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Ectopic Pregnancy

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Medical School Year 3

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Agenda

We will discuss:

- Facts about ectopic pregnancy
- Basics of ultrasound
- Patient presentation

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Ectopic Pregnancy

Definition: implantation of the fetus in any site other than a normal uterine location

Incidence: 2% of reported pregnancies

Locations:

- Fallopian tubes- 90%
- Ovaries
- Abdominal cavity
- Cervix
- Intrauterine portion of the tube

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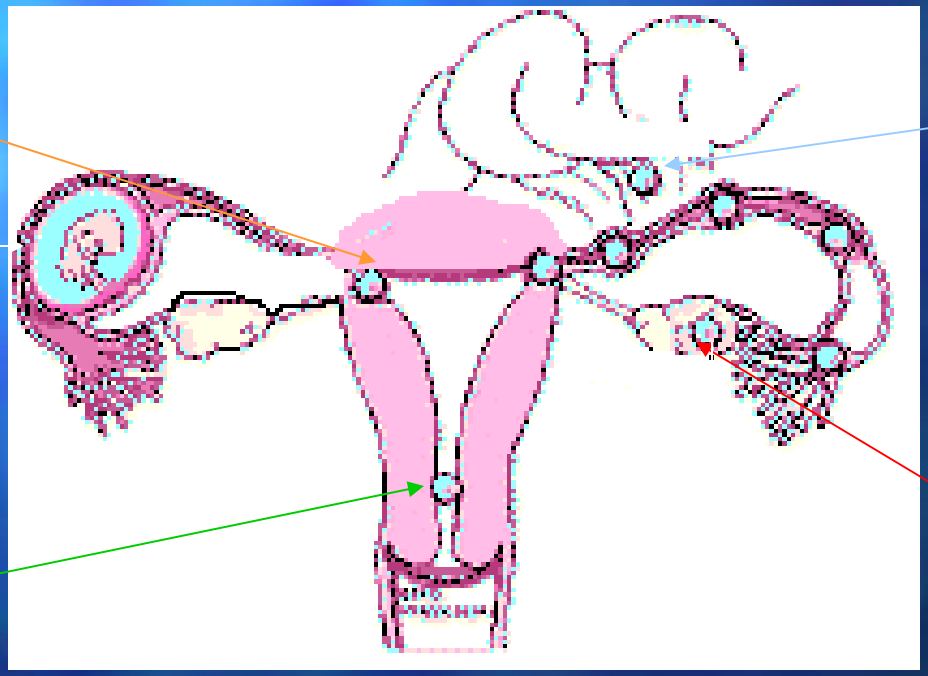
Ectopic Pregnancy Locations



Adapted from http://matweb.hcuge.ch/Selected_images?Ectopic_pregnancy_images/ectopic_pregnancy

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Risk Factors for Ectopic Pregnancy

- PID with chronic salpingitis
- Peritubular adhesions
  - Appendicitis
  - Endometriosis
  - Leiomyomas
  - Surgery
- IVF
- IUD use (?)

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Presentation of Ectopic Pregnancy

The typical triad

- Abdominal pain
- Vaginal bleeding
- Adnexal mass

***Rarely the patient presents with hypovolemic shock secondary to tube rupture

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Differential Diagnosis of Acute Abdominal Pain

- Appendicitis
- Ectopic pregnancy
- Acute PID
- Ruptured graafian follicle or corpus luteum cyst
- Endometriosis
- Mesenteric lymphadenitis
- Acute gastroenteritis
- Acute cholecystitis
- Perforated ulcer
- Acute pancreatitis
- Acute diverticulitis
- Intestinal obstruction
- Ureteral calculus
- Pyelonephritis

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Woman of childbearing age with + hCG, bleeding and/or mass

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Diagnosis in the Setting of an Acute Abdomen

Patient presents in hypovolemic shock

↓

hCG if available

(stabilize patient first!)

↓

Diagnostic/interventional

laparotomy/laparoscopy

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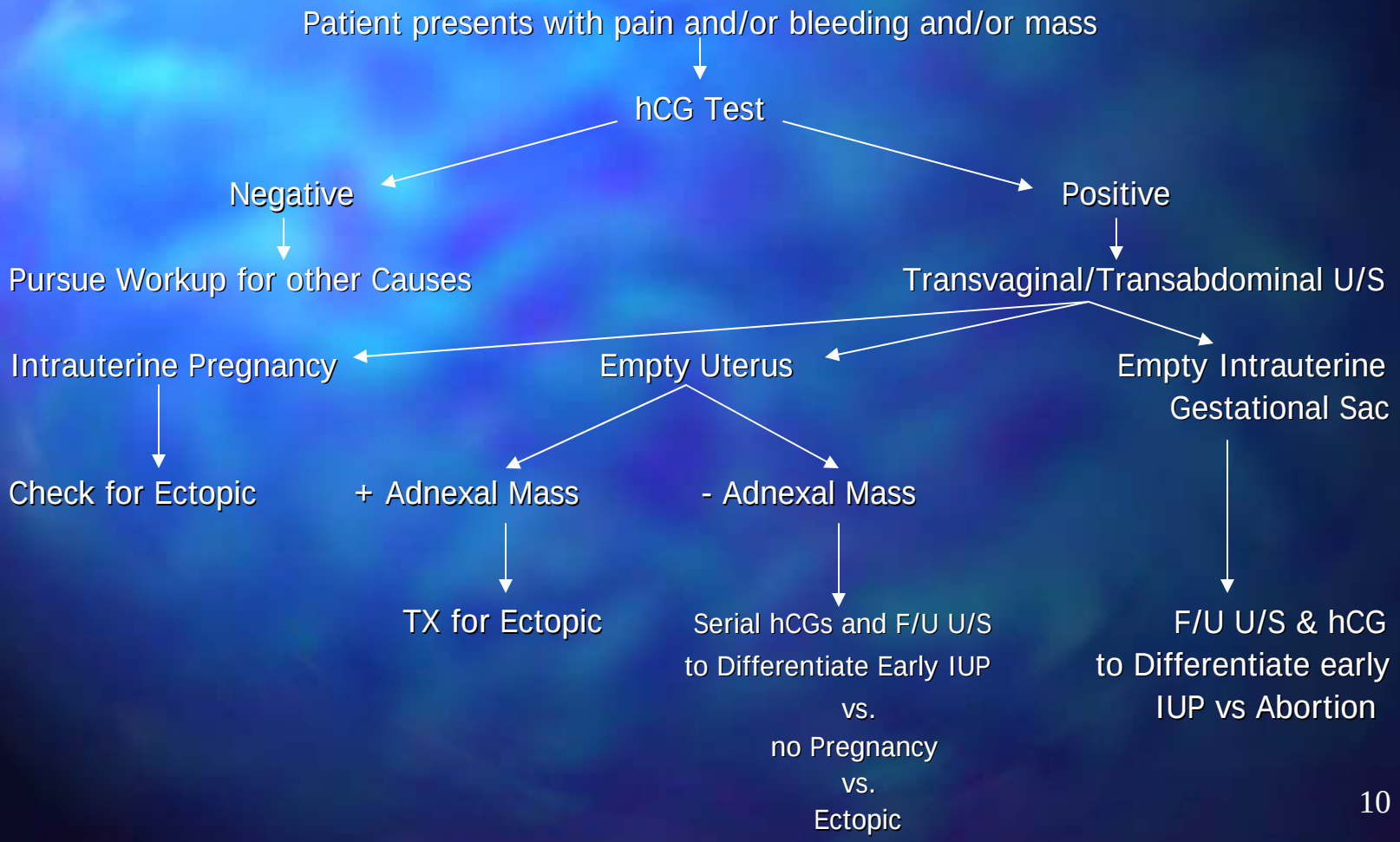
Diagnosis of a Symptomatic but Stable Patient



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Treatment of Ectopic Pregnancy

- Emergency hysterectomy
- Laparotomy
  - Removal of ectopic leaving tube intact
  - Removal of ectopic and tube
- Methotrexate
- Relocation of ectopic

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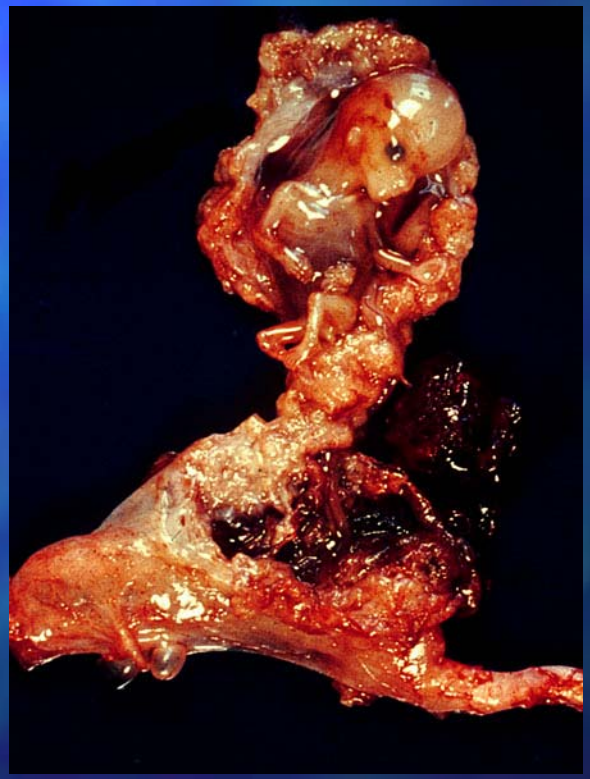
Complications of Ectopic Pregnancy

- Tubal rupture and intraperitoneal hemorrhage (most common)
- Hematosalpinx occurs when poorly adherent ectopic separates from tubal wall



From: www.kumc.edu/instruction/medicine/pathology/ed/ch_18/c18_ectopic_gross.jpg

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Basics of Ultrasound

- Transducer
  - Piezoelectric crystal: electric energy → high frequency sound waves
- Narrow beam of sound waves travels into tissues
- Quality of returning beam dependent upon tissue's acoustic impedance
- Echo returns to transmitter and is converted into electrical signals
- Electrical signals → real-time images

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Tissue Appearance on Ultrasound

- Solid organs- isoechoic to tissue density (grey)
  - Consist of tissues with multiple acoustic interfaces
- Cysts/fluid collections- anechoic (black)
  - Lack internal acoustic reflectors
- Bone and air- echogenic (white)
  - Impedance mismatch with adjacent soft tissue is very great- most sound energy is reflected
  - Little sound energy left to image structures beyond the interface

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Uses of Ultrasound

- Dating pregnancy
- Detecting multiple pregnancy
- Monitoring fetal growth/health
- Detect ectopic pregnancy
- Detect spontaneous abortion
- Detect placenta previa
- Detect placental abruption
- Assess fetal abnormalities
- Evaluate pelvic masses
- Oocyte retrieval

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Benefits of Ultrasound

- Safe- no ionizing radiation
  - Excellent for imaging pediatric, ob/gyn, and testicular processes
- Images can be transaxial, sagittal, or at any obliquity
- Less expensive than most modalities
- Portable- can be done at the bedside
- Real-time images

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Pelvic Ultrasound

- Transabdominal
  - Better to image large uterine fibroids, ovarian cysts, and blood clots
- Transvaginal
  - Can identify sac ½→1 week earlier
  - Patient does not need a full bladder
  - Closer to areas of interest
  - Better angles
  - Less bowel gas shadowing

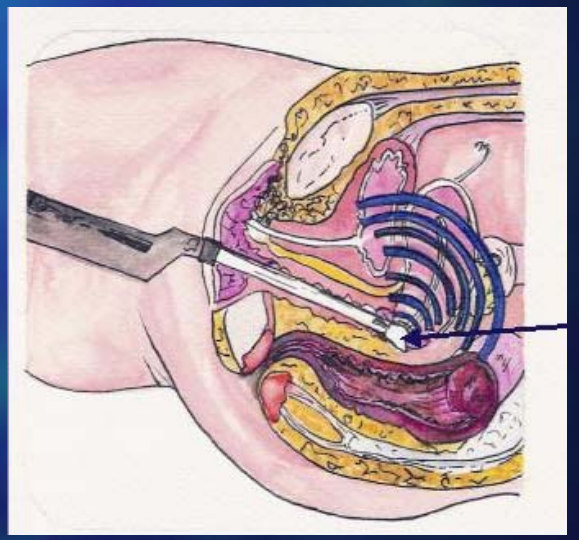

Image from: www.2womenshealth.co.uk/Figure04-01.htm

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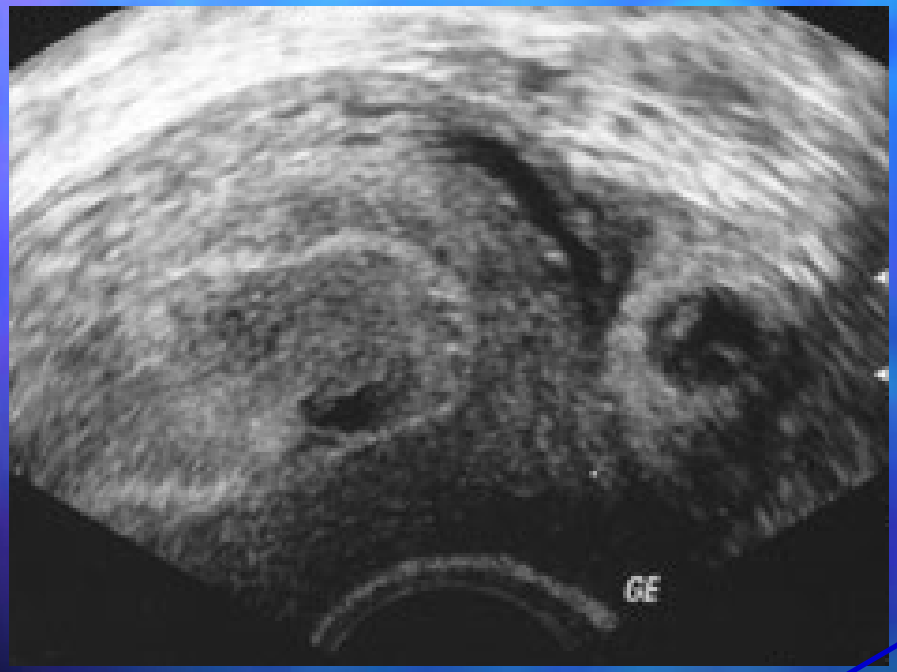
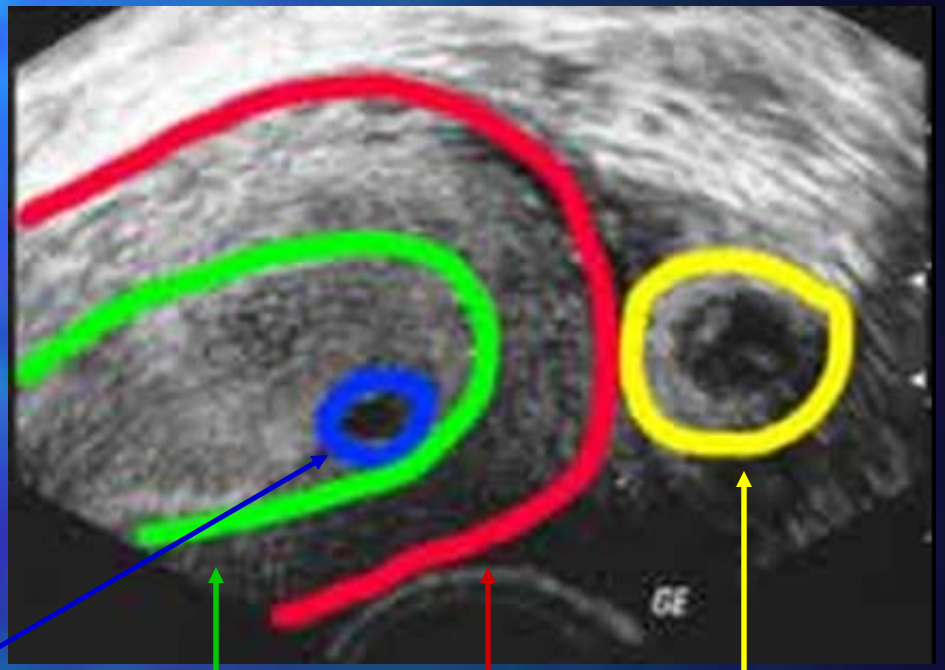
Appearance of an Ectopic on Ultrasound





Pseudogestational sac

Endometrial lining

Uterus

Ectopic

Image from: www.advancedfertility.com/ectopic.htm

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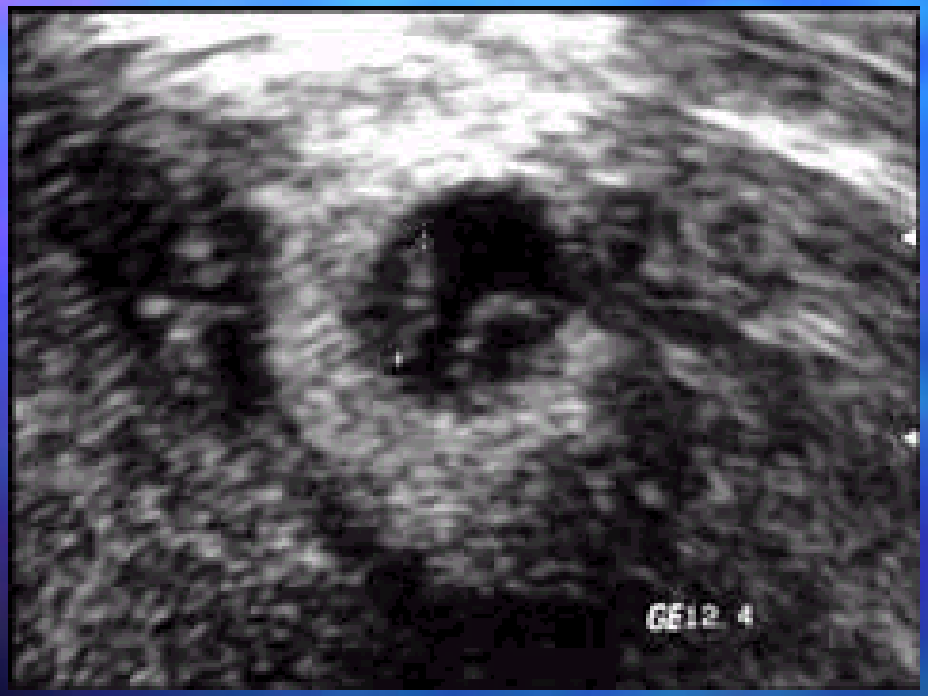
Appearance of an Ectopic on Ultrasound



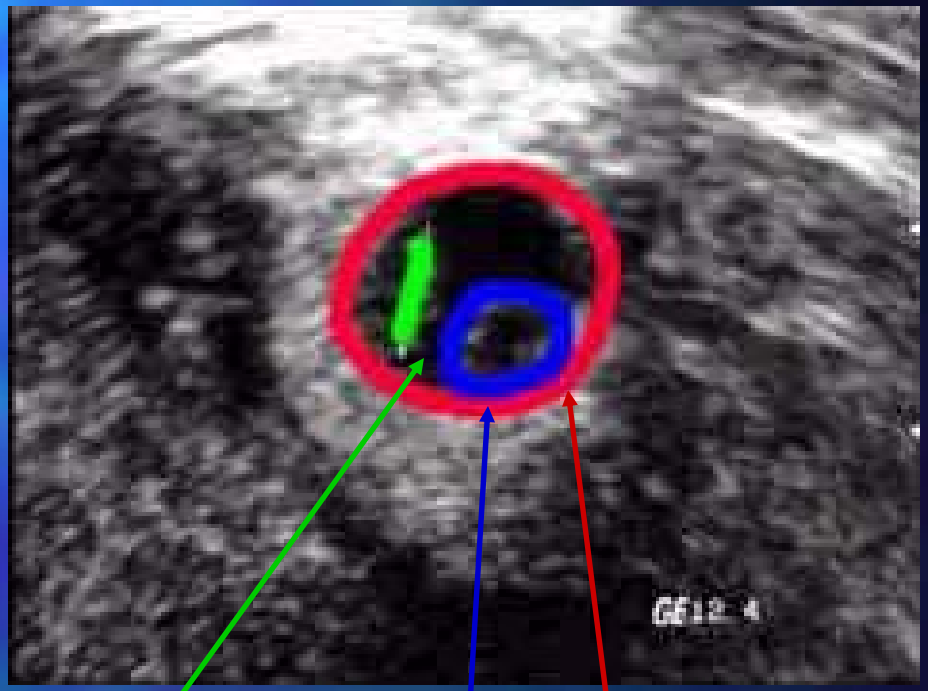


Image from: www.advancedfertility.com/ectopic.htm

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Our patient- Ms. T

- Patient information
  - 34 year old female
  - + pregnancy test with appropriately rising hCG
  - 5 6/7 weeks pregnant by LMP
- Chief Complaint on 6/6/2002
  - LLQ pain and vaginal bleeding
- PMH
  - Incomplete abortion- 1/2/2002

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Ms. T- 6/6/2002

- Findings
  - Normal uterus and ovaries
  - No free fluid
  - No gestational sac
  - Mass between uterus and left ovary
- Impression
  - Mass in left tube- probable ectopic
- Treatment
  - Methotrexate

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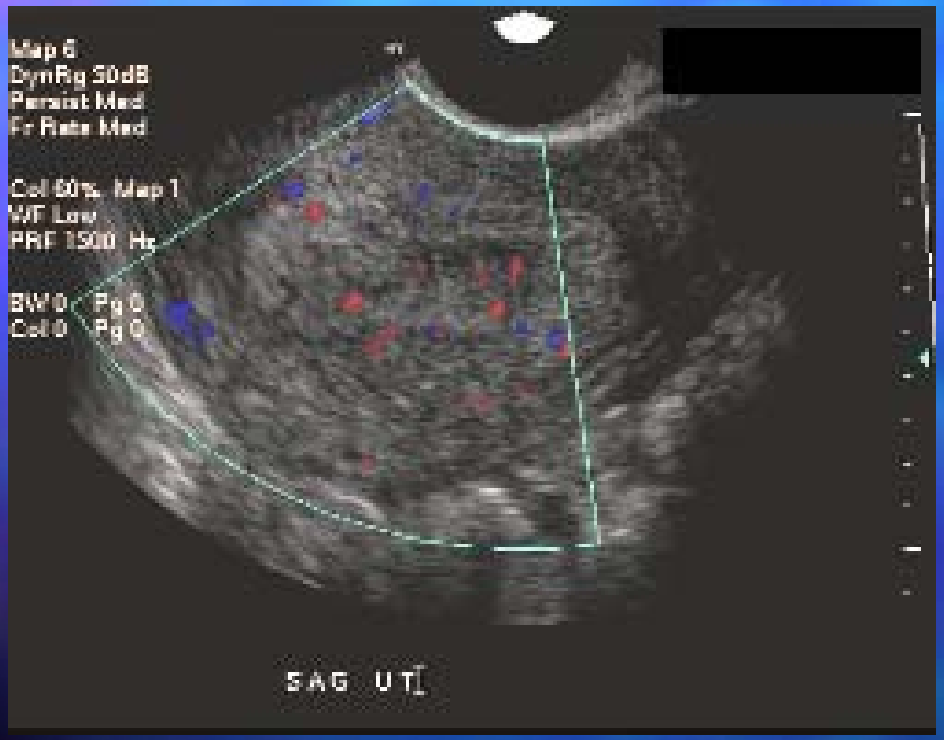
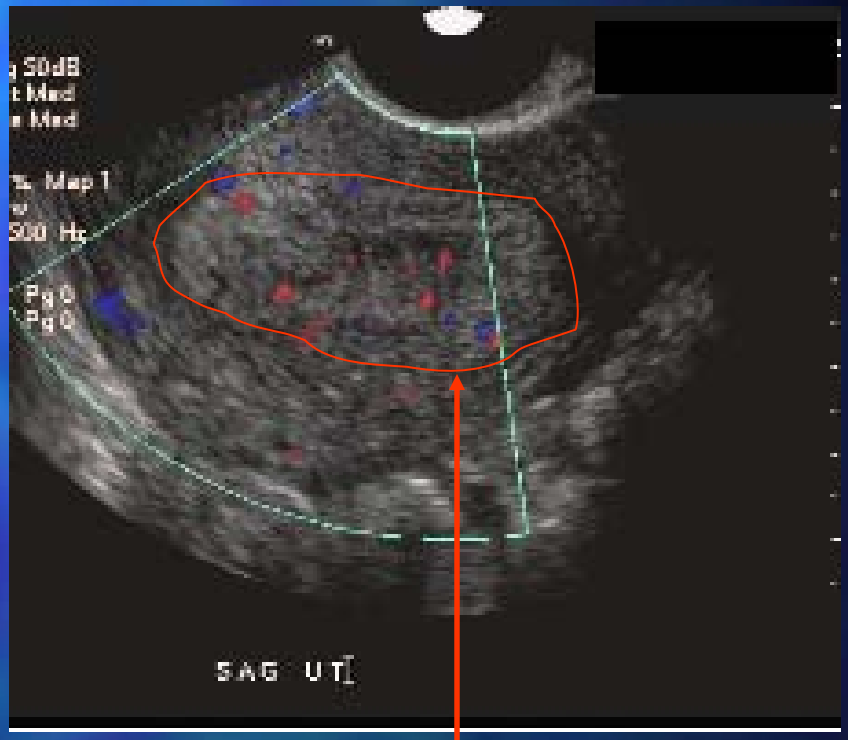
Ultrasound 6/6/2002





Empty Endometrium

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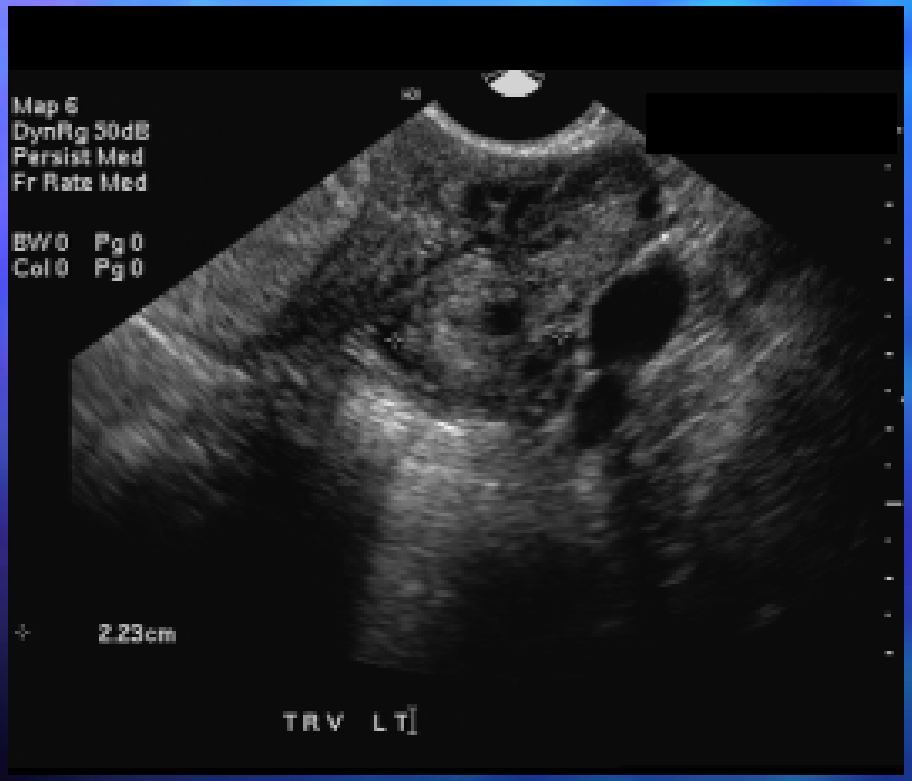
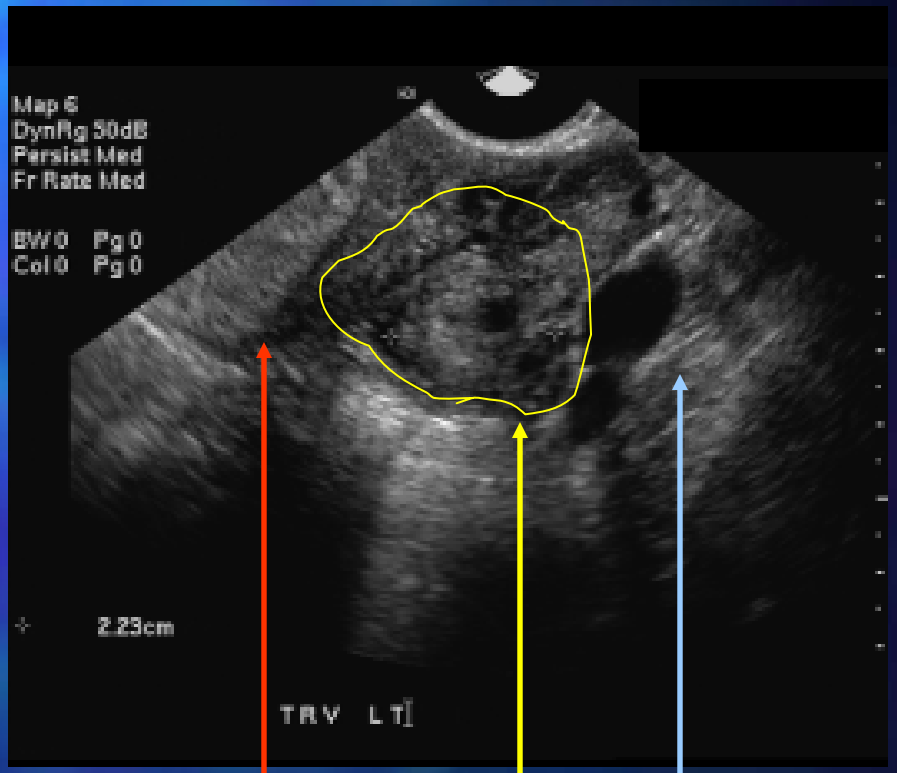
Ultrasound 6/6/2002





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Ms. T- 6/7/2002- F/U U/S

- Findings
  - Normal ovaries
  - Endometrium somewhat thickened
  - ? Free fluid
  - No gestational sac
  - Mass in left adnexa
- Impression
  - Ectopic in left adnexa
- Treatment
  - None

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Ms. T- 6/13/2002- F/U U/S

- Findings
  - Normal ovaries and uterus
  - Small amount of free fluid
  - Left adnexal mass larger and less well-defined
- Impression
  - Hemorrhagic evolution of ectopic
- Treatment
  - None- F/U appointment to assess hCG

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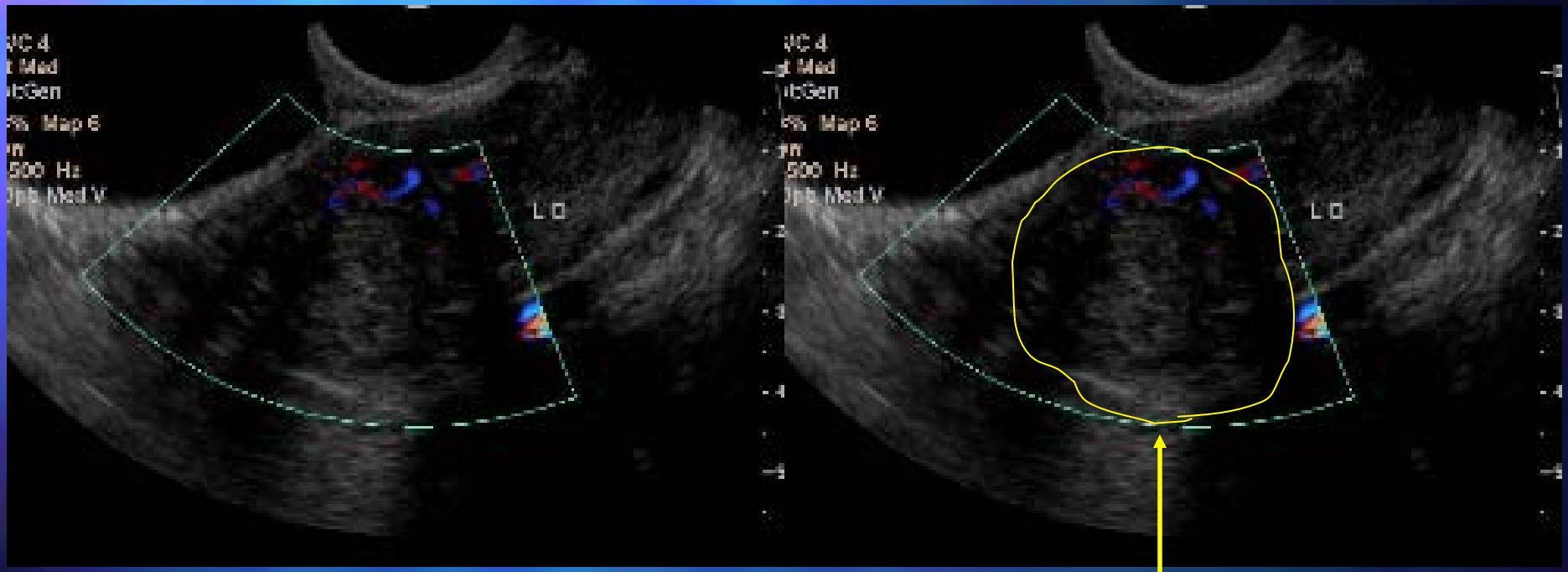
Ultrasound 6/13/2002



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Ms. T- 6/18/2002- F/U appt.

- Findings
  - Rising hCG
- Treatment
  - 2nd dose of methotrexate

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Ms. T- 6/28/2002

- Presentation
  - Acute LLQ pain
  - Stable vitals
  - Falling hCG
- Findings
  - Normal ovaries and uterus
  - Free fluid in cul-de-sac and lateral to right kidney
  - Larger, ill-defined mass next to left ovary
- Treatment
  - Patient taken to laparoscopy

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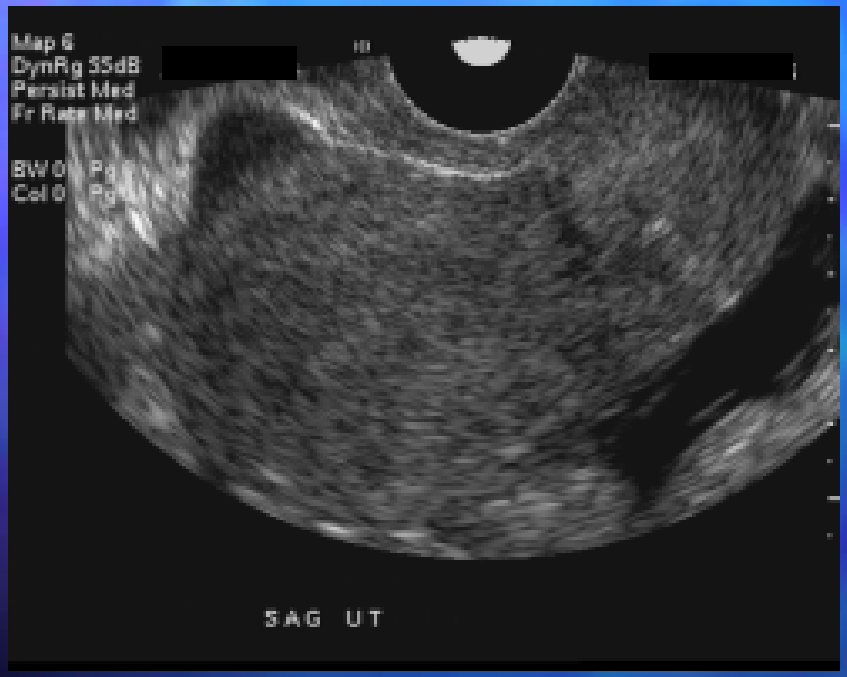
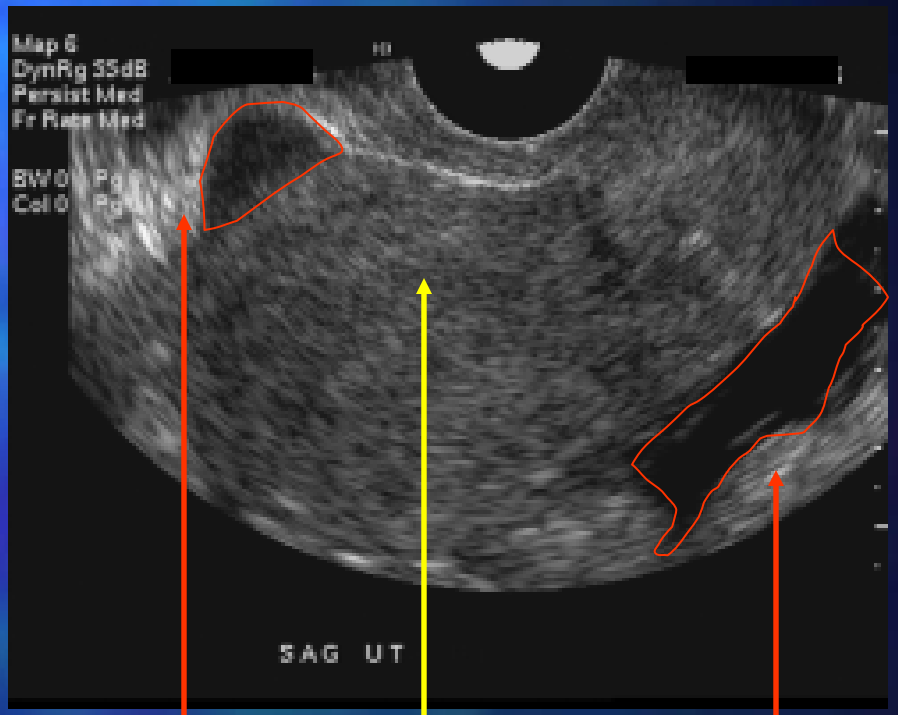
Ultrasound 6/28/2002

Sagittal view





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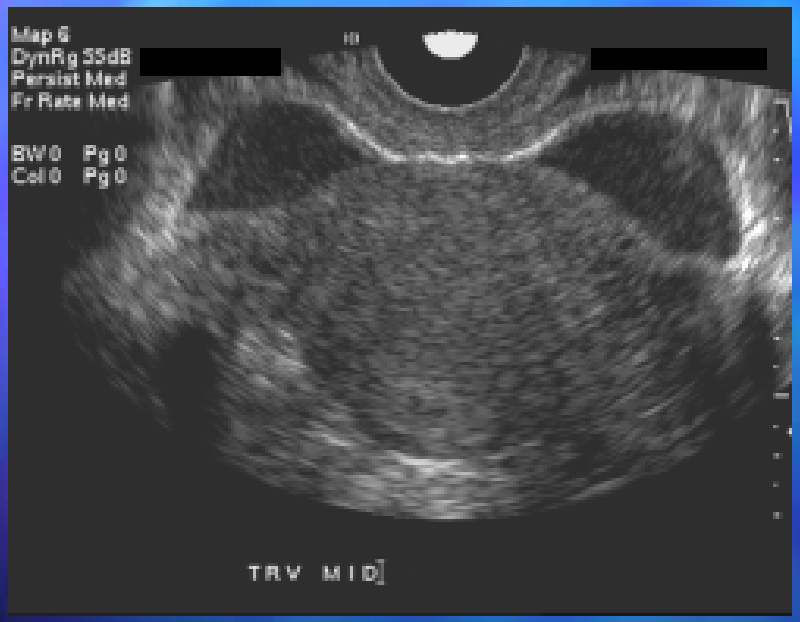
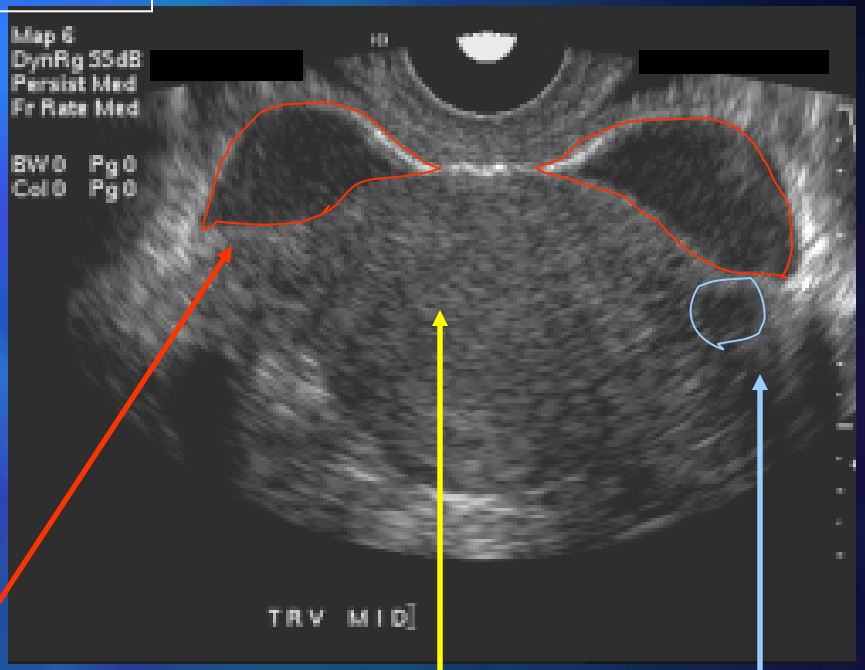
Ultrasound 6/28/2002

Axial view





Blood in pelvis

Uterus

Ectopic

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Ms. T- 6/28/2002-laparoscopy

- Impression
  - Ectopic in isthmus of left tube
  - No evidence of tubal rupture
  - 200 cc of blood and clot in pelvis
  - Omental adhesions (likely from prior PID)
- Procedure
  - Salpingoscopy and removal of ectopic from left tube
  - Omental adhesions lysed

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Conclusion

- Main points
  - It is important to include ectopic pregnancy on the DDX of any woman of child-bearing age that presents with abdominal pain and/or vaginal bleeding and/or adnexal mass
  - Ultrasound is the modality of choice to image the female pelvis and detect ectopic pregnancy

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- SLIDE #17- www.2womenshealth.co.uk/Figure04-01.htm
- SLIDE #18, #19- www.advancedfertility.com/ectopic.htm
- SLIDE #22, 23, 26, 29, 30- http://bidmcpacs.caregroup.org
- SLIDE #12- www.kumc.edu/instruction/medicine/pathology/ed/ch_18/c18_ectopic_gross.jpg
- SLIDE #4- http://matweb.hcuge.ch/Selected_images?Ectopic_pregnancy_images/ectopic_pregnancy
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