

## Out of place, navigating the challenges of Ectopic pregnancy – A Comprehensive literature review

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### Abstract

Ectopic pregnancy occurs when a fertilized egg implants outside the uterus, most commonly in the fallopian tubes. This condition poses serious health risks, including rupture and internal bleeding, making early diagnosis and treatment critical. Clinical management involves a combination of ultrasound imaging and monitoring hCG levels, with treatment options ranging from medication to surgery, depending on the severity and progression. Beyond the medical emergency, ectopic pregnancy has a profound emotional impact, often leaving patients grappling with grief and anxiety. Fertility concerns also arise, as damaged fallopian tubes can affect future pregnancies. This paper discusses the medical, emotional, and reproductive challenges posed by ectopic pregnancy, emphasizing the need for timely intervention and comprehensive post-treatment care.

**Key words :** Ectopic pregnancy, Tubal pregnancy, Pregnancy complications, Infertility.

**A**n ectopic pregnancy is when a fertilised egg implants itself on external surface of the womb, rather than within it and begins to grow outside the main cavity of the uterus, usually in one of the fallopian tubes. The fallopian tubes are the tubes connecting the ovaries to the womb. If an egg gets stuck in them, it won't develop into a baby and your health may be at risk if the pregnancy continues. This

rare condition occurs in approximately 1.5% of pregnancies in developed countries. The embryo attaches to a fallopian tube, ovary, cervix, or abdominal cavity, rather than the uterine lining serious condition that can pose significant health risks to the mother if not diagnosed and treated promptly. An ectopic pregnancy arises when an egg that has been fertilized implants outside of the uterus, usually

in the fallopian tube, though it can also happen in the ovary, cervix, or abdomen<sup>17</sup>.

A multitude of conditions might impede the fertilized egg's usual journey to the uterine cavity, contributing to the etiology of ectopic pregnancy. The primary etiological factors are as follows: Tube Damage or Dysfunction i.e, Pelvic Inflammatory Disease (PID), infections, frequently brought on by STDs such as *Neisseria gonorrhoeae* or *Chlamydia trachomatis*, can result in inflammation and fallopian tube scarring, which can hinder the delivery of eggs. Previous Ectopic Pregnancy, future ectopic pregnancies are more likely to occur in those with a history of ectopic pregnancy. Tubal Surgery, the removal of a fallopian tube or its ligation, as well as the reversal of sterilization, can result in scarring or impair normal tubal function.

Endometriosis can occur, when endometrial tissue is found outside the uterus, it can cause scarring and inflammation of the tubes. Hormone levels are abnormal, as they can be when undergoing fertility treatments, it might impact the fallopian tubes' motility or the timing of ovulation. There is a chance of ectopic implantation due to the slowing down of tubal motility caused by certain progesterone-only contraceptives. Congenital Tubal Abnormalities, infrequent anatomical flaws that exist from birth can interfere with the fallopian tubes' ability to operate normally<sup>5</sup>.

Uterine or tubal fibroids, these can cause anatomical changes and block the fertilized egg's path. Assisted Reproductive Technologies (ART), by placing embryos abnormally during transfer, procedures like in vitro fertilization (IVF) may raise the chance of an ectopic

pregnancy. Other Risk Factors like Age, Smoking, Intrauterine devices (IUDs) are quite successful at preventing pregnancy, but if one does happen, there's a greater chance it will be an ectopic pregnancy.

Although the warning signs and symptoms of an ectopic pregnancy might vary, they usually appear between weeks four and twelve of pregnancy. Because untreated ectopic pregnancy can result in serious consequences, including potentially fatal internal bleeding, early detection is essential. The following are typical symptoms and signs: Abdominal or Pelvic Pain, frequently the first symptom to be noticed, may affect one side of the pelvis or abdomen and feel cramp, painful, or stabbing and should the ectopic pregnancy explode, the pain could get worse and spread more widely<sup>6</sup>. Bleeding is frequently distinct from typical menstrual bleeding (darker or lighter in colour); it can be light or heavy and mistaken for a regular menstrual period. Pain felt at the junction of the arm and shoulder; this is referred pain from internal bleeding causing diaphragm irritation. This may happen in conjunction with more severe symptoms and could be an indication of internal bleeding. Low blood pressure brought on by blood loss might cause dizziness, weakness, or fainting episodes. It's possible to experience symptoms like nausea, vomiting, or diarrhoea, which are frequently misdiagnosed as digestive problems. Signs of shock from severe internal bleeding include light-headedness, rapid heartbeat, cold, clammy skin, and dizziness. Some women may experience a quick end of symptoms, such as morning sickness, or an absence of these common symptoms during pregnancy<sup>23</sup>.

*Pathophysiology :*

When a fertilized egg implants outside the uterine cavity, usually in the fallopian tube, it results in an ectopic pregnancy. Normally, the egg implants into the uterine lining of the uterus after passing via the fallopian tube following fertilization. However, this process is hampered in ectopic pregnancy, frequently as a result of issues including tubal injury, scarring, or decreased egg motility<sup>28</sup>.

Abnormalities including inflammation, hormone imbalances, or physical blockages might create an environment in the fallopian tube that is favourable for implantation. These alterations could result from endometriosis, infections such as pelvic inflammatory disease, or prior procedures that harm the sensitive cilia that guide the egg along the tube. The embryo invades the tubal wall, a structure not meant to support a developing pregnancy, as it implants.

The embryo pushes the tube past its breaking point as it grows, which can cause pain and possibly burst. The embryo receives insufficient oxygen and nutrients because the tubal wall is not thick enough or has insufficient blood flow to support the pregnancy<sup>16</sup>. In order to avoid difficulties and maintain the patient's health and fertility, early detection and management of an ectopic pregnancy are crucial. This pathophysiological process emphasizes this point.

*Diagnosis :*

A mix of clinical assessment, lab testing, and imaging procedures are used to diagnose ectopic pregnancy by determining the pregnancy's position and existence. In order to avoid problems like internal bleeding and

tubal rupture, early identification is essential. The main procedures and techniques for identifying an ectopic pregnancy are as follows for clinical evaluation.

***Patient History :*** A thorough medical history is obtained in order to identify symptoms such as stomach discomfort, vaginal bleeding, and amenorrhea (missing period) as well as risk factors such as prior ectopic pregnancy, pelvic inflammatory disease, and tubal surgery. Physical Examination is necessary during a pelvic exam.

***Laboratory Tests :*** Serum Human Chorionic Gonadotropin (hCG) levels about double every 48 hours. The increase is frequently abnormal or slower in ectopic pregnancy. A sluggish increase or plateau in HCG levels may indicate an ectopic pregnancy.

***Progesterone Levels :*** Although this test is less frequently utilized for diagnosis, progesterone levels are frequently lower in ectopic pregnancies compared to normal intrauterine pregnancies.

***Transvaginal Ultrasound :*** Notably, there was no intrauterine pregnancy detected, despite the fact that hCG levels typically indicate that one should be evident (normally over 1,500–2,000 IU/L), and there was an adnexal mass or gestational.

***Abdominal Ultrasound :*** Although less sensitive, particularly in the early stages of pregnancy, it can be utilized in conjunction with transvaginal ultrasound<sup>25</sup>.

*Diagnostic Procedures :*

***Culdcentesis :*** A surgical technique

in which the posterior vaginal fornix is punctured with a needle to check for blood in the abdominal cavity, which may indicate a rupture.

**Laparoscopy :** A minimally invasive surgical procedure performed in cases when rupture is a worry or the diagnosis is unclear. The diagnosis can be verified by directly visualizing the ectopic pregnancy in the fallopian tube or another place.

*Serial monitoring :*

Sonography In cases where first results are equivocal, recurrent and serial monitoring of HCG levels may be required to gradually clarify the diagnosis. When a fertilised egg implants outside the uterus, it results in an ectopic pregnancy. Ten percent of maternal deaths worldwide are attributed to ectopic pregnancy, according to the World Health Organisation (WHO). Regional differences exist in ectopic pregnancy epidemiological data. The US Centres for Disease Control and Prevention (CDC) estimates that 1.57 ectopic pregnancies occur for every 1,000 women between the ages of 15 and 44. In East Africa, Western Africa, and Southeast Asia, where access to medical services is restricted, the bulk of ectopic pregnancies take place. Between one and two percent of pregnancies in the nation are ectopic. The bulk of instances involve women between the ages of 20 and 35. The largest incidence is reported in Gujarat and Maharashtra, while the lowest rates are found in Manipur and Nagaland. The most prevalent risk factors include endometriosis, assisted reproductive technologies, and a history of ectopic pregnancy. The National Centre for Disease Control

discovered that India had an ectopic pregnancy prevalence of 0.58% per 1,000 people in the general population after analysing epidemiological data from 2003 to 2014. The Indian Journal of Medical Research estimates that between 1.4 and 2.3% of all pregnancies in Andhra Pradesh result in ectopic pregnancies. The Guntur district has a high occurrence of ectopic pregnancy, particularly in women between the ages of 20 and 35 <sup>19</sup>.

The body mass index and the risk of ectopic pregnancy: a 5-year retrospective case control study revealed that more than 90% of EP is tubal pregnancy accounting for the first maternal mortality rate in first-trimester pregnancy. Due to aesthetic aberrations, more and more women pursued the ideal body or were underweight. Observed patients with ectopic pregnancies were lean. Whether there is some association between body mass index (BMI) and ectopic pregnancy. In a prospective study, it suggested that low BMI was associated with EP after receiving assisted reproductive technology. It alerts and advocates women to have a healthy body mass index to protect fertility. Women with a low BMI had a slightly higher risk of ectopic pregnancy than women with normal BMI <sup>12</sup>. The study of the meta-analysis into the mediatory effects of family planning utilization on complications of pregnancy in women of reproductive age. The objective of this review is to provide updated and comprehensive data on the determinants of contraceptive use among women of reproductive age, particularly in low- and middle-income countries (LMIC), and to assess the implications of unmet need for family planning on maternal mortality. By examining recent populations affected since the previous

studies published in 2012, this review aims to offer a broader and more generalizable perspective on the barriers to contraceptive use, including awareness, access, and personal or familial opposition. Additionally, the review seeks to evaluate how addressing unmet contraceptive needs can contribute to reducing maternal mortality rates and advance global health goals, particularly the sustainable development goal of decreasing the global maternal mortality ratio. Through this updated analysis, the review aims to complement existing literature and provide valuable insights for enhancing family planning resources and interventions in LMICs<sup>4</sup>.

Effect of weight loss before in vitro fertilization in women with obesity or overweight and infertility, the objective of this meta-analysis and systematic review was to evaluate the impact of intensive weight loss immediately before in vitro fertilization (IVF) on reproductive outcomes in obese and overweight women with infertility. Given the known associations between obesity and various health issues, including impaired fertility and increased pregnancy complications, this study aimed to determine whether pre-IVF weight reduction improves reproductive outcomes, such as pregnancy rates and success of infertility treatments. By synthesizing evidence from previously published studies, this review sought to clarify whether losing weight before undergoing assisted reproductive technology (ART) enhances the efficacy of treatments like IVF and addresses inconsistencies in current research regarding the benefits of weight loss in improving fertility and pregnancy outcomes<sup>31</sup>.

The Caesarean section surgical techniques: 3 year follow-up of the CORONIS fractional, factorial, unmasked, randomised controlled trial. The objective of the CORONIS follow-up study is to evaluate the long-term outcomes associated with different surgical techniques used during caesarean section. Building on our previous research, which assessed short-term outcomes in 15,935 women across low-income and middle-income settings, this follow-up study aims to investigate the impact of various surgical methods on longer-term maternal health. Specifically, we will examine the effects of these techniques on the functional integrity of uterine and abdominal scars, chronic pelvic pain, infertility, and symptoms related to peritoneal and bowel adhesions, including bowel obstruction. By focusing on these long-term outcomes, we seek to provide comprehensive insights into the optimal surgical practices for caesarean sections and inform guidelines to improve maternal health and surgical outcomes in future pregnancies.

The Four dimensional ultrasound guided embryo transfers improve live birth rates when compared to the clinical touch technique: a randomised controlled trial. The primary objective of this project is to evaluate whether 4D ultrasound-guided embryo transfers (UGETs) lead to a higher clinical pregnancy rate (CPR) compared to the conventional clinical touch technique (CTT). Despite advancements in in-vitro fertilisation (IVF) techniques, embryo transfer (ET) methods have remained relatively unchanged, and a significant proportion of ETs still fail to achieve pregnancy. Current evidence suggests that 2D ultrasound-guided ETs improve live birth rates, but inconsistencies in data quality and

heterogeneity have led some units to continue using CTT. By investigating the efficacy of 4D UGET, which offers real-time, three-dimensional imaging of the uterine cavity and precise placement of the embryo at the maximal implantation potential (MIP) point, this study aims to determine if it provides a superior CPR and potentially improves overall ET outcomes.

Early (Days 1–4) post-treatment serum hCG level changes predict single-dose Methotrexate treatment success in tubal ectopic pregnancy. The objective of this study was to evaluate whether the change in serum human chorionic gonadotropin (hCG) levels between Day 1 and Day 4 post-methotrexate treatment can predict the success of single-dose methotrexate therapy for unruptured ectopic pregnancies. Building on previous research and clinical guidelines, which typically use the >15% reduction rule from Day 4 and Day 7 hCG measurements to assess treatment efficacy, this study sought to determine if earlier prognostic information could be obtained by analyzing Day 1 and Day 4 hCG level changes. By utilizing prospectively collected data from a large UK ectopic pregnancy clinical trial cohort, the study aimed to improve the ability to predict treatment outcomes earlier in the management process, potentially allowing for timely adjustments in treatment strategy and reducing the risk of complications such as tubal rupture<sup>29</sup>.

The Research progress on psychological distress in patients with Ectopic Pregnancy in China, the psychological distress, influencing factors, measurement tools, and nursing interventions in patients with ectopic pregnancy in China. The results showed that the main

psychological distress of patients with ectopic pregnancy is anxiety, depression, uncertainty sense of disease, and low self-esteem. The main intervention methods for psychological distress in pregnant patients included: cognitive behavioural therapy, emotional therapy of traditional Chinese medicine, and family support. Large-sample, multicenter longitudinal studies should be conducted in the future to monitor the development of ectopic pregnancy. With the development of the disease, patients with ectopic pregnancy may experience psychological problems such as anxiety, depression<sup>27</sup>.

A 30-Year Observational Database Study. The objective of this study is to review and analyze the epidemiological trends of ectopic pregnancy over the past 30 years, utilizing comprehensive and global data sources. Ectopic pregnancy remains a critical cause of maternal mortality and morbidity, with potential severe outcomes such as rupture leading to life-threatening complications. Despite advancements in social and medical fields, which have contributed to a decrease in mortality, understanding the evolving burden of ectopic pregnancy is essential for improving prevention and treatment strategies. This study aims to leverage extensive public databases and data mining technologies to evaluate changes in the incidence and mortality of ectopic pregnancy, focusing on indicators such as age-standardized incidence rates (ASIR) and age-standardized death rates (ASDR). By providing a detailed assessment of these trends, the study seeks to support better health decision-making and disease management across different regions and inform the development of future public health strategies<sup>10</sup>.

Association of serum vitamin D levels with ectopic pregnancy. The objective of this study is to investigate the association between serum vitamin D levels and ectopic pregnancy during the first trimester, with a particular focus on women in Iran where vitamin D deficiency is prevalent. Ectopic pregnancy, characterized by the implantation of a fetus outside the uterine cavity, primarily occurs in the fallopian tubes and is associated with significant risks including abdominal pain and vaginal bleeding. Despite advances in diagnostic techniques such as measuring beta-human chorionic gonadotropin ( $\beta$ -hCG) levels and vaginal ultrasonography, the disorder remains a leading cause of death in the first trimester. Recognized risk factors include pelvic inflammatory disease, smoking, previous ectopic pregnancies, and assisted reproductive technologies. Recent studies suggest a potential link between vitamin D deficiency and an increased incidence of ectopic pregnancy, given vitamin D's role in reproductive health and its presence in reproductive tissues. This study aims to clarify this relationship by evaluating whether insufficient vitamin D levels are associated with a higher incidence of ectopic pregnancies, thereby addressing a gap in the current literature and providing insights for preventive strategies and treatment improvements<sup>9</sup>.

Pregnancy outcomes following in vitro fertilization treatment in women with previous recurrent ectopic pregnancy. The objective of this study is to investigate how a history of single or recurrent ectopic pregnancy (EP) influences pregnancy outcomes in subsequent in vitro fertilization (IVF) treatments. With the rising incidence of EP associated with assisted reproductive technologies, particularly IVF, it

is crucial to understand how a prior EP—whether single or recurrent—affects future reproductive success and the risk of further EP. This study aims to clarify differences in pregnancy rates and the likelihood of recurrent EP between women with a history of single EP and those with recurrent EP. Additionally, it seeks to evaluate how various treatments for EP impact the incidence of EP in future IVF cycles, addressing a significant gap in current evidence and providing valuable insights for counselling patients with previous EP experiences<sup>11</sup>.

Ectopic pregnancy risk factors in infertile patients: a 10 year single centre experience. The objective of this study is to assess the incidence of ectopic pregnancies (EP) across various medically assisted procreation (MAP) procedures, including intrauterine insemination and in-vitro fertilization (IVF), over a span of 10 years at a single centre. Given that EP is a significant cause of maternal morbidity and mortality during the first trimester and that its incidence appears to be higher following assisted reproductive technologies (ART), this study aims to provide a comprehensive evaluation of EP rates within this context. Furthermore, the study seeks to identify and analyze risk factors influencing the occurrence of EP after MAP, taking into account variables such as embryo transfer stage, fresh versus frozen embryo cycles, and other procedural factors. By investigating these elements, the study aims to enhance understanding of the factors contributing to EP and to inform practices that may reduce its incidence and associated risks in ART settings<sup>7</sup>.

Identification of non-invasive diagnostic

biomarkers for ectopic pregnancy using data independent acquisition (DIA) proteomics: a pilot study. The objective of this study is to identify novel serological markers for the early diagnosis of ectopic pregnancy using data-independent acquisition (DIA)-based quantitative proteomics. Ectopic pregnancy, characterized by the implantation of pregnancy outside the uterus, remains a significant cause of maternal mortality and morbidity. Current diagnostic methods, which rely heavily on transvaginal ultrasound and  $\beta$ -hCG measurement, often lead to delays in diagnosis due to late presentation of symptoms. Although  $\beta$ -hCG is a common serum marker, it is not specific to ectopic pregnancy and thus does not reliably differentiate it from intrauterine pregnancy. This study aims to overcome limitations of existing markers by leveraging DIA, an advanced quantitative proteomics technique, to identify and validate new serological markers that could be used for early, at-home screening. The goal is to enhance early detection and improve clinical outcomes by discovering more sensitive and specific biomarkers for ectopic pregnancy<sup>22</sup>.

Randomized trial of the application value of comprehensive nursing intervention in the perioperative period of ruptured bleeding of ectopic pregnancy, the objective of this study was to compare the effects of comprehensive nursing interventions versus basic nursing interventions during the perioperative period in patients undergoing laparoscopic surgery for ectopic pregnancy. By evaluating 164 patients with ectopic pregnancy hemorrhage admitted to the Department of Gynecology between January 2015 and January 2020, the study aimed to determine which nursing approach more effectively promotes patient recovery

and reduces complications. This research sought to provide evidence-based recommendations for clinical care practices, with the goal of enhancing patient outcomes, minimizing complications, and supporting faster recovery following laparoscopic treatment for ectopic pregnancy<sup>26</sup>.

Effect of endometrial preparation protocols on the risk of ectopic pregnancy for frozen embryo transfer, the objective of this study is to evaluate the risk of ectopic pregnancy (EP) in frozen-thawed single embryo transfer (SET) cycles across different endometrial preparation protocols. Despite advancements in in-vitro fertilization (IVF) techniques, EP remains a significant issue in assisted reproductive technology (ART), with a higher incidence compared to the general population. Factors associated with EP include the number of embryos transferred, embryo stage at transfer, and patient-related factors such as tubal factor infertility and endometriosis. Previous studies have shown a reduced risk of EP in frozen-thawed ET cycles compared to fresh cycles, potentially due to the more physiological hormonal environment of frozen-thawed cycles. However, the impact of different endometrial preparation protocols—such as natural ovulatory cycles, hormone replacement cycles (HRC), and ovarian stimulation—on EP risk has been inconsistently reported. This study leverages data from the Japanese ART registry, which includes comprehensive records of ART cycles and endometrial preparation protocols, to assess EP risk specifically in frozen-thawed SET cycles. By comparing the incidence of EP across various endometrial preparation protocols, the study aims to provide clearer insights into how different hormonal environments influence the risk of EP, thereby

contributing to improved ART practices and patient outcomes<sup>2</sup>.

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Risk factors and treatment modalities

of ectopic pregnancy, the objective of this study is to comprehensively investigate the clinical presentation, risk factors, maternal morbidity, and mortality associated with ectopic pregnancy (EP), a potentially life-threatening condition often initially missed by primary care physicians. Ectopic pregnancy, characterized by abnormal implantation of a fertilized egg outside the uterine cavity, can present with a variety of symptoms, including lower abdominal pain and vaginal bleeding, or, in less common cases, with nonspecific symptoms and hemodynamic shock. Given that the incidence of EP increases with age and that it is linked to various risk factors such as previous ectopic pregnancies, fertility treatments, and certain contraceptive methods, this study aims to compile and analyze these risk factors to enhance early diagnosis and referral practices. By examining the correlation between clinical presentation and modern diagnostic technologies, this study seeks to support primary care physicians in recognizing and managing EP more effectively, thus contributing to reduced maternal morbidity and mortality. This research is particularly relevant in light of the declining mortality ratio associated with improved healthcare systems and early treatment, as evidenced by historical data, and aims to further elucidate the role of clinical vigilance and timely intervention in managing ectopic pregnancies<sup>14</sup>.

Analysis of the Clinical Efficacy of Laparoscopy and Hysteroscopy in the Treatment of Tubal-Factor Infertility (TFI) is induced by changes in the structure and function of the fallopian tubes. These changes are mainly caused by chronic salpingitis, peritubal inflammation, and abnormal fallopian tube development, which reduce peristaltic function and affect egg picking, fertilization, and the

transport of fertilized eggs. Laparoscopic treatment of TFI has several advantages, including fewer traumas, less bleeding, faster recovery, and a shorter hospital stay. Pelvic adhesion is the leading cause of TFI. This study provides guidance for the clinical treatment of patients with tubal infertility and analyzes the effectiveness of hysteroscopic and laparoscopic surgery in treating tubal infertility and the relationship between the degree of tubal lesions and the postoperative pregnancy rate. However, the current diagnosis and treatment methods are still difficult to relieve patients' complicated conditions. The establishment of a reliable clinical efficacy and prognosis evaluation system will bring benefits to all patients with tubal infertility<sup>20</sup>.

A protocol for developing a core outcome set for ectopic pregnancy, Ectopic pregnancy (EP) occurs when the developing embryo implants in a site other than the uterine cavity endometrium and is a potentially life-threatening complication in first trimester pregnancy. It has the potential to affect patients not only in the acute setting but also has lasting impacts on future fertility. The approach towards counselling women with ectopic pregnancies depends not only on the woman's clinical state, her wishes and level of compliance with treatment, but also her serum beta-hCG, ultrasonography findings and operator experience laparoscopically. Diagnosis has improved significantly in the last few decades, and randomised controlled trials (RCTs) remain the mainstay of assessing the effectiveness and safety of treatments. Implementation of a core outcome set will enable collection and reporting of data in a standardised fashion, with data sets important to key stakeholders including individuals with lived experience with ectopic

pregnancy. This will allow standardisation of research to guide and inform clinical practice and enhance patient-centred care<sup>30</sup>.

Ectopic pregnancies – Catch them early, treat them wisely! . The objective of this study is ectopic pregnancy (EP) remains the leading cause of pregnancy-related death in the first trimester, a fundamental understanding of its pathophysiology and management is crucial for physicians, including those in primary healthcare settings. With advancements in high-resolution ultrasonography (USG) and highly sensitive beta-HCG assays, early diagnosis of EP has become increasingly feasible, allowing for more nuanced management strategies that can positively impact long-term fertility. For hemodynamically stable patients with unruptured EP, individualized management plans can be effective and in some cases, primary healthcare providers can safely manage these cases. Key to determining the appropriate management strategy is the initial beta-HCG value, with levels <1500 mIU/ml being suitable for expectant management, especially when <1000 mIU/ml, which indicates a lower likelihood of rupture. Patients with beta-HCG values <5000 mIU/ml may be treated with methotrexate (MTX), often with a single dose being sufficient for those with levels <3000 mIU/ml. Additionally, the presence of free fluid restricted to the pelvis on USG does not preclude non-surgical management. Although the size of the adnexal mass should not deter non-surgical options, compliance with follow-up care remains a challenge. Thus, follow-up should be tailored based on the trend of beta-HCG level decline to ensure effective monitoring and treatment<sup>13</sup>.

Miscarriage on Endometriosis and Adenomyosis in Women by Assisted Reproductive Technology or with Spontaneous Conception, the objective of this systematic review and meta-analysis was to evaluate the impact of endometriosis (EMS) and adenomyosis (AD) on the risk of miscarriage in women who conceive either spontaneously or through assisted reproductive technology (ART). This study aimed to clarify the relationship between these diseases and miscarriage outcomes by comparing various stages and types of EMS, including superficial peritoneal endometriosis (SUP), deep infiltrating endometriosis (DIE), and ovarian endometrioma (OMA). Additionally, the review sought to assess the risk of early abortion (before 12 weeks) and late abortion (at 12 weeks or later). By synthesizing results from multiple studies, the review aimed to resolve the conflicting findings reported in previous research and provide a comprehensive understanding of how EMS and AD influence miscarriage risk<sup>24</sup>.

Trends in Ectopic Pregnancy: A Prospective Observational Study from a Tertiary Care Centre in Eastern India. The objective of this study is to analyze 280 cases of ectopic pregnancy admitted to our tertiary care hospital over the past year, with a focus on identifying trends and patterns associated with this condition. By examining risk factors, clinical presentations, age demographics, and management strategies, this study aims to enhance understanding of ectopic pregnancies in our urban setting. Given the rising global incidence and the challenges in early diagnosis, this research seeks to contribute valuable insights into the condition's epidemiology and management, thereby aiding in the timely identification and treatment of ectopic pregnancies.

This effort is intended to prevent mortality and optimize fertility-preserving techniques, addressing both immediate and long-term clinical goals<sup>15</sup>.

Association of pelvic inflammatory disease (PID) with ectopic pregnancy and preterm labour in Taiwan: A nationwide population-based retrospective cohort study. Pelvic inflammatory disease (PID) is an infectious disease that causes tubal occlusion and other pelvic and abdominal adhesions. The incidence of pelvic inflammatory disease (PID) has increased due to the sexually active status of the young population. This study demonstrated that PID is a significant and independent risk factor for preterm labour and ectopic pregnancy. Compared with those without PID disease, patients with PID history, the effect of disease progression on the development of preterm labour and/or ectopic pregnancy needs to be further elucidated in future studies. The results from this study indicate that clinical doctors need to perform a cautious assessment of PID patients with pregnancy problems<sup>1</sup>.

Diagnostic role of the  $\beta$ -hCG discriminatory zone combined with the endometrial pattern for ectopic pregnancy in Chinese women. The objective of this study is to determine an appropriate discriminatory serum  $\beta$ -hCG zone (DSZ) for diagnosing ectopic pregnancy (EP) in Chinese women and to evaluate the diagnostic value of DSZ in conjunction with transvaginal ultrasound (TVS) characteristics, including endometrial thickness and trilaminar patterns. Ectopic pregnancy, a serious condition occurring in the first trimester, remains a leading cause of maternal mortality, exacerbated by challenges in timely

and accurate diagnosis. Although advancements have been made in diagnostic and therapeutic approaches, misdiagnosis and delays persist. This study aims to address these issues by defining a specific DSZ applicable to the Chinese population and assessing how incorporating additional TVS features, such as reduced endometrial thickness and specific patterns, can enhance diagnostic accuracy. The goal is to improve clinical management and outcomes for women with suspected EP by refining diagnostic criteria and integrating these new insights into current practice<sup>3</sup>.

Effect of Methotrexate for the treatment of unruptured tubal ectopic pregnancy, the objective of this study was to determine the outcomes of women who presented to the emergency department (ED) with suspected ectopic pregnancy and received methotrexate as first-line treatment. Early detection of ectopic pregnancy and careful management are critical to prevent adverse clinical outcomes, including fallopian tube rupture, decreased future fertility, and death. Methotrexate is widely accepted as first-line treatment of non-ruptured ectopic pregnancy and may be considered for women with a confirmed ectopic pregnancy who are hemodynamically stable with an unruptured mass. In appropriately selected patients, the overall success rate for women treated with methotrexate for an ectopic pregnancy is 90%. Trained research personnel reviewed the medical records and extracted data using a computerized, data abstraction form. The primary outcome was the proportion of women who failed medical management with methotrexate after being discharged from the ED. Clinical features and pregnancy-related outcomes were also reported. Failure of methotrexate management

often results in tubal rupture, need for urgent surgery, intra-abdominal hemorrhage, need for transfusion, and may be associated with future infertility and death<sup>18</sup>.

Ectopic pregnancy, a condition where a fertilized egg implants outside the uterine cavity, presents significant clinical and emotional challenges. The majority of ectopic pregnancies occur in the fallopian tubes, although other rare locations such as the cervix, ovary, or abdomen can also be affected. This condition is a medical emergency, as untreated ectopic pregnancies can lead to life-threatening complications, including rupture and severe internal bleeding. Diagnosis of ectopic pregnancy is often complicated due to the overlapping symptoms with normal early pregnancy, such as missed periods, abdominal pain, and light vaginal bleeding. A combination of transvaginal ultrasound and serial measurement of human chorionic gonadotropin (hCG) levels helps confirm the diagnosis. When diagnosed early, treatment options include medication, like methotrexate, which halts the growth of the pregnancy, or surgical intervention in cases where the ectopic pregnancy is advanced or ruptured.

Emotional and Psychological Impact on beyond the immediate physical risks, ectopic pregnancy has profound emotional effects on patients. The loss of a desired pregnancy, coupled with the life-threatening nature of the condition, often leaves women and their partners feeling grief, anxiety, and confusion. Post-treatment counselling is critical in helping patients cope with these emotions and discuss future reproductive plans. A key concern for many women who experience ectopic pregnancy is future fertility. While having an ectopic

pregnancy slightly increases the risk of recurrence, many women go on to have healthy pregnancies<sup>8</sup>. However, damaged fallopian tubes may reduce fertility, and women who have had one ectopic pregnancy are advised to undergo early monitoring in future pregnancies to ensure proper implantation.

Ectopic pregnancy is a complex condition that requires prompt diagnosis and intervention to prevent severe complications. It also necessitates holistic care that addresses both the physical and emotional needs of patients, helping them navigate the immediate medical challenges while preparing them for the future, both physically and emotionally.

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