

**ORIGINAL ARTICLE**DOI: <https://doi.org/10.3329/mediscope.v13i2.91946>**Histomorphological Pattern of Different Ovarian Tumors in Pregnancy at a Tertiary Care Hospital in Khulna, Bangladesh**

***Syeda Noorjahan Karim¹, *Amina Jannat Peea², Sohanur Rahman³, Abu Md. Mayeenuddin Al-Amin⁴, Banga Kamal Basu⁵, Sumaiya Binte Wahid⁶, Shantanu Sen⁶**

Abstract

1. Associate Professor, Department of Pathology, Gazi Medical College, Khulna, Bangladesh.

1. Professor and Head, Department of Gynaecology & Obstetrics, Gazi Medical College Hospital, Khulna, Bangladesh.

2. Assistant Professor, Department of Community Medicine, Army Medical College, Jashore, Bangladesh.

3. Associate Professor, Department of Microbiology, Gazi Medical College, Khulna, Bangladesh.

4. Professor and Ex-Head, Department of Surgery, Gazi Medical College Hospital, Khulna, Bangladesh.

5. Assistant Professor, Department of Pharmacology & Therapeutics, Gazi Medical College, Khulna, Bangladesh.

6. Assistant Professor, Department of Anesthesiology, Gazi Medical College Hospital, Khulna, Bangladesh.

***Corresponding author:** Dr. Syeda Noorjahan Karim, Associate Professor, Department of Pathology, Gazi Medical College, Khulna, Bangladesh.
Email: noorjahanska@gmail.com
<https://orcid.org/0009-0005-6646-585X>

How to cite:

Karim SN, Peea AJ, Rahman S, Al-Amin AMM, Basu BK, Wahid SB, Sen S. Histomorphological Pattern of Different Ovarian Tumors in Pregnancy at a Tertiary Care Hospital in Khulna, Bangladesh. Mediscope 2026; 13(2): 77-81.
<https://doi.org/10.3329/mediscope.v13i2.91946>

Submission: 13 August 2025

Acceptance: 04 May 2026

Publication: 30 July 2026



Copyright: © 2026 by the authors.

Licensee: MEDISCOPE, Gazi Medical College, Khulna, Bangladesh. This is an open-access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>). This license permits use, distribution, and reproduction in any medium, provided the original work is properly cited.

Background: Ovarian tumor in pregnancy presents a unique clinical challenge due to difficulties in diagnosis and management that are increasingly being faced by the clinician. After surgery, the nature of the tumor should be confirmed by histopathology. Early diagnosis usually leads to a good prognosis. **Aim:** The study aimed to analyze the diverse histomorphological features of ovarian tumors in pregnancy. **Methods:** This cross-sectional study was carried out at the Department of Obs & Gynae and Pathology of Gazi Medical College, Khulna, from January 2023 to June 2025. In this study, thirty (30) samples of ovarian tumors were collected. The specimens were received in different forms, processed and stained with hematoxylin and eosin and examined under a light microscope to evaluate histopathologic characteristics. The data was tabulated, and statistical analysis was performed. **Results:** In this study age of the patients varied from 19 to 35 years. The mean age was 27.2 ± 4.59 years. The right ovary (70%) was found to be affected more than the left ovary. Regarding parity, most of the patient (40%) was 2nd gravida. Most of the patients were diagnosed incidentally during C/S (90%). Three patients were diagnosed by USG and underwent laparotomy during the second trimester (10%). Histologically, the most common tumor was serous cystadenoma (73%), followed by mature cystic teratoma (10%). In the present study, only 1 patient was diagnosed as a malignant mixed germ cell tumor (3.3%). No significant correlation was found between the age, laterality, parity, and the histological study of the tumor. **Conclusion:** Histopathological study plays a very important role in the diagnosis, treatment, and prognosis of ovarian tumors. This study highlighted the distinct incidences and pathological characteristics of a wide range of ovarian tumors in pregnancy. While ovarian tumors in pregnancy are relatively rare, a multidisciplinary approach is essential to optimize maternal & fetal outcome.

Keywords: Ovarian tumor, Histopathology, Pregnancy, Serous cyst adenoma.

Introduction

Ovarian tumor in pregnancy is a clinical challenge. On one hand, the diagnostic process should be accurate, and adequate treatment should be implemented. On the other hand, the safety of the fetus must be kept in mind.¹ It is a very rare condition. According to various population-based studies and meta-analyses, they are observed in 2.0% of pregnant patients. Over 95% of these lesions are benign. While most masses are benign and resolve spontaneously, there are others that persist and indicate the need for surgical management.² A small but significant proportion may be malignant, posing risks to both maternal and fetal outcomes. Currently, ultrasound is routinely used early in pregnancy, and this helps in the early diagnosis and management of asymptomatic ovarian tumors.³ Most ovarian lesions do not cause any symptoms. Rarely can patients experience abdominal pain caused by tumor torsion or rupture.⁴ Surgical intervention, histological examination, and clinical findings remain the treatment of choice even during pregnancy.² Timely diagnosis and appropriate management in a tertiary hospital setting are essential for optimizing outcomes. Management remains challenging due to the need to balance maternal benefits and fetal safety. Elective surgery in the second trimester offers the safest window for intervention when indicated.²

Therefore, the study aimed to analyze the diagnostic approach, management strategy, surgical outcome and final pathological findings in cases of ovarian tumors that were diagnosed and treated during pregnancy. By documenting these cases, the rationale behind this study is multifaceted- raising awareness among healthcare professionals, clinical presentation and diagnostic challenges, effective treatment strategies, highlighting the gaps in knowledge, and encouraging further studies.

Materials and methods

This was a Descriptive type of cross-sectional study carried out at the department of Obs & Gynae and Pathology, Gazi Medical College (GMC), Khulna, from January 2023 to June 2025. The sample size was 30. The study population was pregnant females with a diagnosed case of ovarian tumor and an incidental diagnosis of ovarian tumor during caesarean section (C/S) at the specified time duration. All of these specimens of ovarian tumors were sectioned, stained, and studied in the Department of Pathology, GMC.

All the specimens were fixed in 10% formalin and kept for overnight fixation. The next day, the tissues were examined during grossing and were embedded accordingly. Tissue processing was performed manually following standard protocol for paraffin embedding. The paraffin blocks were sectioned with a rotary manual microtome at a thickness of 5 micrometers. From each paraffin block, tissue sections were taken on glass slides. After deparaffinization with xylene, the slides were rehydrated with decreasing graded alcohol. Then, the slides were stained with the routine Haematoxylin and Eosin (H&E) stain. Slides of all cases were examined thoroughly to confirm the diagnosis and to evaluate histopathologic characteristics. In case of malignancy, evaluation of the type of tumor, histologic grading of the tumor, presence of lymphovascular invasion, perineural invasion, and presence of necrosis was observed.

Sampling technique: Purposive type of non-probability sampling.

Inclusion criteria

- Pregnant females with a diagnosed case of ovarian tumor.
- Females with an incidental diagnosis of ovarian tumor during C/S.
- Respondents who are willing to participate in the study.

Exclusion criteria

- Adnexal lesion other than an ovarian tumor
- Ovarian non-neoplastic and inflammatory lesion.

Method of data collection

After getting verbal consent, data were collected by face-to-face interview, clinical records based on the questionnaire, and biopsy samples.

Results

This cross-sectional study aimed to assess the histomorphologic pattern of various ovarian tumors in pregnancy. In this study, the age of the patients varied from 19 to 35 years. The mean age was 27.2 ± 4.59 years (Table 01). The right ovary (70%) was found to be affected more than the left ovary. (Table 02). Regarding parity, most of the patient (40%) was 2nd gravida. (Table 03). In our study, most of the patients were asymptomatic (76.67%). Others presented with lower abdominal pain & heaviness (23.33%) (Table 04). Most of the patients were diagnosed incidentally during

C/S (90%). Three patients were diagnosed by USG and underwent laparotomy during the second trimester (Table 05). Histologically, we found only two types of tumors: surface epithelial tumors and germ cell tumors. Among them, the most common tumor was serous cystadenoma (73%), followed by mature cystic teratoma (10%). In the present study, two patients (6.7%) were diagnosed as serous cyst adenofibroma (borderline tumor), and only one patient was diagnosed as malignant mixed germ cell tumor (3.3%) (Table 06). No significant correlation was found between the age, laterality, parity, and the histological study of the tumor.

Table 01: Distribution of patients according to age

Age	Mean	27.2±4.59 years
	Max	19 Years
	Min	35 Years

Table 02: Distribution of patients according to laterality

Laterality	n (%)
Right	21 (70%)
Left	9 (30%)

Table 03: Distribution of patients according to parity

Parity	n (%)
2nd gravida	12 (40%)
Primi gravida	11 (37%)
3rd gravida	7 (23%)

Table 04: Distribution of patients according to clinical features

Clinical features	n (%)
Asymptomatic	23 (76.67%)
Symptomatic (Lower abdominal pain & heaviness)	7 (23.33%)

Table 05: Distribution of patients according to time of diagnosis

Time of diagnosis	n (%)
Diagnosed incidentally during C/S	27 (90%)
Diagnosed and underwent laparotomy during the second trimester	3 (10%)

Table 06: Distribution of patients according to histopathological diagnosis

Histopathological diagnosis of the tumor	n (%)
Serous Cystadenoma	22 (73%)
Mature Cystic Teratoma	3 (10%)
Mucinous Cyst Adenoma	2 (6.7%)

serous cyst adenofibroma	2 (6.7%)
Malignant mixed germ cell tumor	1 (3.3%)
Total	30 (100%)



Figure 01: Solido-cystic ovarian tumor surgically removed in the 2nd trimester

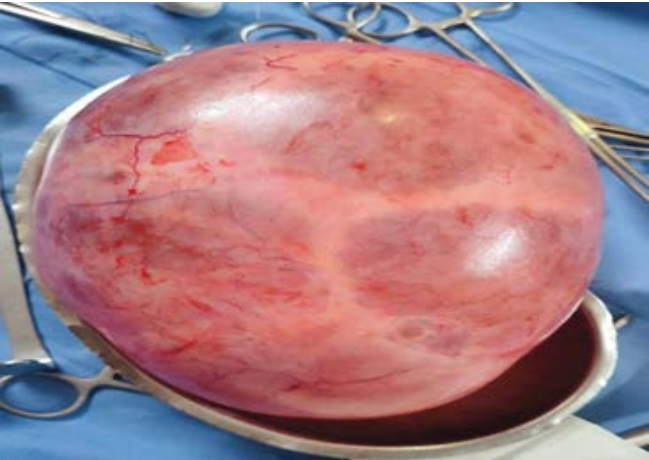


Figure 02: Cystic ovarian tumor surgically removed during C/S

Discussion

Ovarian tumors are relatively uncommon in pregnancy but represent one of the most frequently encountered adnexal masses during the antenatal period. With the widespread use of ultrasonography, the incidental detection of ovarian masses during pregnancy has increased. This study focuses on the prevalence of ovarian tumors in pregnancy in a tertiary hospital, analyzing clinical patterns, histopathological diagnosis, maternal-fetal complications, and management strategies.

In this study, the age of the patients varied from 19 to 35 years. The mean age was 27.2 ± 4.59 years. Some other studies showed similar type of results. Gasim et al. found in their study that the mean age was 27.2 years.⁵ A group of authors found in their study that the mean age was 23.47 years with a range of 18-29 years.⁶ Kwon et al. found that most of the patients are in the age group 23-40 years with a mean age of 29.1 years.⁷ These age differences may be due to different places of study and different sample sizes.

In the present study, the right ovary (70%) was found to be affected more than the left ovary. We didn't find any bilateral involvement. A group of authors found unilateral involvement in 84% cases.⁸

Regarding parity, most of the patient (40%) was 2nd gravida. A group of authors reported that most of the patients were primigravida (18.1%).⁵

Patients often presented incidentally during routine obstetric ultrasound examinations, though some cases presented with acute abdominal pain due to torsion or rupture. The majority of women underwent conservative management during pregnancy if the tumors were small, asymptomatic, and suggestive of benign features. In most cases, USG provides sufficient information to take decision for exploratory laparotomy or expectant management. Suspicion of a neoplastic tumor is high if the size of the tumor exceeds 6 cm or more, if echogenic and papilliform excrescences are seen within it. Once the diagnosis of an ovarian tumor is made, its removal is imperative as soon as possible to prevent acute complications and to resolve the possibility of malignancy.⁹

In our study, most of the patients were asymptomatic (76.67%). Others presented with lower abdominal pain (LAP) & heaviness (23.33%). Most of the patients were diagnosed incidentally during C/S. (90%). Only 10 % patient diagnosed and underwent laparotomy during the second trimester. There was no pregnancy loss in any of our cases. Gasim et al. found in their study that 16 (17.1%) tumors were discovered incidentally during elective or emergency cesarean section. Twenty-two (23.4%) patients presented as an acute emergency at different periods of pregnancy (8–40 weeks), and underwent laparotomy. Eleven tumors were found to have torsion of the pedicle, 4 ruptured, 3 had hemorrhage into the cyst, and 4 tumors caused obstructed labor.⁵ Another group of authors showed in their study that ten patients (58.82%) presented as an emergency at different periods of gestation and underwent laparotomy.

Eight tumors were found to have torsion of the pedicle (2 in the first trimester, 4 in the second trimester, and 2 during puerperium), 2 ruptured, and 4 had hemorrhage into the cyst.⁶

The treatment of ovarian tumors in pregnancy is still challenging, because the treatment decision is often associated with unacceptable errors. Regarding conservative management, it is widely recommended because the majority of ovarian tumors in pregnant women spontaneously disappear during follow-up, and only a few tumors are persistent and need further surgical intervention. Surgical intervention—preferably in the second trimester—was required in cases of large, symptomatic, or suspicious tumors. Maternal and fetal outcomes were generally favorable when managed in a multidisciplinary setting. However, malignant tumors, though rare, emphasize the importance of vigilance and the role of advanced imaging and tumor markers where feasible.⁶

In the present study, we found that the most common tumor was serous cyst adenoma (73%), followed by mature cystic teratoma (10%). In the present study, two patients (6.7 %) were diagnosed as serous cyst adenofibroma (borderline tumor), and only 1 patient was diagnosed as malignant mixed germ cell tumor (3.3%). A group of authors also reported serous cyst adenoma as the most common histologic type (23.52%), followed by mature cystic teratoma (17%). and malignant mixed germ cell tumor (5.9%).⁶ Gasim et al. showed mature cystic teratoma (39.4%) as the most common type, followed by serous cyst adenoma. (24.5%). They found 5 cases of malignant tumors (5.3%).⁵ May be these discrepancies are due to different sample sizes and duration.

The findings highlight that ovarian tumors in pregnancy, while uncommon, are clinically significant. From a public health perspective, the study underlines the value of accessible antenatal care with high-resolution imaging in tertiary hospitals. Early detection and individualized management can prevent complications while also allowing timely intervention for malignancy.

Limitation and recommendations

Small sample size and single-center study are considered limitations of the present study. Further large-scale studies are recommended to refine guidelines for diagnosis, follow-up, and management in resource-limited and advanced healthcare settings.

Conclusion

Histopathological examination plays an important role in differentiating between benign and malignant lesions. In the present study, the most common ovarian tumor was found serous cyst adenoma. Early detection and individualized management can prevent complications and also ensure timely intervention for malignancy.

References:

1. Giuntoli RL, Vang RS, Bristow RE. Evaluation and management of adnexal masses during pregnancy. *Clin Obstet Gynecol* 2006;49(3):492-505.
2. Kondi-Pafiti A, Grigoriadis C, Iavazzo C, Papakonstantinou E, Liapis A, Hassiakos D. Clinicopathological characteristics of adnexal lesions diagnosed during pregnancy or cesarean section. *Clin Exp Obstet Gynecol*. 2012 Dec 10;39(4):458-61.
3. Zanutti KS, Belinson JL, Kennedy AW. Treatment of gynecologic cancers in pregnancy. *Semin Oncol*. 2000; 27:686–698.
4. Erdemoglu M, Kuyumcuoglu U, Guzel AI. Clinical experience of adnexal torsion: evaluation of 143 cases. *J Exp Ther Oncol* 2011;9(3):17.
5. Gasim T, Al Dakheel SA, Al Ghamdi AA, Ali MA, Jama FA, Rahman J, Al Suleiman SA, Rahman MS. Ovarian tumors associated with pregnancy: a 20-year experience in a teaching hospital. *Archives of gynecology and obstetrics*. 2010 Nov;282(5):529-33.
6. Sunanda N. Ovarian tumours associated with pregnancy: a five-year retrospective study in a tertiary care hospital. *International Journal of Reproduction, Contraception, Obstetrics and Gynecology*. 4(6):1966.
7. Kwon YS, Mok JE, Lim KT, Lee IH, Kim TJ, Lee KH, Shim JU. Ovarian cancer during pregnancy: clinical and pregnancy outcome. *Journal of Korean Medical Science*. 2010 Jan 22;25(2):230.
8. Wang L, Huang S, Sheng X, Ren C, Wang Q, Yang L, Zhao S, Xu T, Ma X, Guo R, Sun P. Malignant ovarian tumors during pregnancy: A multicenter retrospective analysis. *Cancer Management and Research*. 2020 Oct 29:10841-8.
9. Curtis M, Hopkins MP, Zarlingo T, Martino C, Graciansky-Leng yl M, Jenison EL (1993) Magnetic resonance imaging to avoid laparotomy in pregnancy. *Obstet Gynecol* 82:833–836.