Joint CAR/SOGC Statement on Performing Ultrasound Examinations of the Female Pelvis

These joint guidelines of the Canadian Association of Radiologists (CAR) and the Society of Obstetricians and Gynaecologists of Canada (SOGC) are not rules, but an attempt to define principles of guiding practices that should generally produce optimal radiological care. The physician may deviate from existing guidelines as determined by the individual patient and available resources. Adherence to these CAR/SOGC practice guidelines will not assure a successful outcome in every situation. The practice guidelines should not be deemed inclusive of all proper methods of care or exclusive of other methods of care reasonably directed to obtaining the same results. The practice guidelines are not intended to establish a legal standard of care or conduct, and deviation from practice guidelines does not, in and of itself, indicate or imply that such medical practice is below an acceptable level of care. The ultimate judgment regarding the propriety of any specific procedure or course of conduct must be made by the physician and medical physicist in light of all circumstances presented by the individual situation.

This Joint Statement has been prepared by the Diagnostic Imaging Committee of the Society of Obstetricians and Gynaecologists of Canada and the Ultrasound Working Group of the Canadian Association of Radiologists and approved by the Executive and Board of the Society of Obstetricians and Gynaecologists of Canada and the Board of Directors of the Canadian Association of Radiologists.

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INTRODUCTION

These practice guidelines have been developed to provide assistance to practitioners performing ultrasound examinations of the female pelvis and are based on the guidelines published collaboratively by the American College of Radiology, the American Institute of Ultrasound in Medicine, the American College of Obstetricians and Gynecologists and the Society of Radiologists in Ultrasound, which are acknowledged. In some cases, additional and/or specialized examinations may be necessary. While it is not possible to detect every abnormality, adherence to the following guidelines will maximize the probability of detecting most of the abnormalities that occur. Diagnostic ultrasound is an established, effective diagnostic imaging technique which employs the use of high frequency ultrasound waves for both imaging and Doppler examinations.

Experience has shown that ultrasound is a safe and effective diagnostic procedure. While no demonstrable harmful effects of ultrasound have been proven at power levels used for diagnostic studies, the ALARA (as low as reasonably achievable) principle should be followed in order to obtain the necessary diagnostic information. Quality assurance dictates that it is necessary to utilize this imaging technique in the most appropriate and indicated fashion.

Diagnostic ultrasound examinations of the female pelvis should be performed only for a valid medical reason by qualified and knowledgeable physicians and/or sonographers using appropriate equipment and techniques, and should be supervised and interpreted by trained and credentialed physician imaging specialists.

SONOGRAPHER’S CREDENTIALS CRITERIA

Sonographers should be graduates of an accredited training program or have obtained certification by the Sonography Canada or the American Registry of Diagnostic Medical Sonographers (ARDMS). They should be members of their national or provincial professional organization. Continuing medical education should be mandatory consistent with the requirements of the facility and Sonography Canada or ARDMS.

DOCUMENTATION

Adequate documentation is essential for high-quality patient care and the report should be issued in a timely fashion. Such documentation should consist of a permanent record of the request for examination, the ultrasound examination itself and its interpretation. Appropriate normal and abnormal images should be recorded for each anatomical area together with appropriate measurements. Images should be appropriately labelled with the examination date, patient identification, facility identification, and image location and orientation. A written report should be included with the patient’s medical record.

The images must be of sufficient quality to record pertinent findings and to be used for comparison with subsequent examinations and enable third party sonologists to confirm the diagnosis. The interpretation may include comparisons with other pelvic imaging studies, if available, and to relevant bloodwork.

A permanent record of each ultrasound examination and written report should be retained for a statutory period which should be consistent with clinical needs and relevant legal and local health care facility requirements. Videotape and/or video clips may be used as a supplement to the digital or hard copy images of an ultrasound examination. The videotape record of the ultrasound examination should be retained for the same statutory period as the remainder of the permanent record. The videotape cassette number and counter number (name or time) must be recorded in a log book or on the printed report to allow for future access.

SUPERVISION AND INTERPRETATION OF ULTRASOUND EXAMINATIONS

A sonologist must be available for consultation with the sonographer on a case by case basis. Ideally the sonologist should be on-site and available to participate actively in the ultrasound examination when required. It is recognized however that the geographic realities in Canada do not...
permit the presence of an on-site sonologist in all locations. Best practice would suggest real-time consultation. The sonologist must be available by telephone for consultation with the sonographer and the referring physician, and have access to the images contemporaneously. The sonologist should visit the facility on a regular basis to provide on-site review of ultrasound procedures and sonographer supervision, and to provide ongoing quality assurance feedback to the sonographer.

Adequate documentation of each examination is critical. Despite the geographic isolation of a community, the reports must be timely. The timeliness of reporting any imaging examination varies with the nature and urgency of the clinical problem. The final written report should be made available in a clinically appropriate, timely manner.

QUALITY IMPROVEMENT PROGRAMS

Facilities should maintain and regularly update procedure manuals. Procedures should be systematically monitored and evaluated as part of the overall quality improvement program of the facility. Monitoring should include the evaluation of the accuracy of interpretation as well as the appropriateness of the examination. Incidence of complications and adverse reactions should be recorded and periodically reviewed in order to identify opportunities to improve patient care. Data should be collected in a manner which complies with the statutory and regulatory peer review procedures in order to protect confidentiality of the peer review data.

EQUIPMENT

Sonography of the female pelvis should be performed with a real-time scanner preferably using sector, curved linear or vaginal transducers. The transducer or scanner should be adjusted to operate at the highest clinical appropriate frequency, realizing there is a trade-off between resolution and beam penetration. 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. Each facility should adjust the examination presets on the ultrasound scanners to obtain the necessary diagnostic information under the ALARA principle. Where appropriate, the radiologist and sonographer should work together to reduce the acoustic output power from the maximum setting.

Vaginal probes must be covered by a sterile, waterproof protective sheath, and a suitable sterile lubricant gel applied to the exterior of the sheath, just prior to insertion. Prior to selecting the probe, patients must be questioned whether they have a history of latex allergy. If present, a non-latex probe cover must be used.

The vaginal probe must be covered by a coupling gel prior to inserting into the protective sheath. All probes must undergo a high-level disinfection after each patient examination. The sheath must be discarded and the probe cleaned in an antimicrobial solution. Any parts of the probe which may have or will come into contact with an exposed part of the patient (skin or genital area) must be wiped clean with a suitable cleaning agent. The type of solution, amount of time for cleaning and cleaning protocol depend on manufacturer and local infectious control recommendations.

Indications

Indications for pelvic sonography include but are not limited to:

1. Evaluation of pelvic pain;
2. Evaluation of pelvic masses;
3. Evaluation of endocrine abnormalities, including polycystic ovaries;
4. Evaluation of dysmenorrhea (painful menses);
5. Evaluation of amenorrhea;
6. Evaluation of abnormal bleeding;
7. Evaluation of delayed menses;
8. Follow-up of a previously detected abnormality;
9. Evaluation, monitoring, and/or treatment of infertility patients;
10. Evaluation in the presence of a limited clinical examination of the pelvis;
11. Evaluation for signs or symptoms of pelvic infection;
12. Further characterization of a pelvic abnormality noted on another imaging study;
13. Evaluation of congenital uterine and lower genital tract anomalies;
14. Evaluation of excessive bleeding, pain, or signs of infection after pelvic surgery, delivery, or abortion;
15. Localization of an intrauterine contraceptive device;
16. Screening for malignancy in high-risk patients;
17. Evaluation of incontinence or pelvic organ prolapse;
18. Guidance for interventional or surgical procedures; and
19. Preoperative and postoperative evaluation of pelvic structures.
SONOGRAPHIC TECHNIQUE

General Pelvic Preparation

All relevant structures should be identified and recorded by the abdominal and/or vaginal approach. In many cases, both may be necessary. In patients who are not candidates for the introduction of a vaginal transducer or who have pelvic organ prolapse, a transrectal or transperineal approach may be useful.

For a pelvic sonogram performed from the anterior abdominal wall, the patient's urinary bladder should be adequately distended to displace the small bowel from the field of view. Any abnormality within the bladder (mass, stones, wall thickening, etc.) should be documented. For a vaginal sonogram, the urinary bladder is preferably empty. The vaginal transducer may be introduced by the patient, partner, accompanying person, sonographer or physician after obtaining verbal permission from the patient. It may be appropriate that an additional person acceptable to the patient and the sonographer be present in the examining room during vaginal sonography, either as an examiner or a chaperone.

Uterus

Using the vagina and uterus as anatomical landmarks, the pelvic structures are evaluated individually. The vagina should be imaged as a landmark for the cervix and lower uterine segment.

In evaluating the uterus, the following should be documented: (1) uterine size, shape and orientation, (2) the endometrium, (3) the myometrium, and (4) the cervix.

Uterine length is evaluated in long-axis from the fundus to the cervix. The depth of the uterus (anteroposterior dimension) is measured in the same long-axis from its anterior to posterior walls, perpendicular to its length. The width is measured in the transaxial or coronal view.

The endometrium should be assessed for thickness, echogenicity, focal abnormality and the presence of fluid or masses in the endometrial cavity. The endometrium is measured anterior to posterior on a midline sagittal image and should include both layers. The hypoechoic inner layer of myometrium should not be included in the measurement. The measuring cursor should be placed at the site of maximum thickness (double-wall thickness measurement). In the presence of fluid in the endometrial cavity, the thickness of the anterior and posterior endometrial layers should be measured separately and summed. Assessment of the endometrium should allow for normal cyclical variations and changes with supplemental hormone therapy. If the endometrium is poorly defined or difficult to image in its entirety, this should be reported. If an intrauterine contraceptive device has been inserted, the report should state whether it is seen or not seen. If the contraceptive device is seen, its location should be documented.

Abnormalities of the uterus and cervix should be documented. The myometrium and cervix should be assessed for morphology, including contour changes, echogenicity, cysts and masses. Size and location of the largest and clinically relevant fibroids should be measured and documented. Fibroids and other masses should be measured in at least 2, but preferably 3 dimensions, recognizing that it is usually not necessary to measure all fibroids.

Sonohysterography may be useful as an adjunct in a patient with abnormal uterine bleeding or to further clarify a thickened endometrium.

Also the addition of 3-dimensional ultrasound with a reconstructed coronal view of the uterus may be useful in further assessing the uterine contour, endometrium, and IUD position.

Adnexa (Ovaries and Fallopian Tubes)

An attempt should be made to identify the ovaries first since they can serve as the major reference point for assessing adnexal structures and pathology. Frequently the ovaries are situated anterior to the internal iliac (hypogastric) vessels, which serve as landmarks for their identification. Size, shape, contour and echogenicity of the ovaries should be assessed together with their position relative to the uterus. The ovarian size can be determined by measuring the length in long-axis with the anteroposterior dimension measured perpendicular to the length. The ovarian width is measured in the transaxial or coronal view. A volume can be calculated.

It is recognized that the ovaries may not be identifiable in some women, most frequently prior to puberty, after menopause or in the presence of a large leiomyomatous uterus, and may be obscured by bowel gas.

The normal fallopian tubes are not commonly identified. The adnexal region should be assessed for abnormalities, especially masses or fluid-filled or distended tubular structures that may represent dilated fallopian tubes.

Abnormalities of the ovaries and/or adnexa should be documented. Adnexal masses should be assessed for size, location (ovarian or extra-ovarian), external contour (well-defined, poorly-defined or irregular borders), internal consistency (cystic, complex predominantly cystic, complex predominantly solid or solid), and the presence or absence
of calcification. Complex masses should be further assessed for internal septations, mural nodules and papillary projections. Spectral, colour and/or power Doppler ultrasound is useful to assess for vascularity within the septations or nodules. Doppler ultrasound is also useful to identify vascular structures within the pelvis.  

Pelvic MRI may be useful in cases when the ovaries are not identified in a high-risk patient, or to help further delineate the characteristics of an adnexal mass.

**Cul-de-Sac**

The cul-de-sac should be evaluated for the presence of free fluid or a mass. If a mass is detected, its position, size, shape, morphology and relationship to the uterus and ovaries should be documented. If there is free fluid in the pelvis, it should be documented whether the free fluid is simple or particulate. Any visible peritoneal nodules/meteotases should be documented. Endovaginal ultrasound may be helpful in evaluating other sources of pelvic pain, such as appendicitis or ureterovesical junction stones.

**REFERENCES**