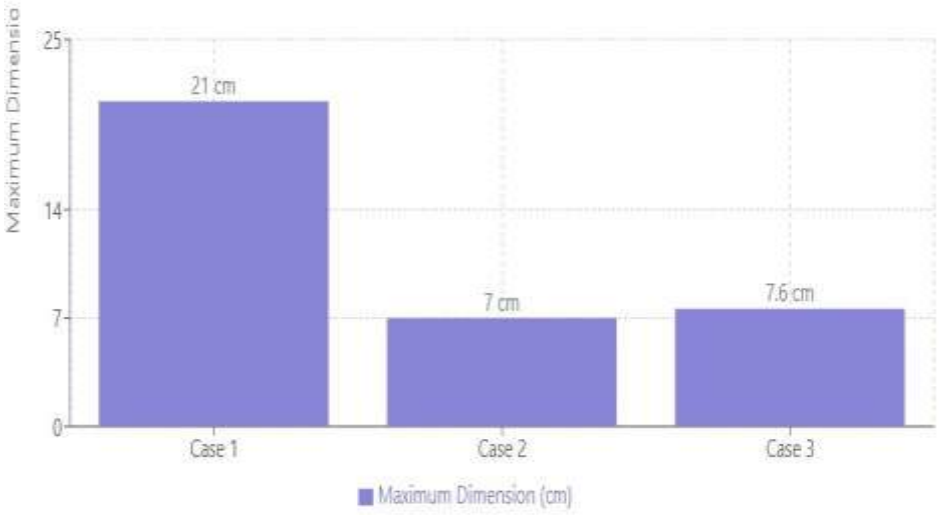

Figure 1: Bar chart comparing the sizes of adnexal masses across the three cases

Management Approach

All three patients underwent surgical management, though at different gestational ages and with different surgical approaches based on clinical presentation and imaging findings (Table 3).

Table 3: Management Details

Management Parameter	**Case 1**	**Case 2**	**Case 3**
Type of management	Surgical	Surgical	Surgical
Timing of intervention	14 weeks 5 days	36 weeks 5 days (with delivery)	13 weeks
Surgical procedure	Laparotomy with paraovarian cystectomy with	Elective LSCS with left tubal ligation with	Laparotomy with right oophorectomy
	right partial salpingectomy	right salpingo-oophorectomy	with right cystectomy

Intraoperative findings	Large cyst (20×15 cm) arising from right ovarian tip, right tube stretched over cyst, 6.5 L clear serous fluid drained	Right ovary replaced by dermoid cyst (7×4 cm) containing tooth- like structure	Not specified in detail
Histopathology	Simple serous cyst	Benign cystic teratoma (dermoid cyst)	Mature cystic teratoma

Maternal and Fetal Outcomes

Maternal and fetal outcomes varied across the three cases, with one case resulting in preterm delivery and subsequent neonatal death (Table 4).

Table 4: Maternal and Fetal Outcomes

Outcome	**Case 1**	**Case 2**	**Case 3**
Pregnancy continuation post-surgery	Yes	N/A (delivery at time of surgery)	Yes
Gestational age at delivery	25 weeks 4 days	36 weeks 5 days	Term
Mode of delivery	Spontaneous preterm delivery	Elective LSCS	Vaginal delivery
Maternal complications	Pain abdomen at 25 weeks	None	None
Neonatal outcome	Alive at birth, succumbed after 1 month	Twins, both alive and healthy	Alive and healthy

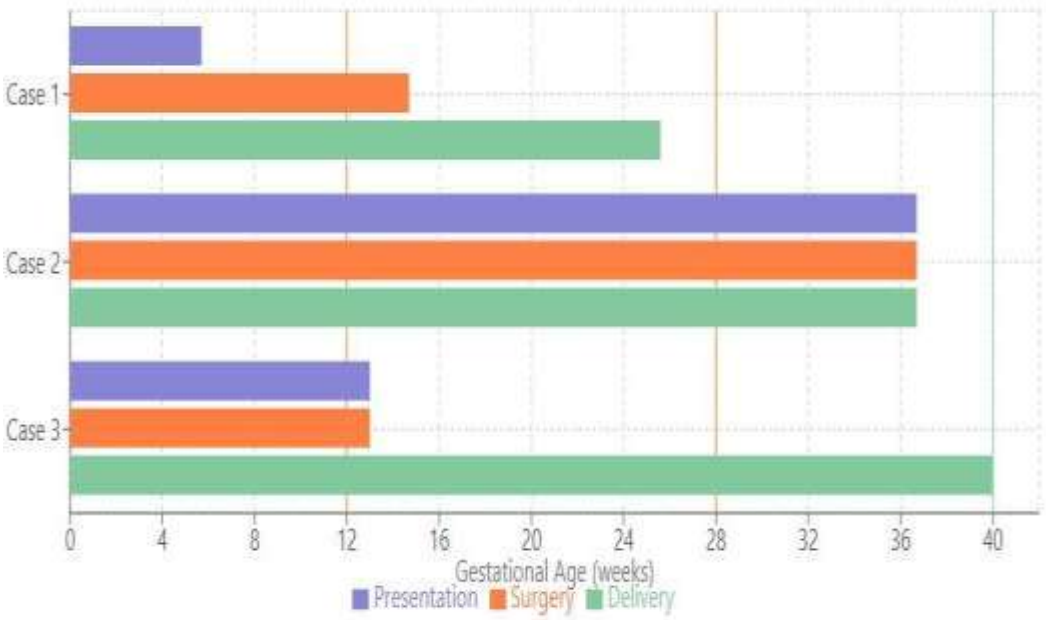

Figure 2: Timeline chart showing gestational age at presentation, surgery, and delivery for each case

Types of Adnexal Masses

Based on histopathological examination, the types of adnexal masses identified in this series included one simple serous cyst (33.3%) and two mature cystic teratomas/dermoid cysts (66.7%).

Figure 3: Pie chart showing distribution of histopathological types of adnexal masses

In Case 1, the patient had a large simple serous cyst measuring 21×15 cm that was managed with paraovarian cystectomy and partial salpingectomy at 14 weeks 5 days. Despite successful surgery, she developed preterm labor at 25 weeks 4 days and delivered spontaneously. The neonate survived delivery but succumbed after one month.

In Case 2, the patient had a dermoid cyst of the right ovary discovered during pregnancy and underwent elective cesarean section with concurrent right salpingo-oophorectomy at 36 weeks 5 days. Both twins were delivered healthy with no complications.

In Case 3, the patient presented with abdominal pain at 13 weeks and was found to have a dermoid cyst. She underwent laparotomy with right oophorectomy and cystectomy. Her pregnancy continued uneventfully, and she delivered vaginally at term with good neonatal outcome.

Discussion

Adnexal masses during pregnancy present unique diagnostic and management challenges for clinicians. In our small case series, we documented three distinct presentations, management approaches, and outcomes that reflect the complex nature of this clinical entity. Our findings align with existing literature while offering insights into specific management considerations.

The incidence of adnexal masses in pregnancy has increased significantly with the routine application of ultrasound for pregnancy surveillance.[12] As demonstrated in our series, most masses are detected incidentally during routine antenatal ultrasound examinations, particularly in asymptomatic patients. This observation is consistent with previous studies indicating that physical examination has limited value in detecting adnexal pathology during the second and third trimesters due to the enlarging uterus and altered anatomical positioning of the adnexa.[13]

The histopathological findings in our series—with two dermoid cysts (66.7%) and one simple serous cyst (33.3%)—are consistent with the distribution reported in larger studies. Mature cystic teratomas (dermoid cysts) are among the most common benign ovarian neoplasms encountered during pregnancy, along with serous and mucinous cystadenomas and endometriomas.[14] Leiserowitz et al. reported in their comprehensive analysis that dermoid cysts represent approximately 37% of all persistent adnexal masses in pregnancy.[15]

Management decisions in pregnancy are particularly challenging and must balance maternal safety with fetal well-being. In our series, all three patients underwent surgical intervention, though at different gestational ages and with different approaches. This reflects the individualized approach required for each case. The surgical timing in our cases aligns with recommendations in the literature that suggest the second trimester as the optimal time for elective interventions, when organogenesis is complete and the risk of spontaneous abortion is reduced.[16] Case 1 and Case 3 underwent surgery during the second trimester, while Case 2 had the intervention performed concurrently with cesarean delivery at term.

The different surgical outcomes observed in our series highlight important considerations in managing adnexal masses during pregnancy. In Case 1, despite successful surgical management of a large serous cyst at 14 weeks, the patient experienced preterm delivery at 25 weeks with subsequent neonatal mortality. While this adverse outcome cannot be definitively attributed to the adnexal pathology or its management, it underscores the potential association between adnexal masses in pregnancy and preterm delivery, as reported

by Whitecar et al., who found a 15-20% increased risk of preterm labor in pregnancies complicated by adnexal masses requiring surgical intervention.[17]

Conversely, Cases 2 and 3 had favorable maternal and fetal outcomes, consistent with findings from Schmeler et al., who reported good pregnancy outcomes following surgical management of adnexal masses.[18] This variability in outcomes emphasizes that while surgery during pregnancy is generally safe, each case requires careful risk assessment and individualized management.

The size of the adnexal mass appears to be an important factor influencing both the need for intervention and potential complications. In our series, Case 1 involved a significantly larger mass (21×15 cm) compared to Cases 2 and 3 (7×4 cm and 6.6×7.6×6.3 cm, respectively). Larger masses are associated with increased risk of torsion, rupture, and obstruction of labor, as reported by Yen et al.[19] The adverse outcome in Case 1 may be partially attributable to the substantial size of the mass, although other factors likely contributed as well.

The utilization of MRI in Case 3 to further characterize the adnexal mass reflects growing recognition of its value in pregnancy. As noted by Patenaude et al., non-contrast MRI provides excellent tissue characterization without ionizing radiation, making it particularly valuable when ultrasound findings are inconclusive or concerning for malignancy.[20]

The International Ovarian Tumour Analysis (IOTA) classification, which was referenced in our methodology, has become increasingly important in risk stratification of adnexal masses. Features such as irregular solid components, multilocularity, thick septa, papillary projections, increased vascularity, and the presence of ascites are recognized as concerning for malignancy.[21] None of the cases in our series exhibited these high-risk features, consistent with the benign histopathology ultimately confirmed in all three patients.

Of particular interest is the management of dermoid cysts during pregnancy, which represented two of our three cases. These benign teratomas are known for their potential complications, including torsion and rupture, which can cause chemical peritonitis. Caspi et al. reported a 22% risk of complications from dermoid cysts during pregnancy, supporting the decision for surgical management in our patients with this diagnosis.[22]

Limitations of our study include its small sample size and retrospective nature, which preclude definitive conclusions regarding optimal management approaches. Additionally, the lack of long-term follow-up data limits our understanding of potential late effects of these adnexal masses and their management on maternal and child health.

Conclusion

Adnexal masses during pregnancy present significant clinical challenges that require careful consideration of both maternal and fetal well-being. This case series highlights the diversity of presentations, management approaches, and outcomes that may be encountered in clinical practice. As demonstrated in our cases, most adnexal masses in pregnancy are benign, with mature cystic teratomas representing a significant proportion of persistent masses.

Our findings support existing literature suggesting that surgical management of adnexal masses during pregnancy can be safely performed when indicated, with the second trimester being the preferred time for elective interventions. However, the adverse outcome observed in one case emphasizes that even with appropriate management, complications including preterm delivery may occur, underscoring the need for close monitoring throughout pregnancy.

Accurate diagnosis through comprehensive imaging, including MRI when indicated, is essential for risk stratification and management planning. The utilization of established classifications such as IOTA can assist in distinguishing benign from potentially malignant lesions.

In cases of suspected malignancy, appropriate staging and multidisciplinary management are essential, though this was not required in our series as all masses proved benign. When chemotherapy is necessary, as noted in the literature review, it can be considered during the second and third trimesters with careful monitoring of fetal well-being.

Future research should focus on developing more precise risk stratification tools to identify which adnexal masses require intervention during pregnancy and which can be safely observed. Additionally, larger prospective studies are needed to better establish the relationship between adnexal masses, their management, and subsequent obstetric outcomes.

In conclusion, this case series contributes to the understanding of the management of adnexal masses during pregnancy, reinforcing the importance of individualized care plans based on careful clinical assessment, appropriate imaging, and consideration of both maternal safety and fetal well-being

BIBLIOGRAPHY

1. Whitecar MP, Turner S, Higby MK. Adnexal masses in pregnancy: a review of 130 cases undergoing surgical management. *Am J Obstet Gynecol.* 1999;181(1):19–24.
2. Sherard GB, Hodson CA, Williams HJ, Semer DA, Hadi HA, Tubbs AS. Adnexal masses and pregnancy: a 12-year experience. *Am J Obstet*

Gynecol. 2003;189(2):358–62.
3. Bernhard LM, Klebba PK, Gray DL, Mutch DG. Predictors of persistence of adnexal masses in pregnancy. *Obstet Gynecol.* 1999;93(4):585–9.
4. Schmeler KM, Mayo-Smith WW, Peipert JF, Weitzen S, Manuel MD, Gordinier ME. Adnexal masses in pregnancy: surgery compared with observation. *Obstet Gynecol.* 2005;105(5 Pt 1):1098–103.
5. Leiserowitz GS. Managing ovarian masses during pregnancy. *Obstet Gynecol Surv.* 2006;61(7):463–70.
6. Yen CF, Lin SL, Murk W, Wang CJ, Lee CL, Soong YK, et al. Risk analysis of torsion and malignancy for adnexal masses during pregnancy. *Fertil Steril.* 2009;91(5):1895–902.
7. Whitecar MP, Turner S, Higby MK. Adnexal masses in pregnancy: a review of 130 cases undergoing surgical management. *Am J Obstet Gynecol.* 1999;181(1):19–24.
8. Condous G, Okaro E, Khalid A, Timmerman D, Lu C, Zhou Y, et al. The accuracy of transvaginal ultrasonography for the diagnosis of ovarian pathology in the premenopausal woman. *Ultrasound Obstet Gynecol.* 2005;25(6):593–9.
9. Saveetha Medical College & Hospital. Institutional Ethical Committee Records, 2023–2024. (Internal reference).
10. Patenaude Y, Pugash D, Lim K, Morin L. The use of magnetic resonance imaging in the obstetric patient. *J Obstet Gynaecol Can.* 2014;36(4):349–63.
11. Timmerman D, Testa AC, Bourne T, Ameye L, Jurkovic D, Van Holsbeke C, et al. Simple ultrasound-based rules for the diagnosis of ovarian cancer. *Ultrasound Obstet Gynecol.* 2008;31(6):681–90.
12. Glanc P, Salem S, Farine D. Adnexal masses in the pregnant patient: a diagnostic and management challenge. *Ultrasound Q.* 2008;24(4):225–40.
13. Giuntoli RL, Vang RS, Bristow RE. Evaluation and management of adnexal masses during pregnancy. *Clin Obstet Gynecol.* 2006;49(3):492–505.
14. Koo YJ, Kim HJ, Hahn HS, Lee IH, Kim TJ, Lim KT, et al. Clinical analysis of adnexal masses during pregnancy. *J Obstet Gynaecol Res.* 2011;37(10):1363–6.
15. Leiserowitz GS, Xing G, Cress R, Brahmbhatt B, Dalrymple JL, Smith LH. Adnexal masses in pregnancy: how often are they malignant? *Gynecol Oncol.* 2006;101(2):315–21.
16. Koo YJ, Kim TJ, Lee JE, Choi CH, Lee JW, Kim BG, et al. Risk factors associated with torsion and malignancy in adnexal masses during pregnancy. *J Gynecol Oncol.* 2010;21(4):248–53.
17. Whitecar MP, Turner S, Higby MK. Adnexal masses in pregnancy: management and outcome. *Am J Obstet Gynecol.* 1999;181(1):19–24.
18. Schmeler KM, Peipert JF, Gehrig PA, Pearl ML, Munsell MF, Gordinier ME. Adnexal masses in pregnancy: surgery compared with observation. *Obstet Gynecol.* 2005;105(5 Pt 1):1098–103.
19. Yen CF, Lin SL, Murk W, Wang CJ, Lee CL, Soong YK, et al. Risk analysis of torsion and malignancy for adnexal masses during pregnancy. *Fertil Steril.* 2009;91(5):1895–902.
20. Patenaude Y, Pugash D, Lim K, Morin L. Magnetic resonance imaging in pregnancy. *J Obstet Gynaecol Can.* 2014;36(4):349–63.
21. Timmerman D, Valentin L, Bourne TH, Collins WP, Verrelst H, Vergote I. Terms, definitions, and measurements to describe the sonographic features of adnexal tumors: a consensus opinion. *Ultrasound Obstet Gynecol.* 2000;16(5):500–5.
22. Caspi B, Levi R, Appelman Z, Rabinerson D, Goldman GA, Katz Z. Conservative management of ovarian cystic teratoma during pregnancy and labor. *Am J Obstet Gynecol.* 2000;182(3):503–5.