بسم الله الرحمن الرحيم
ECTOPIC PREGNANCY

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DEFINITION:
It is defined as pregnancy occurring outside the endometrial lining of the uterus.
Recent evidence indicates that the incidence of ectopic pregnancy has been rising in many countries.

- USA - 5 fold
- UK - 2 fold
- France 15/1000 pregnancies

Recurrence rate - 15% after 1\textsuperscript{st}, 25% after 2 ectopic
SITE OF ECTOPIC PREGNANCY:

1- Fallopian tube 95 %
2- Rare sites : 5%
   A- uterus
   ○ Cervical
   ○ Angular
   ○ Rudimentary Horn
   B- The Ovary.
   C- Broad Ligament
   D- Abdominal
   E- Heterotropic pregnancy
Infection: as in the salpingitis and PID

Contraception:

Tubal Surgery: depends on the degree of damage and the extent of anatomic alteration. Surgeries carrying higher risk of subsequent ectopic pregnancy include salpingostomy, fimbrioplasty, tubal reanastomosis, and lysis of peritubal or periovarian adhesions.

Congenital tubal abnormalities: such as diverticula, hypoplesia, congenital anomaly of celia e.g.: Young Syndrome and Kartagener Syndrome.
ETIOLOGY OF ECTOPIC PREGNANCY:

- Assisted Reproductive Technology: such as in vitro fertilization (IVF) or gamete intralosalpinx transfer (GIFT)

- Salpingitis Isthmica Nodosa: is defined as the microscopic presence of tubal epithelium in the myosalpinx or beneath the tubal serosa. These pockets of epithelium protrude through the tube, similar to small diverticula.

- Endometriosis & leiomyomata
After one previous ectopic pregnancy, the chance of another is 7-15%.

An increased relative incidence of ectopic pregnancy has been reported with use of progestin-only oral contraceptives, previous ectopic pregnancy, previous diethylstilbestrol (DES) exposure, Smoking, Multiple sexual partners, Early age of first intercourse
TUBAL PREGNANCY
The vast majority of ectopic pregnancies implant in the Fallopian tube.
Pregnancy occur mainly in the ampullary section and less common in the isthmus, fimbrial or interstitial part.
Mortality of a tubal pregnancy at interstitial part is higher as there is increased vascularity that may result more likely in sudden major hemorrhage.
The trophoblast invades deeply into the tubal wall.

Following implantation, the trophoblast produces hCG which maintains the corpus luteum.

The corpus luteum produces oestrogen and progesterone which change the secretory endometrium into decidua. The uterus enlarges up to 8 weeks size and becomes soft.
The tubal pregnancy does not usually proceed beyond 8-10 weeks due to:

- lack of decidual reaction in the tube.
- the thin wall of the tube.
- the inadequacy of tubal lumen
- bleeding in the site of implantation as trophoblast invades.
Separation of the gestational sac from the tubal wall leads to its degeneration, and fall of hCG level, regression of the corpus luteum and subsequent drop in the oestrogen and progesterone level.

This leads to separation of the uterine decidua with uterine bleeding.
OUTCOME OF TUBAL PREGNANCY:

1- Tubal mole:
The gestational sac is surrounded by a blood clot and retained in the tube.

2- Tubal abortion: common in *ampullary*.
If placental separation is complete, all of the products of conception may be extruded through the fimbriated end into the peritoneal cavity.

Rarely re implantation of the conceptus occurs in another abdominal structure leads to secondary abdominal pregnancy.
OUTCOME OF ECTOPIC PREGNANCY:

3-Tubal rupture:

- More common if implantation occurs in isthmus.
- Rupture may occur in the anti-mesenteric border of the tube. Usually profuse bleeding occurs → intraperitoneal haemorrhage.
- If rupture occurs in the mesenteric border of the broad ligament haematoma will occur.
uterus

right fallopian tube

collected hemorrhage

ectopic pregnancy (~5 weeks gestation)

bowel
Symptoms: Often subtle, or even absent

1. Pain
   - Pelvic and abdominal pain - sharp, stabbing or tearing in character
   - Pleuritic chest pain - from diaphragmatic irritation caused by the hemorrhage

2. Amenorrhea

3. Vaginal bleeding:
CLINICAL PICTURE:

Sign:

General examination:
- Anemia of varying degree depending upon the blood loss.
- Blood pressure and pulse
  - Before rupture vital signs are generally normal.
  - Hypotension and tachycardia - if bleeding continues and hypovolemia becomes significant.
- Temperature slightly higher (up to 38°C) due to absorption of blood from the peritoneal cavity.
ABDOMINAL EXAMINATION: The abdomen is distended, rigid with generalized tenderness.

PELVIC EXAMINATION: in the conscious patient will demonstrate extreme tenderness over the gravid tube or in the pouch of Douglas if a haematocele has collected.

PERITONEAL IRRITATION: may produce muscle guarding, frequency of micturation, and later a degree of fever, all leading towards a misdiagnosis of appendicitis.
ALSO **SIGNS** and **SYMPTOMS** of EARLY PREGNANCY may be present and help to distinguish the condition from other causes of lower abdominal pain.
DIFFERENTIAL DIAGNOSIS:

- Salpingitis
- Abortion
- Appendicitis
- Torsion of pedicle of ovarian cyst
- Rupture of corpus luteum or follicular cyst
- Perforation of peptic ulcer.
INVESTIGATIONS OF ECTOPIC PREGNANCY
**LABORATORY TEST:**

**Serum HCG:** Detection of HCG in the serum by ELISA or radioimmunoassay are more sensitive than urine pregnancy tests are positive in only 50-60% of ectopic

- If the test is negative, ectopic pregnancy are excluded.
- If the test is positive, ultrasonography is indicated.

**Progesterone**

- Serum progesterone level is lower in ectopic than normal pregnancy and usually less than 15ng/ml.
In general, a positive hCG test with empty uterus by sonar indicates ectopic pregnancy.

Diagnosis of ectopic pregnancy is made if there is:

1. An empty uterine cavity by abdominal sonography with hCG value above 6000 IU/ml.
2. An empty uterine cavity by vaginal sonography with hCG value above 2000 IU/ml.
Ectopic Pregnancy

UNSW Embryology
LAPAROSCOPY:

- This is the gold standard for diagnosis and treatment of Ectopic pregnancy.
- The tubes are easily visualized and evaluated, so small ectopic may be missed.
LAPAROTOMY:

- can also be performed to confirm an ectopic pregnancy when the woman is hemodynamically unstable.
CULDOCENTESIS

This means passing a needle through the posterior fornix into the pouch of Douglas. This may be helpful if laparoscopy is not available. Any blood or fluid found may have been derived from a ruptured ectopic pregnancy.
TREATMENT:

- Depends on the stage of the disease and the condition of the patient at diagnosis.

- Options:
  - Surgery - Laparoscopy / Laparotomy
  - Medical - Administration of drugs at the site / systemically
Surgical Treatment of Tubal Pregnancy:

- Carried out either by Laparoscopy / Laparotomy.
- The procedures are:
  - Salpingectomy.
- Conservative surgery:
  - salpingostomy
  - salpingotomy
  - Segmental resection and anastomosis
MEDICAL TREATMENT:

- **Methotrexate:** it is an antimetabolite and antifolate drug which acts by Interferes with the DNA synthesis and inhibit growth of trophoblast. Give IM in a single dose of 50mg/m² and follow up by measure the HCG level at 4-7d.
  - If hCG levels <15% tested on a weekly until undetectable.
  - If hCG level >15% second dose of Methotrexate is given.
  - If hCG levels continue at higher levels surgery will be needed.
indications:
① before rupture or abortion of tubal pregnancy.
② mass ≤ 4 cm.
③ quantitative serum β-HCG < 2000 IU/L
④ no contraindication
Contraindications:
- Breastfeeding
- Immunodeficiency / active infection
- Chronic liver disease
- Active pulmonary disease
- Active peptic ulcer or colitis
- Blood disorder
- Hepatic, Renal or Haematological dysfunction
A Cervical pregnancy:
- is an ectopic pregnancy that has implanted in the uterine endocervix.
- The incidence has been reported about 0.15%

Outcome of cervical pregnancy:
- Aborts within the first trimester with major hemorrhage.
- If the pregnancy higher in the cervical canal can be go past the first trimester.
- And in the rare cases a cervical pregnancy results in the birth of a live baby.
A typical non-specific symptom is vaginal bleeding during pregnancy. The diagnosis is made in asymptomatic pregnant women either by inspection seeing a bluish discolored cervix or, more commonly, by obstetric ultrasonography. Ultrasound will show the location of the gestational sac in the cervix, while the uterine cavity is "empty".
Histological diagnosis has been made by Rubin’s criteria on the surgical specimen:
1- cervical glands are opposite the trophoblastic tissue.
2- the trophoblastic attachment is below the entrance of the uterine vessels to the uterus or the anterior peritoneal reflection.
3- fetal elements are absent from the uterine corpus
TREATMENT:

- Cerclage
- Curettage and tamponade - suction curettage followed by insertion of foley catheter and vaginal pack
- Uterine artery embolization
- Methotrexate - first line therapy in stable women
- Hysterectomy - if other interventions fail
CORNUAL ANGULAR PREGNANCY:

- The embryo is implanted in the lateral angle of the uterine cavity, medial to the uterotubal junction and round ligament.
- Angular pregnancy must be distinguished from interstitial pregnancy, in which the embryo is implanted lateral to the round ligament.
- Separation of placenta lead to sever hemorrhage.
- Treatment cornual resection by laparotomy.
The incidence: has been reported about 1%

Etiology:
  * Pelvic adhesions.
  * Favorable ovarian surface for implantation as in ovarian endometriosis.

Outcome of ovarian pregnancy:
rupture leading to either internal hemorrhage or pelvic hematocele
Findings are likely to mimic those of a tubal pregnancy or a bleeding corpus luteum.

The increased use of vaginal ultrasound has resulted in the more frequent diagnosis of unruptured ovarian pregnancies.
Spiegelberg criteria for diagnosis of ovarian pregnancy:

* The gestational sac is located in the region of the ovary,
* the ectopic pregnancy is attached to the uterus by the ovarian ligament,
* ovarian tissue in the wall of the gestational sac is proved histologically,
* the tube on the involved side is intact.
Treatment:

- Surgical laparotomy with ovarian wedge resection or cystectomy, ovariectomy
- Methotrexate for unruptured ovarian pregnancy
- Laparoscopic resection or laser ablation
ABDOMINAL (PERITONEAL) PREGNANCY

- Is implanted within the peritoneal cavity outside the fallopian tube or ovary

  **Incidence** about 2%

**Primary abdominal** pregnancy refers to a pregnancy that implanted directly in the abdominal cavity and its organs such pregnancies are very rare.

**Secondary implantation** which means that it originated from a tubal (less common an ovarian) pregnancy and re-implanted
Fetal malformation and deformations - facial or cranial asymmetry, or both, various joint abnormalities, limb deficiency and CNS anomalies

- If the fetus dies after reaching a size too large to be resorbed, it may undergo
  - Suppuration
  - Mummification/ *Lithopedian* formation
  - Calcification
ABDOMINAL (PERITONEAL) PREGNANCY

Diagnosis:

Normal signs of pregnancy or have non-specific symptoms such as abdominal pain, vaginal bleeding.

Abdominal examination:

- Unusual transverse or oblique lie.
- Fetal parts are felt very superficial with no uterine muscle wall around.

Vaginal examination:

- The uterus is soft, about 8 weeks and separate from the fetus
- No presenting part in the pelvis
Special investigations:

- Plain X-ray: shows abnormal lie. In lateral view, the fetus overshadows the maternal spines.
- Ultrasound: shows no uterine wall around the fetus.
- Magnetic resonance imaging (MRI): has a particular importance in preoperative detection of placental anatomic relationships.
Treatment:

The condition should be terminated surgically through laparotomy once diagnosed.
HETEROPTROPHIC PREGNANCY:

- It is rare cases of ectopic pregnancy, there are two fertilized eggs one outside the uterus and other inside.
- Incidence about 1:30,000
- Becoming more common likely due to increased use of IVF.
- The diagnosis of ectopic should be consider in ONE of:
  - Persistent or rising chorionic gonadotropin levels after dilatation and curettage for an induced or spontaneous abortion.
HETEROTROPHIC PREGNANCY:

- With more than one corpus luteum
- With absence of vaginal bleeding in the presence of signs and symptoms of an ectopic pregnancy
- When there is ultrasonigraphic evidence of uterine and extra uterine pregnancy

- Treatment surgically
Right tubal gestational sac
Intrauterine gestational sac
THANK YOU