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The American College of Radiology will periodically define new practice guidelines and technical standards for radiologic practice to help advance the science of radiology and to improve the quality of service to patients throughout the United States. Existing practice guidelines and technical standards will be reviewed for revision or renewal, as appropriate, on their fifth anniversary or sooner, if indicated.

Each practice guideline and technical standard, representing a policy statement by the College, has undergone a thorough consensus process in which it has been subjected to extensive review, requiring the approval of the Commission on Quality and Safety as well as the ACR Board of Chancellors, the ACR Council Steering Committee, and the ACR Council. The practice guidelines and technical standards recognize that the safe and effective use of diagnostic and therapeutic radiology requires specific training, skills, and techniques, as described in each document. Reproduction or modification of the published practice guideline and technical standard by those entities not providing these services is not authorized.

Revised 2009 (Resolution 19)*

ACR–ACOG–AIUM–SRU PRACTICE GUIDELINE FOR THE PERFORMANCE OF PELVIC ULTRASOUND

PREAMBLE

These guidelines are an educational tool designed to assist practitioners in providing appropriate radiologic care for patients. They are not inflexible rules or requirements of practice and are not intended, nor should they be used, to establish a legal standard of care. For these reasons and those set forth below, the American College of Radiology cautions against the use of these guidelines in litigation in which the clinical decisions of a practitioner are called into question.

The ultimate judgment regarding the propriety of any specific procedure or course of action must be made by the physician or medical physicist in light of all the circumstances presented. Thus, an approach that differs from the guidelines, standing alone, does not necessarily imply that the approach was below the standard of care. To the contrary, a conscientious practitioner may responsibly adopt a course of action different from that set forth in the guidelines when, in the reasonable judgment of the practitioner, such course of action is indicated by the condition of the patient, limitations of available resources, or advances in knowledge or technology subsequent to publication of the guidelines. However, a practitioner who employs an approach substantially different from these guidelines is advised to document in the patient record information sufficient to explain the approach taken.

The practice of medicine involves not only the science, but also the art of dealing with the prevention, diagnosis, alleviation, and treatment of disease. The variety and complexity of human conditions make it impossible to always reach the most appropriate diagnosis or to predict with certainty a particular response to treatment.

Therefore, it should be recognized that adherence to these guidelines will not assure an accurate diagnosis or a successful outcome. All that should be expected is that the practitioner will follow a reasonable course of action based on current knowledge, available resources, and the needs of the patient to deliver effective and safe medical care. The sole purpose of these guidelines is to assist practitioners in achieving this objective.

I. INTRODUCTION

The clinical aspects contained in specific sections of this guideline (Introduction, Indications, Specifications of the Examination, and Equipment Specifications) were developed collaboratively by the American College of Radiology (ACR), the American Institute of Ultrasound in Medicine (AIUM), the American College of Obstetricians and Gynecologists (ACOG), and the Society of Radiologists in Ultrasound (SRU). Recommendations for physician requirements, written request for the examination, documentation, and quality control vary among the four organizations and are addressed by each separately.

This guideline has been developed to assist physicians performing sonographic studies of the female pelvis. Ultrasound of the female pelvis should be performed only when there is a valid medical reason, and the lowest possible ultrasonic exposure settings should be used to gain the necessary diagnostic information. In some cases, additional or specialized examinations may be necessary. While it is not possible to detect every abnormality, adherence to the following guideline will maximize the probability of detecting most abnormalities.

II. INDICATIONS

Indications for pelvic sonography include, but are not limited to:

1. Pelvic pain.
2. Dysmenorrhea (painful menses).
3. Amenorrhea.
4. Menorrhagia (excessive menstrual bleeding).
5. Metrorrhagia (irregular uterine bleeding).
6. Menometrorrhagia (excessive irregular bleeding).
7. Follow-up of a previously detected abnormality.
8. Evaluation, monitoring, and/or treatment of infertility patients.
9. Delayed menses, precocious puberty, or vaginal bleeding in a prepubertal child.
10. Postmenopausal bleeding.
11. Abnormal or technically limited pelvic examination.
12. Signs or symptoms of pelvic infection.
13. Further characterization of a pelvic abnormality noted on another imaging study.
14. Evaluation of congenital anomalies.
15. Excessive bleeding, pain, or signs of infection after pelvic surgery, delivery, or abortion.
16. Localization of an intrauterine contraceptive device.
17. Screening for malignancy in patients at increased risk.
18. Urinary incontinence or pelvic organ prolapse.
19. Guidance for interventional or surgical procedures.

III. QUALIFICATIONS OF PERSONNEL

Each organization addresses this requirement individually. ACR language is as follows:

See the [ACR–SPR–SRU Practice Guideline for Performing and Interpreting Diagnostic Ultrasound Examinations](#).

IV. WRITTEN REQUEST FOR THE EXAMINATION

Each organization addresses this requirement individually. ACR language is as follows:

The written or electronic request for a pelvic ultrasound examination should provide sufficient information to demonstrate the medical necessity of the examination and allow for its proper performance and interpretation.

Documentation that satisfies medical necessity includes 1) signs and symptoms and/or 2) relevant history (including known diagnoses). Additional information regarding the specific reason for the examination or a provisional diagnosis would be helpful and may at times be needed to

allow for the proper performance and interpretation of the examination.

The request for the examination must be originated by a physician or other appropriately licensed health care provider. The accompanying clinical information should be provided by a physician or other appropriately licensed health care provider familiar with the patient's clinical problem or question and consistent with the state's scope of practice requirements. (ACR Resolution 35, adopted in 2006)

V. SPECIFICATIONS OF THE EXAMINATION

The following section details the examination to be performed for each organ and anatomic region in the female pelvis. All relevant structures should be identified by the transabdominal and/or transvaginal approach. In some cases, both will be needed. A transrectal or transperineal approach may be useful in patients who are not candidates for introduction of a vaginal probe and in assessing the patient with pelvic organ prolapse [1].

A. General Pelvic Preparation

For a complete transabdominal pelvic sonogram, the patient's bladder should, in general, be distended adequately to displace the small bowel from the field of view. Occasionally, overdistention of the bladder may compromise the evaluation. When this occurs, imaging may be repeated after the patient partially empties the bladder.

For a transvaginal sonogram, the urinary bladder is preferably empty. The patient, the sonographer, or the physician may introduce the vaginal transducer, preferably under real-time monitoring. Consideration of having a chaperone present should be in accordance with local policy [2].

B. Uterus

The vagina and uterus provide anatomic landmarks that can be used as reference points for the other pelvic structures, whether normal or abnormal. In examining the uterus, the following should be evaluated: a) the uterine size, shape, and orientation; b) the endometrium; c) the myometrium; and d) the cervix. The vagina may be imaged as a landmark for the cervix and lower uterine segment.

Overall uterine length is evaluated in long axis from the fundus to the cervix (to the external os, if it can be identified). The depth of the uterus (anteroposterior dimension) is measured in the same long-axis view from its anterior to posterior walls, perpendicular to the length. The maximum width is measured in the transaxial or

coronal view. If volume measurements of the uterine corpus are performed, the cervical component should be excluded from the uterine length measurement.

Abnormalities of the uterus should be documented [3]. The myometrium and cervix should be evaluated for contour changes, echogenicity, masses, and cysts. Masses that may require follow-up or intervention should be measured in at least 2 dimensions, acknowledging that it is not usually necessary to measure all fibroids.

The endometrium should be analyzed for thickness, focal abnormality, and the presence of fluid or masses in the endometrial cavity. The endometrium should be measured on a midline sagittal image, including anterior and posterior portions of the basal endometrium and excluding the adjacent hypoechoic myometrium or any endometrial fluid. Assessment of the endometrium should allow for variations expected with phases of the menstrual cycle and with hormonal supplementation [4-6]. If the endometrium is difficult to image in its entirety, or ill-defined, it should be reported. Sonohysterography may be a useful adjunct to evaluate the patient with abnormal or dysfunctional uterine bleeding or to further clarify an abnormally thickened endometrium [7]. If the patient has an intrauterine contraceptive device, its location should be documented. (See the [ACR-ACOG-AIUM-SRU Practice Guideline for the Performance of Sonohysterography](#).)

When available, the addition of a reconstructed coronal view of the uterus from a 3D volume may be useful [8].

C. Adnexa Including Ovaries and Fallopian Tubes

When evaluating the adnexa, an attempt should be made to identify the ovaries first since they can serve as a major point of reference for assessing the presence of adnexal pathology. Ovarian size may be determined by measuring the ovary in 3 dimensions (width, length, and depth), on views obtained in 2 orthogonal planes. Any ovarian abnormalities should be documented [9-12]. The ovaries may not be identifiable in some females. This occurs most frequently prior to puberty, after menopause or in the presence of a large leiomyomatous uterus. The normal fallopian tubes are not commonly identified. The adnexal region should be surveyed for abnormalities, particularly masses and dilated tubular structures.

If an adnexal abnormality is noted, its relationship to the ovaries and uterus should be assessed. The size and sonographic characteristics of adnexal masses should be documented.

Spectral, color, and/or power Doppler ultrasound may be useful to evaluate the vascular characteristics of pelvic lesions [13-16].

D. Cul-de-Sac

The cul-de-sac and bowel posterior to the uterus may not be clearly defined. This area should be evaluated for the presence of free fluid or mass. If a mass is detected, its size, position, shape, sonographic characteristics, and relationship to the ovaries and uterus should be documented. Differentiation of normal loops of bowel from a mass may be difficult if only a transabdominal examination is performed. A transvaginal examination may be helpful to distinguish a suspected mass from fluid and feces within the normal rectosigmoid colon.

VI. DOCUMENTATION

Each organization addresses this requirement individually. ACR language is as follows:

Adequate documentation is essential for high-quality patient care. There should be a permanent record of the ultrasound examination and its interpretation. Comparison with prior relevant imaging studies may prove helpful. Images of all appropriate areas, both normal and abnormal, should be recorded. Variations from normal size should generally be accompanied by measurements. Images should be labeled with the patient identification, facility identification, examination date, and image orientation. An official interpretation (final report) of the ultrasound examination should be included in the patient's medical record. Retention of the ultrasound examination images should be consistent both with clinical need and with relevant legal and local health care facility requirements.

Reporting should be in accordance with the [ACR Practice Guideline for Communication of Diagnostic Imaging Findings](#).

VII. EQUIPMENT SPECIFICATIONS

The sonographic examination of the female pelvis should be conducted with a real-time scanner, preferably using sector, curved linear, and/or endovaginal transducers. The transducer or scanner should be adjusted to operate at the highest clinically appropriate frequency, realizing that there is a trade-off between resolution and beam penetration. With modern equipment, studies performed from the anterior abdominal wall can usually use frequencies of 3.5 MHz or higher, while scans performed from the vagina should use frequencies of 5 MHz or higher [2].

VIII. QUALITY CONTROL AND IMPROVEMENT, SAFETY, INFECTION CONTROL, AND PATIENT EDUCATION

Each organization addresses this requirement individually. ACR language is as follows:

All probes should be cleaned after use. Vaginal probes should be covered by a protective sheath prior to insertion. Following the examination, the sheath should be disposed of and the probe cleaned in an antimicrobial solution. The type of solution and amount of time for cleaning depend on manufacturer and infectious disease recommendations.

Policies and procedures related to quality, patient education, infection control, and safety should be developed and implemented in accordance with the ACR Policy on Quality Control and Improvement, Safety, Infection Control, and Patient Education appearing under the heading *Position Statement on QC & Improvement, Safety, Infection Control, and Patient Education* on the ACR web page (<http://www.acr.org/guidelines>).

Equipment performance monitoring should be in accordance with the [ACR Technical Standard for Diagnostic Medical Physics Performance Monitoring of Real Time Ultrasound Equipment](#).

ACKNOWLEDGEMENTS

This guideline was revised according to the process described under the heading *The Process for Developing ACR Practice Guidelines and Technical Standards* on the ACR web page (<http://www.acr.org/guidelines>) by the Guidelines and Standards Committee of the Commission on Ultrasound in collaboration with the ACOG, the AIUM, and the SRU.

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or standard was amended, revised, or approved by the ACR Council.

Development Chronology for this Guideline

1991 (Resolution 10)
 Revised 1995 (Resolution 37)
 Revised 1999 (Resolution 36)
 Revised 2004 (Resolution 23)
 Amended 2006 (Resolution 35)
 Revised 2009 (Resolution 19)

*Guidelines and standards are published annually with an effective date of October 1 in the year in which amended, revised or approved by the ACR Council. For guidelines and standards published before 1999, the effective date was January 1 following the year in which the guideline