



## HETEROTOPIC PREGNANCY: AN EIGHT-YEAR SINGLE-CENTRE CASE SERIES EVALUATING CLINICAL PRESENTATION, DIAGNOSTIC APPROACH, LAPAROSCOPIC MANAGEMENT AND PREGNANCY OUTCOME

### OBGY & Laparoscopic Surgery

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### ABSTRACT

**Introduction:** Heterotopic pregnancy is defined as the coexistence of an intrauterine pregnancy with an extrauterine pregnancy. Although traditionally considered rare, its incidence has increased due to improved diagnostic imaging and the rising use of assisted reproductive techniques. Diagnosis remains challenging, as the presence of an intrauterine pregnancy can lead to delayed recognition of the ectopic component, increasing maternal morbidity. **Aim:** To evaluate the clinical presentation, diagnostic methods, management strategies, and outcomes of heterotopic pregnancy in patients presenting to a tertiary care centre. **Materials and Methods:** This retrospective case series was conducted at a tertiary care teaching hospital over an eight-year period from January 2018 to December 2025. Eighteen women diagnosed with heterotopic pregnancy were included. Clinical presentation, gestational age at diagnosis, site of ectopic pregnancy, laparoscopic findings, postoperative course, and pregnancy outcomes were analyzed. **Results:** Out of 18 cases, 17 (94.4%) were tubal heterotopic pregnancies and one (5.6%) was ovarian. The right fallopian tube was the most common site. Most cases were diagnosed between 4 and 6 weeks of gestation. All patients underwent laparoscopic surgical management with no major postoperative complications. Seventeen patients (94.4%) continued the intrauterine pregnancy to viability, resulting in live births, while one patient experienced miscarriage. **Conclusion:** Early diagnosis and prompt laparoscopic management of heterotopic pregnancy can result in excellent maternal and fetal outcomes. Clinicians should maintain a high index of suspicion for heterotopic pregnancy even in the presence of a confirmed intrauterine gestation.

### KEYWORDS

Heterotopic Pregnancy; Ectopic Pregnancy; Laparoscopy; Pregnancy outcome

### INTRODUCTION

Heterotopic pregnancy (HP) refers to the simultaneous occurrence of an intrauterine pregnancy and an ectopic pregnancy. The reported incidence in spontaneous conception cycles is approximately 1 in 30,000 pregnancies; however, this rate increases significantly with assisted reproductive techniques, reaching up to 1 in 100 pregnancies in some series. Despite this, heterotopic pregnancy remains an uncommon and frequently missed diagnosis.

The presence of an intrauterine pregnancy often leads to diagnostic complacency, resulting in delayed detection of the ectopic component. Such delays may culminate in tubal rupture, hemoperitoneum, and life-threatening maternal complications. Advances in transvaginal ultrasonography and increased clinical awareness have improved early diagnosis, allowing timely intervention.

Management of heterotopic pregnancy aims to treat the ectopic component while preserving the intrauterine pregnancy. Laparoscopic surgery has emerged as the preferred modality due to reduced morbidity and faster recovery. This study presents an eight-year single-center experience with heterotopic pregnancy, focusing on clinical presentation, surgical management, and pregnancy outcomes.

### MATERIALS AND METHODS

This retrospective case series was conducted in the Department of Obstetrics and Gynaecology at Dayanand Medical College and Hospital, Ludhiana, Punjab, India. Hospital records from January 2018 to December 2025 were reviewed.

### Inclusion Criteria

- Women diagnosed with heterotopic pregnancy confirmed by transvaginal ultrasonography and intraoperative findings.

### Data Collection

Data Collected Included:

- Gestational age at diagnosis
- Site of ectopic pregnancy
- Laparoscopic operative findings
- Postoperative complications
- Duration of hospital stay
- Outcome of the intrauterine pregnancy

All patients underwent laparoscopic surgical management. The intrauterine pregnancy was preserved in all feasible cases. Patients were followed until completion of pregnancy. Figure 1 shows the algorithm for diagnosis and management of heterotopic pregnancy.



**Figure 1. Diagnostic and Management Algorithm for Heterotopic Pregnancy**

Statistical analysis was performed using descriptive statistics and results were expressed as frequencies and percentages.

### Ethical Approval

The study was approved by the Institutional Ethics Committee of Dayanand Medical College and Hospital. Written informed consent was obtained from all patients.

### RESULTS

A total of 18 cases of heterotopic pregnancy were identified over the eight-year study period. Table 1 shows the baseline characteristics, table 2 tells about the demographic and clinical characteristics, table 3 about the gestational age at diagnosis, table 4 about the site of ectopic, table 5 about the intraoperative findings, table 6 about the postoperative stay and table 7 regarding the pregnancy outcomes.

**Table 1. Baseline Characteristics**

Variable	Number (%)
Mean age (years)	27.4 ± 3.2
Primigravida	10 (55.6)

Multigravida	8 (44.4)
Spontaneous conception	15 (83.3)
Assisted conception	3 (16.7)

**Table 2. Demographic and Clinical Characteristics of Patients (n = 18)**

Variable	Number	Percentage (%)
Age 20–25 years	6	33.3
Age 26–30 years	9	50
Age >30 years	3	16.7
Abdominal pain	14	77.8
Vaginal bleeding	6	33.3
Asymptomatic (diagnosed on USG)	4	22.2

**Table 3. Gestational Age at Diagnosis**

Gestational Age	Number	Percentage (%)
4–6 weeks	13	72.2
6–7 weeks	4	22.2
7–8 weeks	1	5.6

**Table 4. Site of Ectopic Pregnancy**

Site	Number	Percentage (%)
Right fallopian tube	16	88.9
Left fallopian tube	1	5.6
Ovary	1	5.6
Total	18	100

**Table 5. Intraoperative Findings in Tubal Pregnancies (n = 17)**

Tubal Location	Number	Percentage (%)
Ampullary region	14	82.4
Isthmic region	3	17.6

**Table 6. Postoperative Hospital Stay**

Duration of Stay	Number	Percentage (%)
2 days	7	38.9
3 days	10	55.6
5 days	1	5.6

**Table 7. Pregnancy Outcomes**

Outcome	Number	Percentage (%)
Live birth	17	94.4
Miscarriage	1	5.6 (ovarian ectopic)
Vaginal delivery	10	58.8
Caesarean section	7	41.2

**DISCUSSION**

Heterotopic pregnancy is an uncommon but potentially life-threatening obstetric condition characterized by the coexistence of intrauterine and ectopic gestations. Historically, the incidence in spontaneous pregnancies has been estimated to be approximately 1 in 30,000; however, the incidence increases significantly with assisted reproductive techniques, reaching as high as 1 in 100 pregnancies in some series.

In the present study, most cases were diagnosed between 4 and 6 weeks of gestation, highlighting the importance of early first-trimester ultrasonography. Early diagnosis is often challenging because the presence of an intrauterine pregnancy may lead clinicians to overlook the possibility of a concurrent ectopic pregnancy. Similar diagnostic challenges have been described by Talbot et al., who emphasized that a high index of suspicion is essential in patients presenting with abdominal pain despite confirmation of intrauterine pregnancy.

Consistent with previous studies, the fallopian tube was the most common site of ectopic implantation in our series, accounting for 94.4% of cases. The ampullary region was the predominant tubal location, which aligns with the findings reported by Yu et al. and Wang et al., where tubal pregnancies represented the majority of heterotopic cases.

Laparoscopic surgery was the treatment modality used in all patients in the present study. Minimally invasive surgery allows effective removal of the ectopic component while minimizing surgical trauma and preserving the intrauterine pregnancy. Previous studies have similarly demonstrated the safety and efficacy of laparoscopy in managing heterotopic pregnancy.

The live birth rate in our study was 94.4%, which is comparatively higher than many previously reported series where live birth rates ranged between 66% and 86%. The favourable outcome observed in this study may be attributed to early diagnosis, prompt surgical intervention, and careful postoperative obstetric follow-up.

The findings of this study highlight the importance of systematic adnexal evaluation during first trimester ultrasonography even when an intrauterine pregnancy is visualized. Early detection allows timely surgical management and significantly improves maternal safety while preserving the intrauterine pregnancy.

**Table 8: Comparison of Present Study with Previously Published Series**

Study	Year	Number of Cases	Most Common Site	Management	Live Birth Rate
Reece et al.	1983	35	Tubal	Laparotomy	66%
Louis-Sylvestre et al.	1997	12	Tubal	Laparoscopy	75%
Barrenetxea et al.	2007	20	Tubal	Surgery	70%
Yu et al.	2014	21	Tubal	Laparoscopy	81%
Wang et al.	2016	65	Tubal	Surgery / conservative	85%
Elsayed et al.	2023	15	Tubal	Laparoscopy	86%
Present Study (Kaur et al.)	2025	18	Tubal (94.4%)	Laparoscopy	94.4%

**CONCLUSION**

Heterotopic pregnancy, though rare, should always be considered in early pregnancy, even when an intrauterine gestation is confirmed. Early diagnosis and prompt laparoscopic intervention allow effective treatment of the ectopic component while preserving the intrauterine pregnancy, leading to excellent maternal and fetal outcomes.

**Clinical Message**

Early ultrasonographic evaluation of adnexa in early pregnancy is essential to avoid missing heterotopic pregnancy. Prompt laparoscopic management can effectively treat the ectopic component while preserving the intrauterine pregnancy.

**Declarations**

**Ethical Approval:** Approved by the Institutional Ethics Committee of Dayanand Medical College and Hospital, Ludhiana.

**Consent:** Written informed consent was obtained from all patients.

**Conflict of Interest:** The authors declare no conflict of interest.

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