Ectopic Pregnancy:
Radiological diagnosis and treatment options

Henry Delu, Jr.
Harvard Medical School MSIII
Our Patient

- Chief complaint: 32 yo G10P2-0-7-2 at 6 3/7 weeks gestation by LMP, presents with severe abdominal pain and vaginal bleeding for 12 days.

- 10 Pregnancies, 2 live births, 0 preterm births, 7 miscarriages, 2 living children.
Our Patient continued

- **ROS:** Denies passage of tissue per vagina, vaginal trauma, or recent intercourse.

- **PMH:** 7 prior miscarriages.

- **HCG:** 4455
Differential Diagnosis of Abdominal Pain:

- Ectopic Pregnancy
- Acute salpingitis
- Spontaneous Abortion
- Ruptured corpus luteum
- Acute Appendicitis
- Dysfunctional uterine bleeding
- Adnexal Torsion
- Degenerating Leiomyomata
- Endometriosis
- Nephrolithiasis
Normal Pelvic Anatomy

http://www.yoursurgery.com/procedures/hysteroscopy/images/AnteriorNormalUterus.jpg

http://www.advancedfertility.com/pics/singlefollicle12.jpg
Menu of Radiological Tests

- US
- CT
- MRI
- X-ray
- Nuclear Medicine
Ultrasound

Transabdominal:
1. Easier for the patient
2. Requires FULL BLADDERS for optimal visualization
3. Panoramic view of the abdomen and pelvis
4. Difficult to detect pregnancies below 6wks gestation

Transvaginal:
1. Invasive/Requires insertion of a probe into the vagina
2. Empty bladder necessary
3. Limited pelvic view but Excellent Resolution/ Better anatomy
4. Detects earlier pregnancies
Normal Pelvic Ultrasound

- Uterus
- Bladder
- Endometrium
- Normal Ovary

Images: [Normal Ovary](http://www.obgyn.net/us/gallery/Gyn_Normal_Ovary.jpg)
Our Patient

Transvaginal US

Ectopic Pregnancy

Normal Ovary
Our Patient

Ectopic Pregnancy

Sagittal US
Our Patient

Ectopic Pregnancy
Less than 0.5 cm
TREATMENT OPTIONS

1. Methotrexate, anti-folic acid drug, if less than 3.5/4cm diameter.
2. Surgical Laporotomy if more than 3.5/4cm diameter.
Treatment of Our Patient

- Laparoscopic left salpingectomy, despite less than 4cm.
- The ectopic pregnancy and portion of the left fallopian tube were excised with the gyrus using electrocautery and cutting.
Companion Patient #1

- CHIEF COMPLAINT: 34 year old woman G4P1021 presents with vaginal bleeding x 2 WKS, and believes she is having a miscarriage. She is 11 weeks gestation by LMP 07/04/07.

- Earlier during the week she had severe abdominal pain. No pain now.

- 4 Pregnancies, 1 live birth, 0 preterm births, 2 miscarriages, 1 living child.
Companion Patient #1 continued

- PMH: 2SAB, 1 NSVD 7/01. Negative STIs, prior abdominal surgeries, or abnormal pap smears.

- ROS: Complains of increased fatigue over the past week. Denies passage of tissue per vagina, vaginal trauma, or recent intercourse.

- On Physical exam: No adnexal tenderness or Cervical Motion Tenderness on bimanual.

- B-HCG: 120
Companion patient #1: Pelvic US

ECTOPIC PREGNANCY

Solid mass with increased peripheral vascularity that measures 20 x 19 x 22 mm
Companion Patient 1 continued:
“Ring of Fire”

Blood flow around Ectopic on pelvic US
Companion Patient 1 treatment

- Patient was given Methotrexate 75mg IM and Rhogam IM.
Companion Patient 2

- Chief complaint: 40-yo woman, at 5 wks gestation by LMP. Presents with Abdominal pain and spotting.

- HCG: higher than would be expected of a 5 wk pregnancy.

- Evaluate for pregnancy location and ovarian blood flow.
Companion Patient #2: Interstitial Ectopic Pregnancy on US

Right cornual area has a well-defined gestational sac
Companion Patient #3
Interstitial pregnancy on US

Empty uterus
Right Cornual region


Transvaginal US midsagittal plane
Transvaginal US coronal plane

Ectopic
Companion Patient #4:
29 wk Abdominal pregnancy on US

Midline transverse US image

Fetus, Not in uterus

maternal spine and right iliac artery

Companion Patient #4 Continued:
29 wk abdominal pregnancy

Longitudinal US image  High transverse US image

SITES OF ECTOPIC PREGNANCY

95% of all ectopic pregnancies are Tubal

1. Amputtary
2. Isthmic
3. Interstitial
4. Abdominal
5. Ovarian
6. Inter-ligamentary
7. Cervical

http://img.tfd.com/dorland/pregnancy_ectopic.jpg
Ectopic Pregnancy

Ectopic pregnancy

- Fetus
- Fallopian tube
- Uterus
Ectopic Pregnancy and Epidemiology

- Pregnancy that implants outside of the uterine cavity. In 95% of cases implantation occurs in the fallopian tubes. In the remaining cases the pregnancy is in the cervix, abdominal cavity, or ovary.

- If rupture occurs, it can result in rapid hemorrhage, leading to shock, and eventually death.
Ectopic Pregnancy and Epidemiology continued

- $B$-HCG (Beta-human chorionic gonadotropin) that is low for gestational age.
- Fails to increase at the expected rate, 2X every 48hrs.
- Prevalence is 1/100 pregnancies.
Risk Factors for Ectopic Pregnancy

- 1. Prior ectopic pregnancy
- 2. History of STDs or PID, salpingitis
- 3. Previous tubal surgery
- 4. Prior pelvic or abdominal surgery resulting in adhesions
- 5. Endometriosis
- 6. Current use of exogenous hormones including progesterone or estrogen
- 7. In vitro fertilization and other assisted reproduction
- 8. DES-exposed patients with congenital abnormalities
- 9. Congenital abnormalities of the fallopian tube
- 10. Use of an IUD for birth control
CLASSICAL TRIAD of ECTOPIC PREGNANCY

1. AMENORRHEA

2. VAGINAL SPOTTING

3. ABDOMINAL PAIN
Acknowledgements

- Dr. Lieberman
- Dr. Catherine-Kim, aka AC
- Ms. Nyca Bowen
- Dr. Anghelescu
- Dr. Graham
- Dr. Lourenco
- Dr. Ferris
- Dr. Barth
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