Ectopic, Early Pregnancy Loss, or Normal Pregnancy?
Diagnosis and Management of First-Trimester Bleeding

Jody Steinauer, MD, MAS
July, 2015

Disclosures

July 10, 2015
I have no disclosures.
Objectives

1. To review the workup of bleeding in the first trimester.
2. To apply evidence-based principles to:
   1. ectopic pregnancy (EP) and early pregnancy loss (EPL) diagnoses, and
   2. EP and EPL management options.

Patient Case: Presentation

• Maya is a 26 yo G1P0 presenting to the emergency room.

  “I’m 2 months pregnant and I’m bleeding and cramping. Am I going to lose the baby?”

• How do we care for Maya?
Patient Case: H&P

• Maya’s sure LMP was 9 weeks ago.
• She had a positive UPT 2 weeks ago.
• This is a desired pregnancy.
• Her first prenatal care visit is scheduled for next week.
• Her bleeding is like a “light period” for the past 3 days.
• She has no history of STIs or other risk factors for ectopic pregnancy.
• On exam her cervical os is closed.
• She is Rh-negative.

What can we tell Maya right now?

Symptomatic Early Pregnancy Evaluation
Symptomatic Early Pregnancy

- Ectopic pregnancy must be ruled out, but we must be careful to not diagnose a desired IUP as abnormal.
- There are new guidelines for hCG discriminatory zone, as well as EPL ultrasound diagnostic cut-offs.
- Choice of management is a preference-sensitive decision.

Symptomatic Early Pregnancy: Presentation

- Urgent or emergency care visit
  - Vaginal bleeding
  - Abdominal or pelvic pain or cramping
  - Passage of pregnancy tissue from the vagina
  - Loss of pregnancy-related symptoms
  - Hemodynamic instability
- Incidental clinical finding
  - Bimanual exam inconsistent with LMP
  - Ultrasound suggestive of abnormal pregnancy
Bleeding in Early Pregnancy

• Keep the patient informed.
  – Provide reassurance that not all vaginal bleeding & cramping signifies an abnormality, but avoid guarantees that “everything will be all right.”
  – Assure you are available throughout the process.

• What does the bleeding mean?
  – Up to 20% chance of ectopic pregnancy
  – 50% ongoing pregnancy rate with closed cervical os
  – 85% ongoing pregnancy rate with viable IUP on sono
  – 30% of normal pregnancies have vaginal bleeding

Evaluation

• History
  – Risk factors for ectopic pregnancy

• Physical exam
  – Vital signs
  – Abdominal and pelvic exam

• Ultrasound
  – Transvaginal often necessary

• Lab
  – Rh factor
  – Hemoglobin or Hematocrit
  – β-hCG when indicated

Is the pregnancy desired?
Ectopic Pregnancy

- 1-2% of all pregnancies
- Up to 20% of symptomatic pregnancies
- ½ of ectopic patients have no risk factors
- Mortality has dramatically declined: 0.5/100,000
  - 6% of pregnancy-related deaths
  - 21 deaths per year in US
- Early diagnosis important
- Concern about management errors

Early Pregnancy Loss (EPL)

- 15-20% of clinically recognized pregnancies
- 1 in 4 women will experience EPL in their lifetime
- Includes all non-viable pregnancies in first trimester = Miscarriage
Ectopic Pregnancy
GOAL: Early Diagnosis

- Decreased chance of rupture (rupture can occur at any level of beta HCG and whether rising, falling or plateauing)
- Rupture associated with decreased fertility, increased morbidity and mortality
- More treatment options (e.g., methotrexate, conservative surgical treatment) if diagnosed earlier
- Methotrexate more effective if diagnosed earlier
**Ectopic Diagnosis: Simplified**

1. Where is the pregnancy? → U/S (same day)
2. Is the pregnancy undesired? → uterine aspiration
3. If desired and we can’t tell where it is: Is it normal or abnormal? → serial quantitative Beta-HCG
   - If Bhcg above threshold and no IUP = Abnormal
   - If Bhcg drops > 50% in 48 hours = Abnormal
   - If Bhcg rises > 50% in 48 hours = Most likely normal (can be EP)
   - If between = Most likely abnormal (still can be normal)
4. Once pregnancy determined to be abnormal or if undesired → uterine aspiration to determine if IUP, Ectopic treatment if not.
   (Goal: Diagnose as quickly as possible)

**β-hCG Utility in Symptomatic Early Pregnancy Diagnosis**

- β-hCG median serum concentration:
  - 4 weeks: 100 mIU/ml (5-450)
  - 10 weeks: 60,000 (5,000 – 150,000)

**Discriminatory Level**

- Serum β-hCG at which a normal intrauterine pregnancy should be visualized on ultrasound
  - If >2000 nl IUP unlikely but possible → new values
- Once beyond discriminatory level, limited role for “following betas”
Discriminatory & Threshold level

- 366 ♀ with VB/pain → nl IUP

<table>
<thead>
<tr>
<th></th>
<th>Discriminatory</th>
<th>Threshold</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gestational sac</td>
<td>3510</td>
<td>390</td>
</tr>
<tr>
<td>Yolk sac</td>
<td>17,716</td>
<td>1094</td>
</tr>
<tr>
<td>Fetal pole</td>
<td>47,685</td>
<td>1394</td>
</tr>
</tbody>
</table>

- Highest seen with no sac: 2,300

Old values: 1500 = 80% & 2000 = 91% prob. of seeing GS in viable IUP

Society of Radiologists in Ultrasound: No Gestational Sac

- HCG 2000 - 3000
  - Non-viable pregnancy most likely, 2X ectopic
  - Ectopic is 19 x more likely than viable pregnancy
  - For each viable pregnancy:
    - 19 ectopic pregnancies
    - 38 nonviable pregnancies
  - 2% chance of viable pregnancy

- HCG > 3000
  - Ectopic 70 x and nonviable IUP 140x more likely than viable pregnancy
  - 0.5% chance of viable IUP

In women with desired pregnancy consider beta hcg cut-off of >= 3000.
Balance of Diagnostic Tests

- Maximize sensitivity at the cost of diagnosing some IUPs as Ectopic Pregnancies
  - Error – interrupting desired IUP
- Maximize specificity at the cost of diagnosing some EPs as IUPs
  - Error – delay diagnosis resulting in rupture
- Engage the patient in decision-making
- Cut-off of 3,000 v. repeat beta hcg +/- u/s

Role of Ultrasound in Ectopic Diagnosis

- Only 2% of u/s are diagnostic for EP
  - “Diagnostic” = Gestational Sac with yolk sac or fetal pole visualized outside uterus
- Normal adnexal exam does not exclude ectopic
- Suggestive of ectopic
  - Empty uterus + hCG above discriminatory zone
  - Complex mass + fluid in cul-de-sac (94% are EP)
  - Should still follow them if desired pregnancy

Main role of U/S is to rule in IUP
β HCG trends in normal IUP

Slowest expected 48-hour increase for normal pregnancy = 53% (20% of ectopics increase)

Ectopic Diagnosis: Other Key Points

• Two hcg values may not be enough
• If close to the thresholds – check another
• Presumed ectopic pregnancy – uterine aspiration before MTX
  – High HCG nothing in the uterus (50% SAB)
  – Very low HCG with abnl rise or definite fall (25% SAB)

Barnhart, Ob Gyn, 2002
Ultrasound Findings to R/o EP

- Remember that an EP has not been ruled out until there is an intrauterine pregnancy
  - Gestational sac with a yolk sac and/or embryo

Ectopic Diagnosis: Simplified

1. Where is the pregnancy? \(\rightarrow\) U/S (same day)
2. Is the pregnancy undesired? \(\rightarrow\) uterine aspiration
3. If desired and we can’t tell where it is: Is it normal or abnormal? \(\rightarrow\) serial quantitative Beta-HCG
   - If Bhcg above threshold and no IUP = Abnormal
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   - If Bhcg rises > 50% in 48 hours = Most likely normal (can be EP)
   - If between = Most likely abnormal (still can be normal)
4. Once pregnancy determined to be abnormal or if undesired \(\rightarrow\) uterine aspiration to determine if IUP, Ectopic treatment if not.

(Goal: Diagnose as quickly as possible)
First-trimester Bleeding Algorithm

**Figure 1. Evaluation of first-trimester bleeding**

- Bleeding in desired pregnancy, <12 weeks gestation
- Physical exam
  - Peristalsis or bowel sounds normal?
  - Non-EDR (Eardly period of bleeding specific)
  - Products of conception (POC) visible on scan
  - Pads on glide, U/S or X-ray for other cause of bleeding
- Transvaginal ultrasound (TVUS) and β-hCG level
  - Escalate or reevaluation of action pregnancy
  - Stable pregnancy (β-hCG > 1000)
  - Threatened abortion; expect TVUS & further bleeding
  - Embryonic demise, anembryonic gestation, or missed abortion; discuss treatment options
- Stillbirth
  - Telemetry monitored
  - Repeat β‐hCG in 48 hours
- Bleeding that is not consistent with ongoing pregnancy
  - Suggest; completed abortion, expectant management

**Figure 2. Evaluation of first-trimester bleeding with no intrauterine pregnancy on ultrasound**

- NO IUP or EP seen on TVUS
  - β-hCG > 5000
    - Complete abortion, expectant management
  - β-hCG < 5000
    - TVUS; see Figure 1

- Single β-hCG (1000–2000)
  - No TVUS; no consistent IUP on TVUS?
    - Suggest; completed abortion, expectant management
  - Repeat β-hCG if > 2000
- Single β-hCG (1000–2000)
  - Anembryonic or nonviable pregnancy; TVUS not consistent with ongoing pregnancy?
    - Repeat β-hCG if > 2000
- β-hCG < 5000
  - Complete abortion, expectant management
- No β-hCG
  - TVUS; see Figure 1

* The β-hCG level at which an intrauterine pregnancy should be seen on transvaginal ultrasound is referred to as the discriminatory zone and varies between 1000 – 2000 mIU depending on the machine and the sonographer.
** β-hCG needs to be followed to zero only if ectopic pregnancy has not been reliably excluded. If a definitive diagnosis of completed miscarriage has been made there is no need to follow further β-hCG levels.
*** In a viable intruterine pregnancy there is a 99% chance that the β-hCG will rise by at least 53% in 48 hours. In ectopic pregnancy, there is a 21% chance that the β-hCG will rise by 53% in 48 hours.

Modified from Reproductive Health Access Project/October 2013

www.reproductiveaccess.org
# EPL Diagnosis, Counseling, and Management

## EPL – Making the diagnosis

<table>
<thead>
<tr>
<th>Clinical diagnosis:</th>
<th>Ultrasound diagnosis:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spontaneous abortion</td>
<td>Anembryonic gestation</td>
</tr>
<tr>
<td>Vaginal bleeding + IUP, &lt;20 wks threatened, inevitable, incomplete, complete</td>
<td>Gestational sac without embryonic pole</td>
</tr>
<tr>
<td></td>
<td>Embryonic demise</td>
</tr>
<tr>
<td></td>
<td>Embryo with no cardiac activity</td>
</tr>
</tbody>
</table>
Ultrasound Diagnosis of EPL: Anembryonic Gestation

Mean sac diameter $\geq 21$mm
(20 mm = 0.5% false positive)
AND no fetal pole

<table>
<thead>
<tr>
<th>MSD (mm)</th>
<th>Specificity</th>
<th>False +</th>
<th>Growth per day (wk)</th>
<th>Specificity</th>
<th>False +</th>
</tr>
</thead>
<tbody>
<tr>
<td>8mm</td>
<td>64%</td>
<td>36%</td>
<td>0.2mm (1.4mm)</td>
<td>99%</td>
<td>1%</td>
</tr>
<tr>
<td>16mm</td>
<td>95.6%</td>
<td>4.4%</td>
<td>0.6mm (4.2mm)</td>
<td>90%</td>
<td>10%</td>
</tr>
<tr>
<td>20mm</td>
<td>99.5%</td>
<td>0.5%</td>
<td>1.0mm (7mm)</td>
<td>45%</td>
<td>55%</td>
</tr>
<tr>
<td>21mm</td>
<td>100%</td>
<td>0.5%</td>
<td>1.2mm (8.4mm)</td>
<td>24%</td>
<td>76%</td>
</tr>
</tbody>
</table>

GROWTH:
0 mm/d = 0 False+

<table>
<thead>
<tr>
<th>MSD (mm)</th>
<th>Specificity</th>
<th>False +</th>
<th>Growth per day (wk)</th>
<th>Specificity</th>
<th>False +</th>
</tr>
</thead>
<tbody>
<tr>
<td>8mm</td>
<td>35.7%</td>
<td>64.3%</td>
<td>0.2mm</td>
<td>98.6</td>
<td>1.4</td>
</tr>
<tr>
<td>16mm</td>
<td>97.4%</td>
<td>2.6%</td>
<td>0.6mm</td>
<td>87.3</td>
<td>12.7</td>
</tr>
<tr>
<td>20mm</td>
<td>99.6%</td>
<td>0.4%</td>
<td>1.0mm</td>
<td>43.7</td>
<td>56.3</td>
</tr>
<tr>
<td>21mm</td>
<td>100%</td>
<td>0.4%</td>
<td>1.2mm</td>
<td>25.2</td>
<td>74.8</td>
</tr>
</tbody>
</table>
**Ultrasound Diagnosis of EPL: Embryonic Demise**

- Fetal pole $\geq 5.3$ AND no cardiac activity

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<table>
<thead>
<tr>
<th>CRL (mm)</th>
<th>Specificity</th>
<th>False +</th>
<th>Growth per day (wk)</th>
<th>Specificity</th>
<th>False +</th>
</tr>
</thead>
<tbody>
<tr>
<td>3mm</td>
<td>75%</td>
<td>25%</td>
<td>0.2mm (1.4mm)</td>
<td>100%</td>
<td>0%</td>
</tr>
<tr>
<td>4mm</td>
<td>91.7%</td>
<td>8.3%</td>
<td>0.6mm (4.2mm)</td>
<td>56.3%</td>
<td>63.7%</td>
</tr>
<tr>
<td>5mm</td>
<td>91.7%</td>
<td>8.3%</td>
<td>1.0mm (7mm)</td>
<td>0*</td>
<td></td>
</tr>
<tr>
<td>5.3mm</td>
<td>100%</td>
<td>0</td>
<td>1.2mm (8.4mm)</td>
<td>0%</td>
<td>0%</td>
</tr>
</tbody>
</table>

*16 FP, 0 TN. 37 TP, 1 TN

Radiologists in Ultrasound: Account for Margin of Error

MSD – 25 mm

Fetal pole – 7 mm

Ultrasound Milestones

<table>
<thead>
<tr>
<th>Normal IUP findings</th>
<th>When should you see it?</th>
<th>Abnormality if landmark is absent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gestational Sac</td>
<td>Discriminatory Level ( \beta = 3,000? )</td>
<td>Completed EPL</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Multiple gestation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ectopic pregnancy</td>
</tr>
<tr>
<td>Yolk sac</td>
<td>MSD &gt; 13-16mm</td>
<td>Suspicious for EPL</td>
</tr>
<tr>
<td>Fetal pole</td>
<td>MSD ( \geq 21) \text{mm (new rec 25 due to variability)}</td>
<td>Anembryonic gestation</td>
</tr>
<tr>
<td>Cardiac activity</td>
<td>CRL ( \geq 5.3) \text{mm (new rec 7mm)}</td>
<td>Embryonic demise</td>
</tr>
<tr>
<td>Interval growth (MSD or CRL)</td>
<td>1 \text{mm/day (over 3-7 days)}</td>
<td>Confirmed EPL</td>
</tr>
</tbody>
</table>
Four options for the clinically stable patient:

1. Aspiration w/ general/deep sedation (operating room)
2. Aspiration w/ local/moderate sedation (office-based)
3. Medication (misoprostol +/- mifepristone)
4. Expectant care

All methods are effective, with equivalent safety and patient acceptability = clinical equipoise.

Best choice for management reflects the woman’s values and preferences.

Patients have strong and widely divergent preferences:
- Challenges in recruitment for RCTs
- Report higher satisfaction when treated according to patient’s preference
EPL Management: Patient Preferences

No 'one best way' to treat miscarriage that suits all individuals.

Expectant management is preferred over aspiration by 40-70% of women.

When aspiration is indicated or preferred, the majority of women will choose an office-based procedure over one in the OR.

Research on EPL Counseling

- Women want unbiased and comprehensive counseling about options for this preference-sensitive decision.
- Women perceive communication during EPL diagnosis as a critical time to initiate discussions of management.
- Women are often weighing personal priorities to make decisions about EPL management.
- Use of a decision aid may offer a systematic counseling approach for a patient-centered decision-making process.
Early Pregnancy Failure: Counseling

- Women blame themselves ("was it the stress?")
- Wonder if will happen again

Patient counseling should include:
- How common it is (encourage to talk to friends)
- Reassurance that it is beyond her control and unlikely to recur ("Nothing could have been done to prevent it.")
- Acknowledge/validate grieving
- No need to wait to attempt another pregnancy - ok to try after resumption of menses (when emotionally ready)

Importance of Options

"I think sometimes doctors have you do things or they prescribe things to you that are unnecessary… I like the way it was presented to me… as options, and they were optional, they weren’t necessary or required."
They never said the word ‘miscarriage,’ I did….I felt like I had to drag it out of them….I said, ‘Okay, once we realize that I'm not mistaken with my dates and that this pregnancy should be 12 weeks and it is what you said it looks like, 5 weeks, so then what does that mean? What are the next steps?’

Frustration with Ambiguous or Delayed News Delivery

Patient Priorities

- Pain
- Time
- Complications
- Safety
- Bleeding
- Privacy
- Anesthesia
- Past experience
- Finality
Provider Practice

- Training
- Safety Data
- Efficacy Data
- System Resources
- Staff Buy-in
- Assumptions

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EPL Management Practices in the U.S.

Adapted from Dalton 2010
**Patient Case: Counseling**

- Maya was diagnosed with an embryonic demise.
- How do we counsel her about management options?

**Shared Decision-Making**

1. Provider presents all relevant medical information.
2. Patient provides information about personal circumstances, values, and priorities.
3. Provider also discusses preferences while acknowledging personal values and biases.
4. Decision is reached.
Patient Treatment Priorities for Miscarriage

Having a miscarriage is extremely difficult for most women. This worksheet is intended to help you and your provider choose a treatment that will make you the most comfortable.

Please circle any of the priorities below that you consider important in managing your miscarriage.

**Personal Priorities**
- Treatment by your own provider
- Recommendation of treatment from friend or family member
- Provider recommendation of treatment
- Lowest risk of need for other steps
- Family responsibilities/needs
- Most natural process

**Time and Cost Priorities**
- Shortest time before miscarriage is complete
- Shortest time in the clinic or hospital
- Fastest return to fertility or normalcy
- Fewest number of clinic visits
- Lowest cost of treatment to you

**Medications and Procedure-related Factors**
- Lowest risk of complications
- Avoid invasive procedure
- Avoid medications with side effects
- Avoid going to sleep in case of a surgical procedure
- Want to be asleep in case of a surgical procedure
- Avoid seeing the pregnancy tissue

**Symptoms of Pain and Bleeding**
- Least amount of pain possible
- Experience symptoms of bleeding and cramping in private
- Least amount of bleeding

**Past Abortion or Miscarriage (if applicable)**
- Different treatment from previous
- Similar treatment to previous

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EPL Management

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Early Pregnancy Loss (EPL) Management

• Four options for the clinically stable patient
  1. Aspiration w/ general/deep sedation (operating room)
  2. Aspiration w/ local/moderate sedation (office-based)
  3. Medication (misoprostol +/- mifepristone)
  4. Expectant

• All methods are effective, with equivalent safety and patient acceptability = clinical equipoise

Reference: Helping your patient to choose treatment for EPF

**Expectant: Success: 60% at 2wks.**
Advantages: Privacy, some can avoid surgical treatment, ?decreased infection
Disadvantages: up to 6 wks to complete, more bleeding & more visits, less patient satisfaction

**Misoprostol (800 PV): Success: 80% at 1 wk.**
Advantages: Privacy, availability, most can avoid surgical tx, ?decreased infection, similar satisfaction as surgical
Disadvantages: multiple visits, 30% require 2nd dose, more pain, N/V & bleeding than surgical

**Uterine Aspiration: Success: ~100%**
Advantages: 2-4 hrs, high success rate, less blding & pain
Disadvantages: less available, rare surgical complications, ?increased infection
EPL Management: A preference-sensitive decision

- Best choice for management reflects the woman’s values and preferences
- Comprehensive management options can be offered in a typical primary care or outpatient setting

Expectant Management

- “Watchful waiting”
- Proven safety up to 8 weeks
- Type of EPL affects expected efficacy
- Highly acceptable to patients with realistic expectations about:

  Duration, Discomfort, and potential D&C
Expectant Management

**Advantages**
- Non-invasive
- Body naturally expels non-viable pregnancy
- Avoids anesthesia and surgery risks
- Allows for patient privacy and continuity of care

**Disadvantages**
- Unpredictable outcome and timescale
- Process can last days to weeks
- Can have prolonged bleeding and cramping
- Despite waiting, may still need uterine aspiration

**Contraindications**
- Uncertain diagnosis
- Suspected gestational trophoblastic disease
- Indicated karyotyping
- Severe hemorrhage or pain
- Infection
- IUD in place

*Same contraindications for medication management*
Medication Management

• Use of medications for active management of EPL
  • Misoprostol
    – Stimulates uterine contractions & softens cervix
    – Inexpensive, easy storage
  • Mifepristone
    – Anti-progestin used for pregnancy termination
    – Current research does not support routine use in non-viable pregnancies

Medication Management

**Advantages**

• Highly cost-effective
• Non-invasive
• Safe
• Can be highly effective
• Avoids anesthesia and surgery risks
• Allows for patient privacy and continuity of care

**Disadvantages**

• Increased need for analgesics and pain control
• May cause heavier or longer bleeding
• May cause short-term gastrointestinal and other side effects
• May still need uterine aspiration
Practice Integration for Medication Management

- Evaluation
  - Exam, lab, or sono?
- Medications
  - Dispensed in clinic or Rx?
- 24 hour call service
- Back-up plan for aspiration
  - Emergent vs. non-urgent
- Follow-up plan

Misoprostol for EPL

<table>
<thead>
<tr>
<th>Recommended in ACOG Practice Bulletin</th>
<th>800 mcg vaginally (PV) with optional repeat dose &gt;3 hours later if no initial response</th>
</tr>
</thead>
</table>
## Medications for Symptoms and Side Effects

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cramping</td>
<td>Ibuprofen 600 mg Q6 hrs or 800 mg Q8 hrs (or other NSAID)</td>
</tr>
<tr>
<td>Severe cramping pain not relieved by ibuprofen</td>
<td>Hydrocodone/APAP 5/500 or 5/325 Q 4-6 hrs prn</td>
</tr>
<tr>
<td>Nausea/vomiting</td>
<td>Promethazine 25 mg Q 4-6 hrs prn or other anti-emetic</td>
</tr>
</tbody>
</table>

## Typical Follow-Up

<table>
<thead>
<tr>
<th>Follow-Up Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phone contact</td>
<td>Call patient 1-2 days after first misoprostol dose to assess need for second dose.</td>
</tr>
<tr>
<td>In-person visit</td>
<td>1-2 weeks after choosing expectant or medication management to assess:</td>
</tr>
<tr>
<td></td>
<td>1. If miscarriage is not complete – Is patient interested in alternate treatments?</td>
</tr>
<tr>
<td></td>
<td>2. Confirm completion (see below)</td>
</tr>
<tr>
<td>Confirming completion</td>
<td>1. Clinical history consistent with complete miscarriage plus β-hCG decline of &gt;50% or negative urine pregnancy test</td>
</tr>
<tr>
<td></td>
<td>2. Clinical history plus disappearance of intrauterine pregnancy on transvaginal ultrasound</td>
</tr>
</tbody>
</table>
Aspiration for EPL

- Historically done in operating room under general anesthesia
- Terminology:
  - Surgical “D&C”
  - Suction curettage with MUA or EVA

Operating Room Aspiration

**Advantages**
- Predictable
- Offers fastest resolution of miscarriage
- Reduced duration of bleeding
- Low risk (<5%) of needing further treatment
- Can be asleep

**Disadvantages**
- Rare risks associated with invasive procedure and general anesthesia
- More cost than office-based procedures
- More time and physical exams than office-based procedures
- May be more bleeding complications under general anesthesia than in office-based procedures
### Office-based Aspiration

<table>
<thead>
<tr>
<th><strong>Advantages</strong></th>
<th><strong>Disadvantages</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>• Predictable</td>
<td>• Rare risks of invasive procedure</td>
</tr>
<tr>
<td>• Offers fastest resolution of miscarriage</td>
<td>• Less pain control options in some settings</td>
</tr>
<tr>
<td>• Reduced duration of bleeding</td>
<td></td>
</tr>
<tr>
<td>• Low risk (&lt;5%) of needing further treatment</td>
<td></td>
</tr>
<tr>
<td>• Pain control with local plus oral or IV meds</td>
<td></td>
</tr>
</tbody>
</table>

### Compared to OR management:
- May allow improved patient access and continuity of care
- Improved privacy
- Less patient and staff time
- Resource and cost savings

### EPL Management Principles
- Clinical checklist for care options:
  - Clear diagnosis
  - Patient is stable
  - Access to phone & emergency care
  - Pain control options available
  - Anticipatory guidance for bleeding, S/Sx infection
  - Rh status
  - Reliable follow-up
Patient Case: Management

• How do we manage Maya?
• Chance of success for embryonic demise:
  – Expectant → 1 week (30%)
    2 weeks (60%)
    6 weeks (75%)
  – Medical → 1 week (80%)
  – Aspiration → In office or OR (97-100%)

EPL: Patient-Centered Care

1. Keep her informed throughout the diagnostic work-up.
2. Use clear and compassionate language in delivering news about miscarriage.
3. Be prepared to discuss management options at diagnosis.
4. Present advantages and disadvantages of each.
5. Facilitate recognition of patient’s priorities for management decision.
6. Ensure appropriate follow-up and allow opportunity to change management decision.
Patient Case: Management

• Maya chose to use misoprostol at home.
• She placed the pills vaginally and began having cramping and bleeding 2 hours later.
• Her heavy bleeding lasted 4 hours, and she noticed one particularly large clot, that may have had tissue in it.
• She still has some light bleeding at her follow-up appointment, 7 days later.

How do we confirm success of treatment?

EPL Management: Follow-up

• Use both history and exam to confirm completion.
  – β-HCG drop >50% in 48 hours or negative UPT 2 weeks later
  – Vaginal ultrasound
• Treat the patient, not the ultrasound.
• Address fertility.
  – Contraception vs prenatal vitamins
• Offer grief counseling follow-up or referrals.
Vaginal Ultrasound

*Thickness of endometrium NOT associated with need for future intervention

ACOG Practice Bulletin
Early Pregnancy Loss (May 2015)

**Level A**
- 800 mcg misoprostol for medical management
- Use of anticoagulants doesn’t reduce risk

**Level B**
- US preferred modality to verify viable IUP
- D&C not required for thick stripe after treatment if asymptomatic
- Rh- patients should receive Rhogam

**Level C**
- Can safely accommodate preferences
- Doxycycline before surgical management
Managing Early Pregnancy Loss is an educational initiative incorporating a video-based curriculum with online resources to support an evidence-based and patient-centered approach to miscarriage management.

Explore the resource page and link to the learning module:

www.earlypregnancylossresources.org
Ectopic Pregnancy Management

Ectopic Treatment: MTX vs Surgery

- Methotrexate is not for everyone
- No difference in future IUP or ectopic rates
- Single-dose less effective than salpingostomy (OR=0.38)
- 5% have rupture despite MTX
- Requires significant follow-up
Medical Treatment of EP

**Methotrexate**
- Antimetabolite that interrupts DNA synthesis in actively dividing tissues
- Successful in 80-95%
- Beta HCG levels >5000 higher failure rate with single-dose tx (14% v. 4% if less than 5000)
- Single-, two-, multi-dose regimens
- Start with single-dose if b-hcg <5000
- Multi-dose for cervical or interstitial ectopics

Also: Inability to follow-up

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**Medical Treatment of EP**

**Single-dose regimen**
- Administer MTX 1 mg/kg IM (on days 1, 3, 5, 7), alternate daily with folinic acid 0.1 mg/kg IM (on days 2, 4, 6, 8).
- Measure hCG levels on MTX dose days and continue until hCG has decreased by 15% from its previous measurement.
- The hCG level may increase initially above pretreatment value, but after 15% decrease, monitor hCG levels weekly until reaching the nonpregnant level.
- If the hCG level plateaus or increases, consider repeating MTX using the regimen described.

**Two-dose regimen**
- Administer MTX 2 mg/kg IM (on day 1), and 1 mg/kg IM (on day 2).
- Measure hCG levels on MTX dose days and continue until hCG has decreased by 15% from its previous measurement.
- If the hCG level plateaus or increases, consider repeating MTX using the regimen described.

**Fixed multidose regimen**
- Administer MTX 1 mg/kg IM on days 1, 3, 5, 7, and 9.
- Measure hCG levels on MTX dose days and continue until hCG has decreased by 15% from its previous measurement.
- The hCG level may increase initially above pretreatment value, but after 15% decrease, monitor hCG levels weekly until reaching the nonpregnant level.
- If the hCG level plateaus or increases, consider repeating MTX using the regimen described.
Treatment of EP

**Surgery**
- If hemodynamically unstable, patient desires surgery, contraindications to or failed MTX treatment
- Laparotomy or laparoscopy
- Salpingectomy or salpingostomy
  - Salpingectomy if tube compromised
  - Similar outcomes if not compromised and other tube healthy
  - If other tube absent or unhealthy – salpingostomy preferred
- 10% failure rate if salpingostomy, require b-hcg followup

**Expectant management**
- If beta HCG <200 88% resolve spontaneously
- Declining beta HCG - third value less than first
- Asymptomatic, informed consent
- Careful!

**Conclusion**
Conclusions

• Bleeding in early pregnancy is common.
• Take possibility of ectopic pregnancy seriously!
• Pregnancy of unknown location takes patience to sort out.
• Patient preference is critical in management of EPL.