

EARLY PREGNANCY LOSS

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Introductory Case

A 36-year-old G4P0030 comes to your office for counseling. Her last menstrual period (LMP) was 8 weeks ago. She was seen in the Emergency Department over the weekend with spotting. She had an ultrasound which showed an intrauterine pregnancy (IUP) measuring 7 weeks with no fetal heartbeat. Her history is significant for 3 first trimester losses, two managed surgically, one managed medically.

Milestone-Based Focused Questions

LEVEL I: DEMONSTRATES BASIC KNOWLEDGE ABOUT COMMON AMBULATORY OB/GYN CONDITIONS

WHAT IS THE INCIDENCE OF EARLY PREGNANCY LOSS?

- Approximately 10% of all clinically recognized pregnancies result in early pregnancy loss, commonly referred to as miscarriage or spontaneous abortion
- Approximately 30% of all women will experience an early pregnancy loss

WHAT IS THE MOST COMMON CAUSE OF EARLY PREGNANCY LOSS?

- 50% of early pregnancy losses are due to fetal chromosomal abnormalities
- Advanced maternal age is a significant risk factor
 - The risk of first trimester loss for women less than age 35 is approximately 10%
 - The risk of first trimester loss for women over age 40 approaches 50%

HOW IS THE DIAGNOSIS OF EARLY PREGNANCY LOSS MADE?

- First, a diagnosis of intrauterine pregnancy (IUP) must be made
 - An intrauterine gestational sac with a yolk sac should be visible between 5 and 6 weeks of gestation
 - In the absence of definitive ultrasound diagnosis of IUP, the serum hCG level can be used to aid in diagnosis
 - The "discriminatory level," or the level at which an IUP should be visible on ultrasound, should be conservatively high (for example as high as 3,500 mIU/ mL) to avoid the potential for misdiagnosis of early pregnancy loss in the setting of a viable pregnancy

Table 1. Guidelines for Transvaginal Ultrasonographic Diagnosis of Pregnancy Failure in a Woman With an Intrauterine Pregnancy of Uncertain Viability*

Findings Diagnostic of Pregnancy Failure	Findings Suspicious for, but Not Diagnostic of, Pregnancy Failure [†]
Crown–rump length of 7 mm or greater and no heartbeat	Crown–rump length of less than 7 mm and no heartbeat
Mean sac diameter of 25 mm or greater and no embryo	Mean sac diameter of 16–24 mm and no embryo
Absence of embryo with heartbeat 2 weeks or more after a scan that showed a gestational sac without a yolk sac	Absence of embryo with heartbeat 7–13 days after a scan that showed a gestational sac without a yolk sac
Absence of embryo with heartbeat 11 days or more after a scan that showed a gestational sac with a yolk sac	Absence of embryo with heartbeat 7–10 days after a scan that showed a gestational sac with a yolk sac
	Absence of embryo for 6 weeks or longer after last menstrual period
	Empty amnion (amnion seen adjacent to yolk sac, with no visible embryo)
	Enlarged yolk sac (greater than 7 mm)
	Small gestational sac in relation to the size of the embryo (less than 5 mm difference between mean sac diameter and crown–rump length)

*Criteria are from the Society of Radiologists in Ultrasound Multispecialty Consensus Conference on Early First Trimester Diagnosis of Miscarriage and Exclusion of a Viable Intrauterine Pregnancy, October 2012.

[†]When there are findings suspicious for pregnancy failure, follow-up ultrasonography at 7–10 days to assess the pregnancy for viability is generally appropriate.

Reprinted from Doubilet PM, Benson CB, Bourne T, Blaivas M, Barnhart KT, Benacerraf BR, et al. Diagnostic criteria for nonviable pregnancy early in the first trimester. Society of Radiologists in Ultrasound Multispecialty Panel on Early First Trimester Diagnosis of Miscarriage and Exclusion of a Viable Intrauterine Pregnancy. *N Engl J Med* 2013;369:1443–51.

Source: ACOG Practice Bulletin 200 Early Pregnancy Loss

LEVEL 2: PERFORMS THE INITIAL ASSESSMENT, FORMULATES A DIFFERENTIAL DIAGNOSIS, AND INITIATES TREATMENT FOR COMMON AMBULATORY OB/GYN CONDITIONS

WHAT ARE THE TREATMENT OPTIONS FOR EARLY PREGNANCY LOSS? DISCUSS THE RISKS AND BENEFITS OF EACH OPTION.

- The three treatment options are expectant management, medical management, and surgical management
- There is no evidence that any approach results in different long-term outcomes, although the patient experience is extremely different
- Utilization of shared decision making is very important
- Administration of Rhogam is required if patient Rh negative
- One should discuss future birth control method, if desired

Management options for early pregnancy loss

	Advantages	Disadvantages
Expectant Management	<ul style="list-style-type: none"> • Success rate of up to 80% (based on 14 days of expectant management) • No need for hospitalization or surgery • Low intervention 	<ul style="list-style-type: none"> • Requires medical stability • Requires follow-up of appropriately declining hCG <i>or</i> ultrasound with no gestational sac and endometrial thickness <3 cm • Requires anticipatory guidance • May result in emergent intervention if unsuccessful
Medical Management	<ul style="list-style-type: none"> • Success rate of up to 90% • Usually faster resolution than expectant management • No need for hospitalization or surgery 	<ul style="list-style-type: none"> • Requires medical stability • Requires follow-up of appropriately declining hCG <i>or</i> ultrasound with no gestational sac and endometrial stripe <3 cm • Requires anticipatory guidance • May result in emergent intervention if unsuccessful • Possibly most cost effective
Surgical Management	<ul style="list-style-type: none"> • Success rate approaches 99% • Preferred method for patients with comorbidities or hemodynamic instability • Usually fastest resolution • Less follow-up • Choice of operating room or office manual vacuum aspiration (MVA) 	<ul style="list-style-type: none"> • Increased cost (office MVA less costly than operating room) • Scheduling challenges

WHAT DOES EXPECTANT MANAGEMENT OF EARLY PREGNANCY LOSS ENTAIL?

- Work up of patient to ensure that she is a medically appropriate candidate (absence of infection, hemorrhage, severe anemia, or coagulopathy)
- Counseling regarding expectation for moderate to heavy bleeding and cramping
- Options for pain management
- Review of calling guidelines
- Counseling on failure rates and need for alternative management
- Follow-up with hCG or ultrasound to confirm expulsion of pregnancy

Types of miscarriages and outcomes in patients who choose expectant management

	Complete miscarriage by day 7	Complete miscarriage by day 14
Incomplete miscarriage (bleeding present, products of conception in the uterus)	53%	84%
Missed abortion (bleeding not present, products of conception in the uterus)	30%	59%
Anembryonic pregnancy (empty gestational sac, no fetal pole)	25%	52%
Total	40%	70%

WHAT DOES MEDICAL MANAGEMENT OF EARLY PREGNANCY LOSS ENTAIL?

- There are several dosing regimens. Evidence supports the use of one dose of 800 mcg misoprostol vaginally, followed by a repeat dose if patient does not respond to the first dose.
- The addition of 200 mg mifepristone 24 hours before misoprostol has been shown to increase the rate of complete expulsion of the pregnancy.
- The provider should counsel on expected symptoms and calling precautions (see expectant management).
- There should be follow-up with hCG or ultrasound to confirm expulsion of pregnancy.

WHAT DOES SURGICAL MANAGEMENT OF EARLY PREGNANCY LOSS ENTAIL?

- Dilation and suction curettage (D&S/D&C) in the operating room or manual vacuum aspiration (MVA) in the outpatient setting
- MVA may be performed under moderate sedation or local cervical block, and D&C/D&S is usually performed under general anesthesia

LEVEL 3: FORMULATES MANAGEMENT PLANS AND INITIATES TREATMENT FOR COMPLEX AMBULATORY OB/GYN PROBLEMS.

WHAT IS THE DEFINITION AND EVALUATION OF RECURRENT PREGNANCY LOSS?

- Work up is recommended after the second *consecutive* clinical early pregnancy loss
 - Note that the definition of recurrent pregnancy loss is two or more failed clinical pregnancies, however ACOG and ASRM recommend work up after two *consecutive* losses
- <5% of women will experience two consecutive miscarriages and only 1% experience three or more
 - The cause of recurrent loss is identified in only 50% of patients
- An evaluation of recurrent pregnancy loss may include

- Parental chromosomes (balanced translocations are found in 2-5% of couples with recurrent loss)
- Chromosomal analysis of products of conception
- Assessment for uterine anomalies
- Screening for thyroid disease and diabetes
- Testing for antiphospholipid antibody syndrome with lupus anticoagulant, anticardiolipin antibody, and anti-B2 glycoprotein
- Routine testing of women with recurrent loss for inherited thrombophilias is *not* recommended (only antiphospholipid syndrome has been consistently shown to be associated with early pregnancy loss).

ARE THERE ANY CONSIDERATIONS FOR FUTURE PREGNANCIES IN PATIENTS WITH RECURRENT PREGNANCY LOSS?

- In women with an identified cause of early pregnancy loss, treating the underlying cause may improve future pregnancy outcomes.
- For women with antiphospholipid antibody syndrome, treatment with low dose aspirin and prophylactic unfractionated heparin has shown to improve pregnancy outcomes.
- In women without an identified cause of early pregnancy loss, there are no effective interventions to prevent recurrence.
- ACOG and ASRM suggest that women who have experienced at least three prior pregnancy losses, however, may benefit from progesterone therapy in the first trimester.

REFERENCES

Definitions of Infertility and Recurrent Pregnancy Loss: A Committee Opinion. *Fertil Steril* 2020;113:533-535.

ACOG Practice Bulletin 200: Early Pregnancy Loss. *Obstet Gynecol* 2018;132:e197-e207.

Evaluation and treatment of recurrent pregnancy loss: a committee opinion. *Fertil Steril* 2012;98:1103-11.

Doubilet PM, Benson CB, Bourne T, et al. Diagnostic Criteria for Nonviable Pregnancy Early in the First Trimester. *N Engl J Med* 2013; 369: 15.

Luise C, Jermy K, May C, Costello G, Collins WP, Bourne TH. Outcome of expectant management of spontaneous first trimester miscarriage: observational study. *BMJ* 2002;324:873-5.

Zhang J, Gilles JM, Barnhart K, et al; National Institute of Child Health and Human Development (NICHD) Management of Early Pregnancy Failure Trial. A comparison of medical management with misoprostol and surgical management for early pregnancy failure. *N Engl J Med* 2005;353(8):761-769.