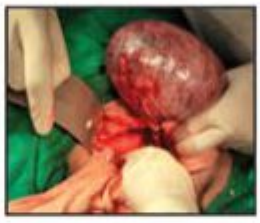
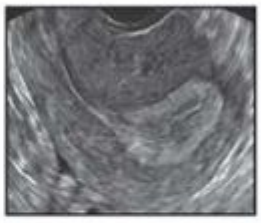
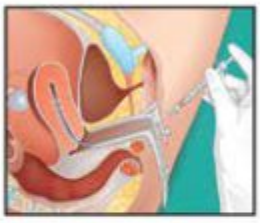
Clinical Handbook of Obstetrics and Gynecology

Editors
Latika Sahu
Chetna A Sethi
Bidhisha Singha
Asmita M Rathore

Foreword
Raksha Arora

JAYPEE

Contents

PART 1

OBSTETRICS

SECTION 1 REPRODUCTIVE BASICS

SECTION 2 PREPREGNANCY

SECTION 3 EARLY ANTENATAL

SECTION 4 LATE ANTENATAL—MATERNAL-MEDICAL DISORDERS

SECTION 7 LABOR

SECTION 8 POSTPARTUM

SECTION 9 OPERATIVE OBSTETRICS

PART 2 GYNECOLOGY

SECTION 10 BASICS IN GYNECOLOGY

SECTION 11 GYNECOLOGIC PROCEDURES

SECTION 12 UROGYNECOLOGY

SECTION 13 DISORDERS OF MENSTRUATION AND PUBERTY

SECTION 14 INFERTILITY

SECTION 15 BENIGN GYNECOLOGICAL DISORDERS

SECTION 16 REPRODUCTIVE TRACT INFECTIONS

SECTION 17 GYNECOLOGIC ONCOLOGY

SECTION 18 GENERAL GYNECOLOGY

SECTION 19 CONTRACEPTION

PART 3
EXAM PREPARATION

SECTION 20 OBSTETRICS

SECTION 21 GYNECOLOGY

SECTION 22 INSTRUMENTS

SECTION 23 DRUGS

SECTION 24 SPECIMENS

SECTION 25 CTG, PARTOGRAM, X-RAY, USG, ETC.

CHAPTER

16 Ectopic Pregnancy

Ashok Kumar, Sharanya

DEFINITION

"Any pregnancy, where the fertilized ovum gets implanted and develops in a site other than normal uterine cavity."

Implantation Sites **(Fig. 1)**

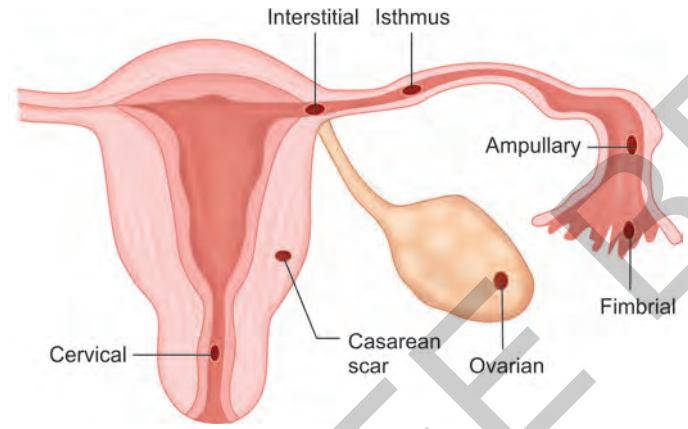
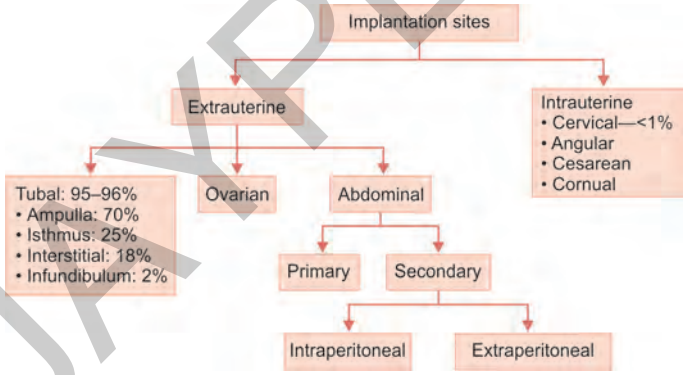


Fig. 1: Various sites of ectopic pregnancy.



INCIDENCE AND MORTALITY

- Incidence of ectopic pregnancy in world is 0.25–2%.
- Incidence of ectopic pregnancy in India is 0.91%.
- Recurrence rate is 15% after first, 25% after second ectopic pregnancy.
- Ectopic pregnancy accounts for 3.5–7.1% of maternal deaths in India.

ETIOLOGY

- Salpingitis and pelvic Inflammatory Disease (PID)—loss of cilia and impairment of muscular peristalsis, narrowing of lumen, peritubal adhesions → kinking and angulation of tube
- Tubal sterilization failure—40%
- Contraceptive failure:
  - Copper-T—4%
  - Progestasert—17%
  - Minipills—10%
  - Norplant—30%
- Tubal reconstructive surgery—four- to fivefold ↑ in incidence of ectopic pregnancy
- ART—4–7%

RISK FACTORS

- Previous episode of ectopic pregnancy
- Advanced age >35 years
- Previous history of pelvic surgeries, e.g., tubal reconstructive surgery
- Cigarette smoking > 1 pack/day—5%
- Genital tuberculosis (TB)—6%
- Diethylstilbestrol (DES) exposure in utero—4%.

EVOLUTION OF ECTOPIC PREGNANCY

Tubal pregnancy has the ability to rapidly invade the mucosa, feeding from tubal vessels, which become enlarged and engorged. Further leading to distention of tube as it grows.

Changes that happen in ectopic pregnancy:

- Implantation—intercolumnar or between mucosal fold
- Minimal decidual changes
- Minimal muscle hyperplasia and hypertrophy
- Pseudocapsule formation
- Trophoblast invasion—erosion of blood vessel

Possible **outcomes of the tubal ectopic pregnancy** are:

- Due to poor blood supply pregnancy is unable to survive leading to:
  - **Tubal abortion:** Common in ampullary pregnancy
  - **Tubal rupture:** Common in isthmic pregnancy—thinnest portion of the tube.
- Isthmic—6–8 weeks; ampullary—8–12 weeks; and interstitial—4 months
- Resorption—rare

CLINICAL APPROACH

Diagnosis can be made by history, clinical examination and investigations.

History

History of past pelvic inflammatory disease (PID), tubal surgery, and current contraceptive measures

Acute ruptured ectopic pregnancy	*Chronic ectopic pregnancy*	*Unruptured ectopic*
Classical triad in 50% patients: • Acute pain of varied intensity—95% cases • History of amenorrhea—60–80% patients; spotting at the time of menses (some cases) • Vaginal bleeding-scanty dark brown • Nausea, vomiting, and syncopal attacks can be present.	Previous attack of acute pain from which she has recovered. • She may have amenorrhea • Vaginal Bleeding • Dull aching pain in abdomen • Bladder and bowel complaints- dysuria, frequency, urinary retention, and rectal tenesmus	History of amenorrhea • Or spotting. • Mild pain or discomfort in lower abdomen

On Examination

Examination	*Acute ruptured ectopic pregnancy (EP)*	*Chronic EP*	*Unruptured EP*
General examination:	• Restless patient; in agony, blanched pale looking • Features of shock: Cold clammy skin • Tachycardia and hypotension	• Looks ill; varying degree of pallor • Absent features of shock	Patient looks stable
Per abdomen examination	Tense, guarding (+), rigidity (+), Tenderness (+) in lower abdomen, and shifting dullness (+)	Tenderness (+) – diffuse, lower abdomen; guarding (+) Mass P/A—irregular, tender may be present	Tenderness (+) in lower abdomen
Per speculum	Minimal bleeding may be present	—	—
Per vaginal Examination	Uterus may be bulky, deviated to opposite side, forniceal tenderness (+), cervical motion tenderness(+), POD may be full, uterus floats as in water	Pale vaginal mucosa; uterus may be normal in size or bulky, ill-defined boggy tender mass may be felt in one of the fornix	Small tender mass may be felt in fornix

Investigations

Baseline	CBC, BG and cross matching, LFT, KFT, serology, and coagulation profile
Serum β-hCG	• Single value— little value • Serial β-hCG—when β-hCG level < 2,000 IU/L doubling time help to predict viable versus nonviable pregnancy • Rise of β-hCG < 66% in 48 hours—ectopic or nonviable pregnancy • Also important to know to plan out the method of management of ectopic pregnancy
Ultrasonography: TVS/TAS **(Fig. 2)**	**Trilaminar endometrial pattern:** • **Pseudogestational sac**—located in midline within endometrial cavity, irregular shape, ring sign (+), avascular • **Decidual cast** may be seen—anechoic area within endometrium away from canal • **Adnexa—**15–30% cases, extrauterine yolk sac/embryo in fallopian tube • **Cul-de-sac—**free fluid (+)
Color Doppler **(Fig. 3)**	• **Ring of fire** pattern outside uterine cavity • **Bagel sign—**hyperechoic ring around gestational sac in adnexal region • **Blob sign—**small inconglomerate mass next to ovary with no evidence of sac or embryo • **Adnexal sac** with fetal pole and cardiac activity
Serum progesterone	• <15 ng/mL suggestive of ectopic pregnancy • <5 ng/mL nonviable pregnancy
Diagnostic laparoscopy	Gold standard. Hemodynamically stable patients, it can be taken as a therapeutic modality as well
Dilatation and curettage	Identification of decidua without chorionic villi is suggestive of ectopic pregnancy
Culdocentesis	• Placing a needle through posterior fornix and aspirating contents within the rectouterine POD. • High positive predictive value and low NPV
Other tests	• PAPPA (pregnancy-associated plasma protein A)—reduced • CA-125, AFP—increased.

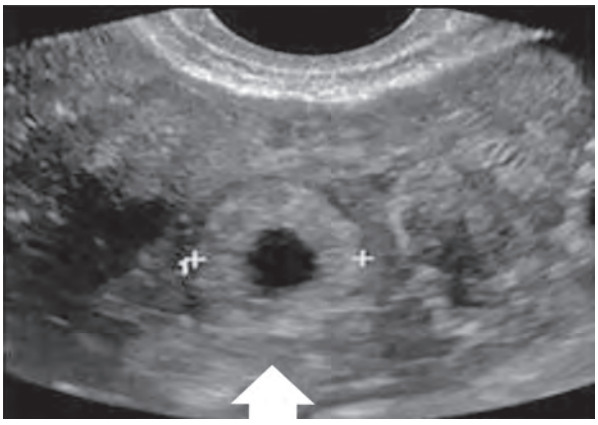


Fig. 2: TVS showing tubal EP (marked by arrow in picture).

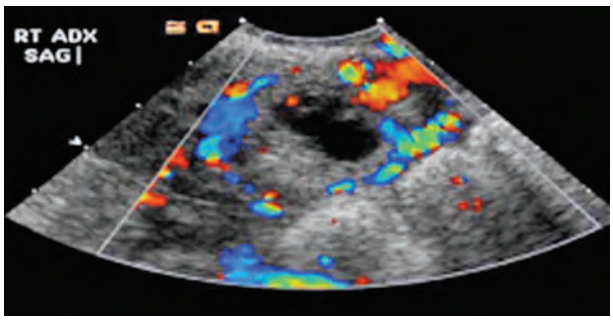
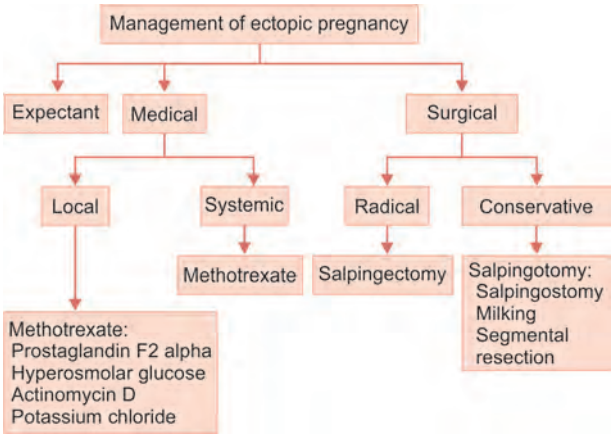


Fig. 3: USG color Doppler of tubal EP.



STEPS OF MANAGEMENT OF ACUTE RUPTURED ECTOPIC

Resuscitation followed by Laparotomy/ Laparoscopy

↓

- Secure IV line with two large bore cannulae. Start IV crystalloid solution
- Blood sample for hemoglobin, blood grouping and cross matching, and coagulation profile. Foley's catheterization

↓

Laparotomy	*Laparoscopy*
• Principle—quick in and quick out • Rapid exploration of abdominal cavity done • Salpingectomy is the definitive surgery	• Preferred method in hemodynamically stable patients • Shorter operating time, less blood loss • Followed by similar number of uterine pregnancy

Criteria to Decide which Management Modality

Expectant management		*Medical management*
• Hemodynamically stable patients • Adnexal mass < 3.5 cm without cardiac activity	• *Initial b-hCG < 1,000 IU/L and falling titer • No evidence of rupture or bleeding	• Initial β-HCG < 5,000 IU/L • Rest same as expectant management criteria

OUTCOMES OF EXPECTANT VERSUS MEDICAL MANAGEMENT

- Spontaneous resolution in 72% cases of expectant management while 28% will need surgical management.
- In spontaneous resolution, it may take 4–67 days for the serum β-hCG to return to nonpregnant levels.
- Success rate of expectant management: Up to 60%; medical management: Up to 90%.

Medical Management

- *Methotrexate:* Folic acid antagonist
  - **Mechanism of action:** Inactivates dihydrofolate reductase; interferes with DNA synthesis by inhibiting pyrimidine synthesis leading to trophoblastic cell death.
  - **Route of administration:** Intramuscular
  - **Regimens:**

• **Single dose:** 50 mg/m^2 then repeat b-hCG levels at day 4 and day 7 ↓ • If difference ≥ 15% repeat weekly till ≤ 5 IU/mL. • If difference ≤ 15% between day 4 and 7 repeat dose	• **Multiple dose:** Mtx 1 g/kg IM on day 1, 3, 5, and 7, leucovorin 0.1 mg/kg IM on day 2, 4, 6, and 8 ↓ • If difference ≥ 15% repeat weekly till ≤ 5 IU/mL • If no ↓ after 4 doses →consider surgery

Adverse effects: GI symptoms, skin side effects.

Contraindications:

• Intrauterine pregnancy • Immunodeficient states • Active pulmonary/peptic ulcer disease	• Hepatic/renal dysfunction • Breastfeeding

Surgically Administered Medical Treatment

- **Aim:** Trophoblastic destruction without systemic side effects
- **Technique:** Using—laparoscopy/USG-guided/falloposcopic control
- **Substances used:** Methotrexate (Mtx), potassium chloride, mifepristone, PGF2 alpha, hyperosmolar glucose solution, and actinomycin D

Surgical Management—Conservative Surgery

Indications:

• Patient desires fertility • If contralateral tube is damaged/ surgically removed previously	• Hemodynamically stable patient • Unruptured and <5 cm size

Methods of conservative surgery are —given here.

Methods	*Procedure*
Linear salpingostomy **(Fig. 4)**	• <2 cm in ampullary region; unruptured ectopic • Linear incision on antimesenteric border and product removed by fingers, scalpel • Incision kept open-heals by secondary intention
Linear salpingotomy	Incision line closed in two layers with 7–0 interrupted Vicryl sutures.
Segmental resection and anastomosis	• Unruptured isthmic pregnancy • End to end anastomosis done
Milking and fimbrial expression	• Distal ampullary or infundibular pregnancy • Increased risk of persistent ectopic pregnancy

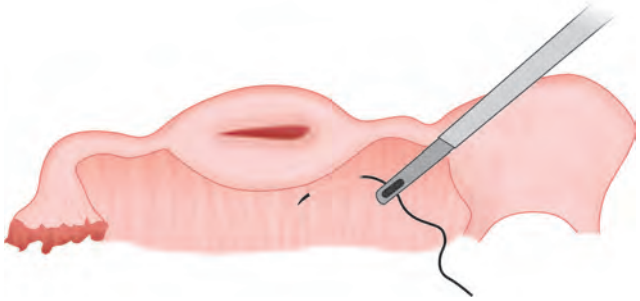


Fig. 4: Salpingostomy.

Chaperon et al. (1993) have described a scoring system as follows:

Fertility reducing factor	*Score*
Antecedent one ectopic pregnancy	2
Antecedent each further ectopic pregnancy	1
Antecedent adhesiolysis	1
Antecedent tubal microsurgery	2
Antecedent salpingitis	1
Solitary tube	2
Unilateral Adhesions	1
Contralateral Adhesions	1

Conservative surgery is indicated with score 1–4 while radical treatment is performed if score is ≥5.

Persistent Ectopic Pregnancy

It is a complication of conservative surgery when residual trophoblastic continues to survive because of incomplete evacuation of ectopic pregnancy.

- **Diagnosis:** Raised postoperative β-hCG
- **Risk factor:** Early ectopic pregnancy (<6 weeks)/smaller size < 2 cm (incomplete removal). Preoperative high serum β-hCG (>3,000 IU/L) and postoperative day 1 titer is <50% of preoperative level is predictor of persistent ectopic pregnancy.
- **Management:** Asymptomatic—Medical (Mtx + leucovorin)/surgery—Salpingectomy.

Ovarian Ectopic Pregnancy (Figs. 5 and 6)

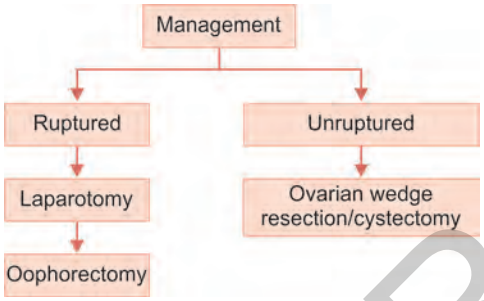
- **Incidence:** 1:40,000
- **Specific risk factor:** Endometriosis on ovarian surface
- **Course:** C/F same as tubal ectopic pregnancy; rupture within 2–3 weeks

- Diagnosis—Spiegelberg criteria
- Ipsilateral tube is intact and separate from sac
- Sac at the position of ovary
- Connected to uterus by ovarian ligament
- Ovarian tissue on its wall on HP study

Abdominal Pregnancy

- **Types**—primary and secondary are two types of abdominal pregnancy. In secondary, conceptus escapes out through a rent from primary site. Secondary is further divided into intraperitoneal and extraperitoneal (broad ligament).
- **Diagnosis and management**

On examination	*Studdiford criteria*	*Management*
• Abdominal fetal position, easy in palpating fetal parts • Uterus palpated separate from sac • No uterine contraction after oxytocin infusion	• Both tubes and ovaries are normal • Absence of uteroperitoneal fistula • Pregnancy related to peritoneal surface and young enough to rule out possibility of secondary implantation **(Fig. 7)**	• Urgent laparotomy irrespective of POG. • Ideal to remove entire sac fetus, placenta and membranes • If placenta adhered to vital organs, can be left behind; gets absorbed by aseptic autolysis



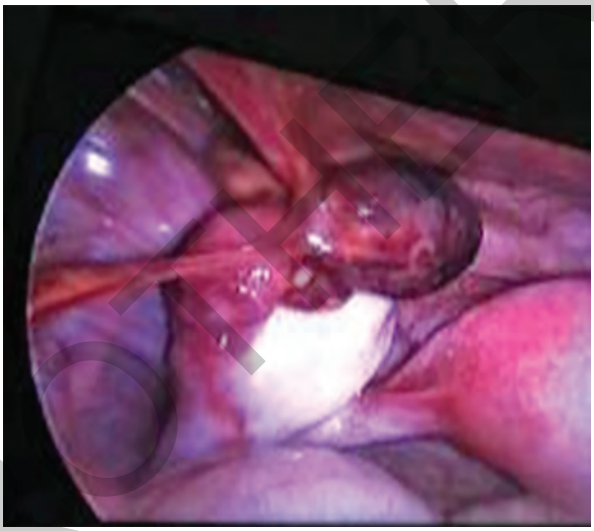


Fig. 5: Laparoscopic view of ovarian EP.

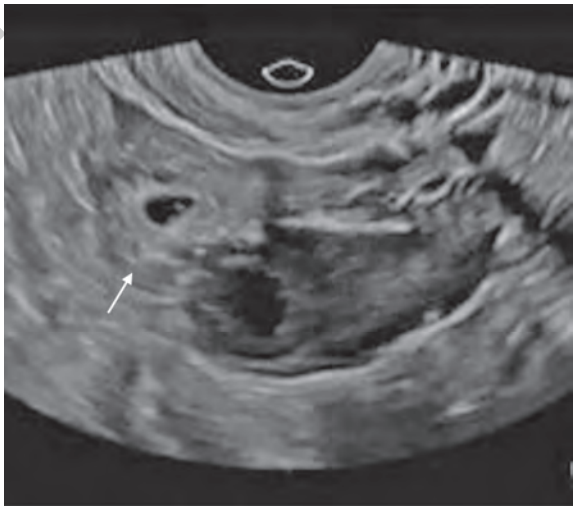


Fig. 6: TVS showing ovarian EP (Marked by arrow).

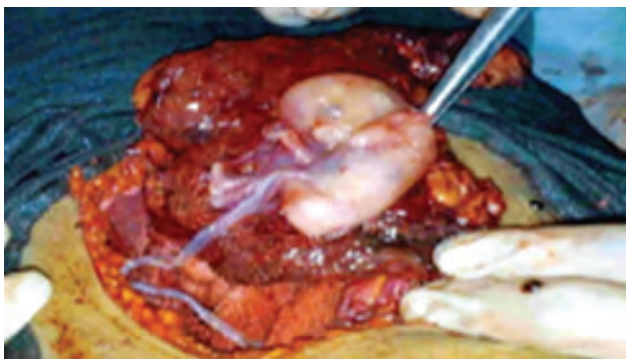


Fig. 7: Abdominal EP.

Cervical Pregnancy

Implantation in cervical canal at or below internal os.

- **Incidence:** 1:18,000
- **Diagnosis:**

Clinical Criteria	*Ultrasound Criteria*	*HPE Criteria: Rubin's*
• Uterine bleeding, no cramping, following amenorrhea • Cervix distended, thin walled, soft consistency • Enlarged uterine fundus may be palpated	• Echo-free uterine cavity/ pseudo-gestational sac • Decidual reaction • Hourglass uterus with ballooned cervical canal • Gestational sac in endocervix	• Cervical glands present opposite to placenta • Placental attachment to cervix must be below entrance of uterine vessels

Clinical Criteria	*Ultrasound Criteria*	*HPE Criteria: Rubin's*
• Internal os is closed • External os is partially opened	• Closed internal os • Placental tissue in cervical canal **(Fig. 8)**	• Fetal element absent from corpus uteri

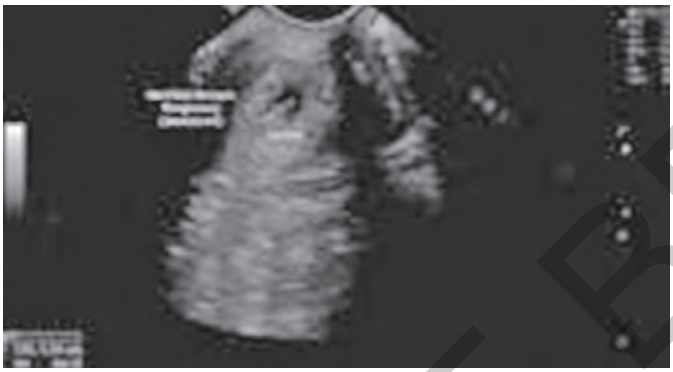


Fig. 8: TVS showing cervical EP

- **Management:**
  - **Medical:** Single or combination—methotrexate, actinomycin, potassium chloride, and etoposide
  - **Surgical—Conservative:**

Cerclage	
• Bernstein/Wharton • Transvaginal ligation of cervical branch of uterine artery • Angiographic UAEmbolization	• Intracervical injection vasopressin • Foley's catheter as tamponade • **Radical—**hysterectomy

CORNUAL PREGNANCY

Implantation in rudimentary horn of bicornuate uterus.

- **Diagnosis—**rupture between 12 and 20 weeks. Asymmetrical enlargement of uterus
- **Treatment—**affected cornu with pregnancy is removed. Hysterectomy—last resort

Interstitial Pregnancy (2%)

Ruptures late at 3–4 months.

- **Fatal rupture—**severe bleeding as both uterine and ovarian artery supply.
- **Management:**
  - **Unruptured—**local/IM methotrexate/cornual resection by laparotomy
  - **Rupture—**hysterectomy is indicated.

Cesarean Scar Ectopic Pregnancy

- **USG—**empty uterine cavity and gestational sac attached low to lower segment cesarean scar
- **Management:**
  - **Medical—**methotrexate
  - **Surgical—**resection and suturing of scar may be done/ hysterectomy

FREQUENTLY ASKED EXAMINATION QUESTIONS

1. Provide definition, risk factors, clinical presentation, and management of acute ruptured tubal ectopic pregnancy.
2. Write short notes:
   (1) Medical management of ectopic pregnancy and
   (2) Persistent ectopic pregnancy.

Clinical Handbook of
Obstetrics and Gynecology

Special Features

An authoritative contributed volume containing vast knowledge and experience of eminent faculty. The contributors are associated with India's prestigious medical institution and hence their presentations are the fine synthesis of practical and theoretical knowledge with excellence in ethical approach. The colored operative or clinical case pictures and specimens are mostly operated and/or managed at Department of Obstetrics and Gynecology, Maulana Azad Medical College and Lok Nayak Hospital, New Delhi, India.

This book covers almost all topics in Obstetrics and Gynecology from the point of view of postgraduate examinations (MD/MS/DGO/DNB). Contains commonly asked theory and practical/viva and entrance examination questions.

A concise and comprehensive overview of most common and essential aspects of obstetrics and gynecology. Includes total 146 chapters with pointwise coverage of all topics with flowcharts, algorithm and tables which are easy to learn and memorize. This book contains total 1044 MCQs of Obstetrics and Gynecology for complete preparation of NEET-PG or CMSE examination (621 MCQs) and SS/FNB entrance examination (423 MCQs).

- Excellent handbook for the undergraduates and postgraduates in need of quick preparation of MBBS, MD, MS, DNB and SS/FNB examinations.
- Special highlights are sections on specimens, instruments, and charts for viva, surgical procedures, MCQs and OSCE imperative for a wholesome examination preparedness. Colorful illustrations and diagrams further enhance comprehension and grasp of the topics.
- Authors are the faculty of Maulana Azad Medical College and Lok Nayak Hospital with vast academic, clinical experience and expertise in conducting undergraduate and postgraduate examinations.

Latika Sahu MD FICOG
Director Professor
Department of Obstetrics and Gynecology
Maulana Azad Medical College and Lok Nayak Hospital
New Delhi, India

Chetna A Sethi DGO DNB FICOG
Specialist
Department of Obstetrics and Gynecology
Maulana Azad Medical College and Lok Nayak Hospital
New Delhi, India

Bidhisha Singha MD
Specialist
Department of Obstetrics and Gynecology
Maulana Azad Medical College and Lok Nayak Hospital
New Delhi, India

Asmita M Rathore MD FRCOG
Director Professor and Head
Department of Obstetrics and Gynecology
Maulana Azad Medical College and Lok Nayak Hospital
New Delhi, India

Printed in India

Available at all medical bookstores
or buy online at www.jaypeebrothers.com

JAYPEE BROTHERS
Medical Publishers (P) Ltd.
EMCA House, 23/23-B, Ansari Road,
Daryaganj, New Delhi - 110 002, INDIA
www.jaypeebrothers.com

Join us on facebook.com/JaypeeMedicalPublishers

Shelving Recommendation
OBSTETRICS & GYNECOLOGY

ISBN 978-93-5465-657-6