ACR Appropriateness Criteria® First Trimester Vaginal Bleeding

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Abstract

Vaginal bleeding is not uncommon in the first trimester of pregnancy. The majority of such patients will have a normal intrauterine pregnancy (IUP), a nonviable IUP, or an ectopic pregnancy. Ultrasound (US) is the primary imaging modality in evaluation of these patients. US, along with clinical observations and serum human chorionic gonadotropin levels, can usually distinguish these causes. Although it is important to diagnose ectopic pregnancies and nonviable IUPs, one should also guard against injury to normal pregnancies due to inappropriate treatment with methotrexate or surgical intervention. Less common causes of first trimester vaginal bleeding include gestational trophoblastic disease and arteriovenous malformations. Pulsed methods of Doppler US should generally be avoided in the first trimester when there is a normal, or a potentially normal, IUP. Once a normal IUP has been excluded, Doppler US may be useful when other diagnoses such as retained products of conception or arteriovenous malformations are suspected. MRI may occasionally be helpful as a problem-solving tool.

The American College of Radiology Appropriateness Criteria are evidence-based guidelines for specific clinical conditions that are reviewed annually by a multidisciplinary expert panel. The guideline development and revision include an extensive analysis of current medical literature from peer reviewed journals and the application of well-established methodologies (RAND/UCLA Appropriateness Method and Grading of Recommendations Assessment, Development, and Evaluation or GRADE) to rate the appropriateness of imaging and treatment procedures for specific clinical scenarios. In those instances where evidence is lacking or equivocal, expert opinion may supplement the available evidence to recommend imaging or treatment.

Key Words: Appropriateness Criteria, Appropriate Use Criteria, AUC, Ectopic pregnancy, First trimester, Nonviable pregnancy, Pregnancy, Ultrasound, Vaginal bleeding

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The American College of Radiology seeks and encourages collaboration with other organizations on the development of the ACR Appropriateness Criteria through society representation on expert panels. Participation by representatives from collaborating societies on the expert panel does not necessarily imply individual or society endorsement of the final document.
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Disclaimer: The ACR Committee on Appropriateness Criteria and its expert panels have developed criteria for determining appropriate imaging examinations for diagnosis and treatment of specified medical condition(s). These criteria are intended to guide radiologists, radiation oncologists, and referring physicians in making decisions regarding radiologic imaging and treatment. Generally, the complexity and severity of a patient's clinical condition should dictate the selection of appropriate imaging procedures or treatments. Only those examinations generally used for evaluation of the patient's condition are ranked. Other imaging studies necessary to evaluate other co-existent diseases or other medical consequences of this condition are not considered in this document. The availability of equipment or personnel may influence the selection of appropriate imaging procedures or treatments. Imaging techniques classified as investigational by the FDA have not been considered in developing these criteria; however, study of new equipment and applications should be encouraged. The ultimate decision regarding the appropriateness of any specific radiologic examination or treatment must be made by the referring physician and radiologist in light of all the circumstances presented in an individual examination.

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ACR Appropriateness Criteria® First Trimester Vaginal Bleeding. Variant 1 and Tables 1 and 2.

Variant 1. First trimester vaginal bleeding. Positive urine or serum pregnancy test.

Procedure	Appropriateness Category	Relative Radiation Level
US pelvis transvaginal	Usually Appropriate	0
US pelvis transabdominal	Usually Appropriate	0
US duplex Doppler uterus	May Be Appropriate	0
MRI pelvis without IV contrast	May Be Appropriate	0
MRI pelvis without and with IV contrast	Usually Not Appropriate	0
CT pelvis without IV contrast	Usually Not Appropriate	☢☢☢
CT pelvis with IV contrast	Usually Not Appropriate	☢☢☢
CT pelvis without and with IV contrast	Usually Not Appropriate	☢☢☢☢

IV = intravenous; US = ultrasound.

Table 1. Appropriateness category names and definitions

Appropriateness Category Name	Appropriateness Rating	Appropriateness Category Definition
Usually Appropriate	7, 8, or 9	The imaging procedure or treatment is indicated in the specified clinical scenarios at a favorable risk-benefit ratio for patients.
May Be Appropriate	4, 5, or 6	The imaging procedure or treatment may be indicated in the specified clinical scenarios as an alternative to imaging procedures or treatments with a more favorable risk-benefit ratio, or the risk-benefit ratio for patients is equivocal.
May Be Appropriate (Disagreement)	5	The individual ratings are too dispersed from the panel median. The different label provides transparency regarding the panel's recommendation. "May be appropriate" is the rating category and a rating of 5 is assigned.
Usually Not Appropriate	1, 2, or 3	The imaging procedure or treatment is unlikely to be indicated in the specified clinical scenarios, or the risk-benefit ratio for patients is likely to be unfavorable.

Table 2. Relative radiation level designations

RRL	Adult Effective Dose Estimate Range (MsV)	Pediatric Effective Dose Estimate Range (MsV)
0	0	0
☢	<0.1	<0.03
☢☢	0.1-1	0.03-0.3
☢☢☢	1-10	0.3-3
☢☢☢☢	10-30	3-10
☢☢☢☢☢	30-100	10-30

Note: Relative radiation level (RRL) assignments for some of the examinations cannot be made, because the actual patient doses in these procedures vary as a function of a number of factors (eg, region of the body exposed to ionizing radiation, the imaging guidance that is used). The RRLs for these examinations are designated as "varies."

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