EXAM OF FOCUS – FEMALE PELVIS PROTOCOL

JANUARY 2024

CLICK TO READ AND REVIEW THE FULL PELVIC PROTOCOL HERE

For our January Exam of Focus, the team reviewed our pelvic protocol. You will be happy to hear that we did not make any changes to the required images! We will however be starting to use the ORADS classification system for adnexal and ovarian masses. We have discussed this in a recent lecture, but please be sure to read more about ORADS in the protocol and sections below. I have already changed Viewpoint to align with the ORADS lexicon, so you may notice the options to choose for describing ovarian masses looks different. Also, although we are not changing the image requirements, I know we have had a number of additions over the course of year, so I would like to make sure to highlight these for you in case there was anything missed! I will also include a few things that continue to be questioned amongst staff. Hope this helps to clarify most things, but as always, reach out if you have additional questions!

BILLING AND GENERAL INFO:

- Only use sterile gel packs for the transvaginal exams. Never use a previously opened one or the gel we use for TV exams.
- Patients do not need to have a full bladder unless we are only scanning abdominally.
- Remember to include the LMP in the indication portion of the report, if postmenopausal, state this instead.
- If a patient has had a hysterectomy or ovary removed, you cannot charge a UPELTV. You must change it to a UPELL and UTVAG.
- The required transabdominal images were decreased in March 2023. Review what is required if you are still doing a full duplication of images. Fewer serial images of the structures are needed.
- If you do dopplers or 3D images, be sure to charge for these and put it in the method section of the report.

ENDOMETRIAL ADHESION EVALUATION: The following should be performed on patients with chronic pain or if endometriosis is suspected.

- Transverse cine sweep through the entire cervix to show uterosacral ligaments. It can be included in your transverse uterus sweep, or a separate sweep if needed. Either way, you need to scan ***completely*** through the cervix. A lot of the sweeps we have been getting have not extended all the way through the cervix to show the ligaments. Be aware that this can often be tender for the patient, especially if adhesions are present, so letting them know in advance that it may be uncomfortable is best.
- Sliding sign: To perform the sliding sign, position the probe in the posterior fornix and then push against the rectum to see if the rectum moves free of the posterior cervix/uterus. Do not just push straight into the cervix, you must be ***posterior*** to the cervix to produce the movement needed. If the patient cannot tolerate the pressure required for the vaginal sliding sign, you can also try to manually press on the fundus of the uterus from the top of the abdomen with your non-scanning hand. This should also result in creating the motion needed to show whether the uterus moves independently from the bowel.

UTERUS:

- The uterine length should still be measured ***without*** the cervix included. Normal uterine corpus volume without the cervix is less than 80cc.
- Your sagittal sweep of the uterus on transabdominal imaging should be done with the depth set deep enough to visualize the posterior cul de sac and wide enough to see superior to the uterine fundus. Not doing this has resulted in missed pedunculated fibroids and other pathology.
- We are using new IUD location descriptions to better align with what the gyn providers use -
    - "Fundal" if normal location
    - "Non-fundal" if low in cavity
    - "Embedded" if within myometrium
    - "Partially expelled" if within cervix
- 3D images are required if interstitial/cornual ectopic is suspected.

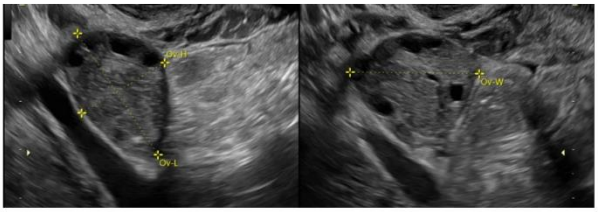
ADNEXA:

- The protocol includes sweeps and still images of the adnexa in both planes. Ovarian sweeps are not required unless pathology is present.
- Additional sweeps of the adnexa ***with and without*** color are required if evaluating for ectopic pregnancy.

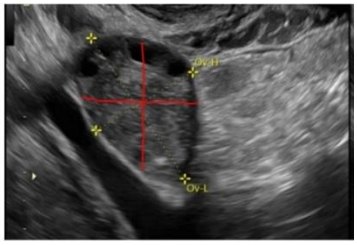
OVARIES:

- Ovarian volumes are subjective. The radiologist will determine whether they are enlarged given the patient situation. For the purposes of PCOS, the volume is considered increased if over 10cc.
- Ovaries should be measured with 2 measurements in long axis, one in transverse. You should measure the ovary length in its longest dimension first and then 90 degrees to that for the height. Your width measurement will be more straight across in a coronal plane, or a bit oblique if sits at an angle. See example below.

• Normal left ovary measured in three orthogonal planes.



Do not measure it like this (in red):



ORADS v2022:

- In order to align with the newest version of the ORADS classification system, we will be using the below descriptions for adnexal and ovarian lesions. These options have all been added to Viewpoint. Do not just say "complex cyst." Use these descriptors as needed to explain why it is complex. If it is a "Unilocular, simple anechoic cyst" you can just say that and leave out the rest of the descriptions, but all complex cysts should include each relevant option below. The radiologist will assign the ORADS score based on our description, but in order for them to choose the correct one, they need our description to be as complete as possible.
    - **Unilocular, bilocular, or multilocular**
    - **Solid vs cystic** (Solid lesion = >80% solid)
    - **Septations**
    - **Solid components** -Solid component = protrudes >3mm into cyst lumen from wall or septation. A papillary projection (pp) is a type of solid component that is surrounded by fluid on three sides. The number of papillary projections is also important for risk stratification, >4 pp is high risk.
    - **Calcifications**
    - **Shadowing** -must be diffuse or broad shadowing
    - **Smooth or irregular wall** -evaluate the inner wall if cystic, outer wall if solid
    - **Color flow** – only comment whether present or not present.
    - **(**Radiologists will choose the color score:
        - CS 1 – No Flow
        - CS 2 – Minimal Flow
        - CS 3 – Moderate Flow
        - CS 4 – Very Strong Flow)

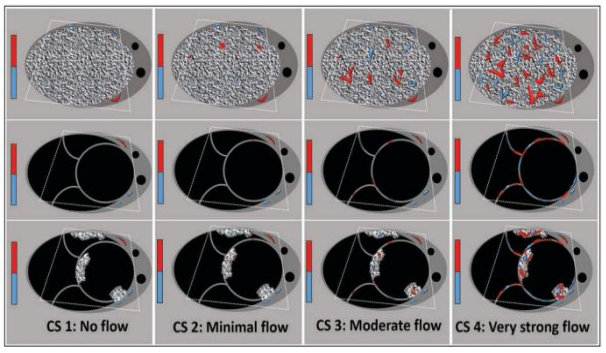


Fig. 6—Schematic shows color score (CS) grading system of degree of internal vascularity within lesion used for risk stratification of solid lesions with smooth outer contour, multilocular cystic lesions with smooth inner walls and septation, and multilocular cystic lesions with solid components. Tips to ensure accurate interpretation of CS include using an adjacent structure (e.g., uterus or contralateral ovary) and optimizing baseline settings. CS 1 reflects no detectable flow. CS 2 should be rendered when flow is present, albeit challenging to see. CS 4 reflects robust flow that is easily seen. Anything between these two should be categorized as moderate flow, CS 3.

The ORADS publications and charts can be found below, but the protocol and our website has them should you need to reference them in the future. The links can be found on our website under the Guidelines & Reference Values tab, in the pelvic folder: PELVIC US GUIDLINES

DON'T FORGET TO READ AND REVIEW THE FULL PELVIC PROTOCOL HERE

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O-RADS™ US v2022 — Assessment Categories

Release Date: November 2022

O-RADS Score	Risk Category [IOTA Model]	Lexicon Descriptors		Management	
				Pre-menopausal	Post-Menopausal
0	Incomplete Evaluation [N/A]	Lesion features relevant for risk stratification cannot be accurately characterized due to technical factors		Repeat US study or MRI	
1	Normal Ovary [N/A]	No ovarian lesion		None	
		Physiologic cyst: follicle (≤3 cm) or corpus luteum (typically ≤3 cm)			
2	Almost Certainly Benign [<1%]	Simple cyst	≤3 cm	N/A (see follicle)	None
			>3 cm to 5 cm	None	Follow-up US in 12 months*
			>5 cm but <10 cm	Follow-up US in 12 months*	
		Unilocular, smooth, non–simple cyst (internal echoes and/or incomplete septations) ––––––––––––––– Bilocular, smooth cyst	≤3 cm	None	Follow-up US in 12 months*
			>3 cm but <10 cm	Follow-up US in 6 months*	
		Typical benign ovarian lesion (see "Classic Benign Lesions" table)	<10 cm	See "Classic Benign Lesions" table for descriptors and management	
		Typical benign extraovarian lesion (see "Classic Benign Lesions" table)	Any size		
3	Low Risk [1 – <10%]	Typical benign ovarian lesion (see "Classic Benign Lesions" table), ≥10 cm		Imaging: • If not surgically excised, consider follow-up US within 6 months** • If solid, may consider US specialist (if available) *or* MRI (with O-RADS MRI score)† Clinical: Gynecologist	
		Uni- or bilocular cyst, smooth, ≥10 cm			
		Unilocular cyst, irregular, any size			
		Multilocular cyst, smooth, <10 cm, CS <4			
		Solid lesion, ± shadowing, smooth, any size, CS = 1			
		Solid lesion, shadowing, smooth, any size, CS 2–3			
4	Intermediate Risk [10 – <50%]	Bilocular cyst without solid component(s)	Irregular, any size, any CS	Imaging: Options include: • US specialist (if available) *or* • MRI (with O–RADS MRI score)† *or* • Per gyn–oncologist protocol Clinical: Gynecologist with gyn–oncologist consultation *or* solely by gyn–oncologist	
		Multilocular cyst without solid component(s)	Smooth, ≥10 cm, CS <4		
			Smooth, any size, CS 4		
			Irregular, any size, any CS		
		Unilocular cyst with solid component(s)	<4 pps or solid component(s) not considered a pp; any size		
		Bi- or multilocular cyst with solid component(s)	Any size, CS 1–2		
		Solid lesion, non-shadowing	Smooth, any size, CS 2–3		
5	High Risk [≥50%]	Unilocular cyst, ≥4 pps, any size, any CS		Imaging: Per gyn-oncologist protocol Clinical: Gyn-oncologist	
		Bi- or multilocular cyst with solid component(s), any size, CS 3–4			
		Solid lesion, ± shadowing, smooth, any size, CS 4			
		Solid lesion, irregular, any size, any CS			
		Ascites and/or peritoneal nodules††			

GLOSSARY

Smooth and irregular: refer to **inner** walls/septation(s) for **cystic** lesions, and **outer** contour for **solid** lesions; irregular inner wall for cysts = <3 mm in height	Solid: excludes blood products and dermoid contents; solid lesion = ≥80% solid; solid component = protrudes ≥3 mm (height) into cyst lumen off wall or septation
Shadowing: must be diffuse or broad to qualify; excludes refractive artifact	pp = papillary projection; subtype of solid component surrounded by fluid on 3 sides
CS = color score; degree of intralesional vascularity; 1 = none, 2 = minimal flow, 3 = moderate flow, 4 = very strong flow	Bilocular = 2 locules; multilocular = ≥3 locules; bilocular smooth cysts have a lower risk of malignancy, regardless of size or CS
Postmenopausal = ≥1 year amenorrhea (early: <5 yrs; late: ≥5 yrs); if uncertain or uterus surgically absent, use age >50 years (early = >50 yrs but <55 yrs, late = ≥55 yrs)	

*Shorter imaging follow-up may be considered in some scenarios (eg, clinical factors). If smaller (≥10–15% decrease in average linear dimension), no further surveillance. If stable, follow-up US at 24 months from initial exam. If enlarging (≥10–15% increase in average linear dimension), consider follow-up US at 12 and 24 months from initial exam, then management per gynecology. For changing morphology, reassess using lexicon descriptors. **Clinical management with gynecology as needed**.

**There is a paucity of evidence for defining the optimal duration or interval for imaging surveillance. Shorter follow-up may be considered in some scenarios (eg, clinical factors). If stable, follow-up at 12 and 24 months from initial exam, then as clinically indicated. For changing morphology, reassess using lexicon descriptors.

† MRI with contrast has higher specificity for solid lesions, and cystic lesions with solid component(s).

†† Not due to other malignant or non-malignant etiologies; specifically, must consider other etiologies of ascites in categories 1–2.

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O-RADS™ US v2022 — Classic Benign Lesions

Release Date: November 2022

Lesion	Descriptors and Definitions For any atypical features on initial or follow-up exam, use other lexicon descriptors (eg, unilocular, multilocular, solid, etc.)	Management If sonographic features are only suggestive, and overall assessment is uncertain, consider follow-up US within 3 months
Typical Hemorrhagic Cyst	Unilocular cyst, **no internal vascularity***, and at least one of the following: • Reticular pattern (fine, thin intersecting lines representing fibrin strands) • Retractile clot (intracystic component with straight, concave, or angular margins)	Imaging: ○ Premenopausal: • ≤5 cm: None • >5 cm but <10 cm: Follow-up US in 2–3 months ○ Early postmenopausal (<5 years): • <10 cm, options to confirm include: ▪ Follow-up US in 2–3 months *or* ▪ US specialist (if available) *or* ▪ MRI (with O–RADS MRI score) ○ Late postmenopausal (≥5 years): • Should not occur; recategorize using other lexicon descriptors. Clinical: Gynecologist**
Typical Dermoid Cyst	Cystic lesion with ≤3 locules, **no internal vascularity***, and at least one of the following: • Hyperechoic component(s) (diffuse or regional) with shadowing • Hyperechoic lines and dots • Floating echogenic spherical structures	Imaging: ○ ≤3 cm: May consider follow-up US in 12 months† ○ >3 cm but <10 cm: If not surgically excised, follow-up US in 12 months† Clinical: Gynecologist**
Typical Endometrioma	Cystic lesion with ≤3 locules, **no internal vascularity***, homogeneous low–level/ground glass echoes, and smooth inner walls/septation(s) • ± Peripheral punctate echogenic foci in wall	Imaging: ○ Premenopausal: • <10 cm: If not surgically excised, follow-up US in 12 months† ○ Postmenopausal: • <10 cm and initial exam, options to confirm include ▪ Follow–up US in 2–3 months *or* ▪ US specialist (if available) *or* ▪ MRI (with O-RADS MRI score) Then, if not surgically excised, recommend follow-up US in 12 months† Clinical: Gynecologist**
Typical Paraovarian Cyst	Simple cyst separate from the ovary	Imaging: None Clinical: Gynecologist**
Typical Peritoneal Inclusion Cyst	Fluid collection with ovary at margin or suspended within that conforms to adjacent pelvic organs • ± Septations (representing adhesions)	Imaging: None Clinical: Gynecologist**
Typical Hydrosalpinx	Anechoic, fluid–filled tubular structure • ± Incomplete septation(s) (representing folds) • ± Endosalpingeal folds (short, round projections around inner walls)	

*Excludes vascularity in walls or intervening septation(s)

**As needed for management of clinical issues

† There is a paucity of evidence for defining the need, optimal duration or interval of timing for surveillance. If stable, consider US follow-up at 24 months from initial exam, then as clinically indicated. Specifically, evidence does support **an increased risk of malignancy in endometriomas following menopause and those present greater than 10 years.**

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O-RADS™ Ultrasound v2022 Lexicon Categories, Terms, and Definitions
Revised: January 2023

Term	Sub-term	Definition	Comments
Major Categories of Imaging Findings			
Physiologic (consistent with normal physiology)			
Follicle		Simple cyst (unilocular, anechoic, smooth) ≤ 3 cm in premenopausal group	
Corpus Luteum (CL)		Thick-walled cyst **typically** ≤ 3 cm, ± crenulated inner walls, ± internal echoes, with peripheral flow in premenopausal group	- May be solid-appearing (no visible central fluid) with peripheral flow - No internal flow
Lesion (not physiologic)			
Unilocular cyst	Without solid component(s)	Cystic lesion with a single locule (no complete septa)	- ± internal echoes, incomplete septa, wall irregularity < 3 mm in height - **Simple cyst:** anechoic and smooth inner walls - **Non-simple cyst:** smooth inner walls and internal echoes or incomplete septa
	With solid component(s)	As above and includes solid tissue ≥ 3 mm in height	
Bilocular cyst	Without solid component(s)	Cystic lesion with 2 locules (single complete septation)	± internal echoes, incomplete septa, or wall/septal irregularity (< 3 mm height)
	With solid component(s)	As above and includes solid tissue ≥ 3 mm in height	
Multilocular cyst	Without solid component(s)	Cystic lesion with ≥ 3 locules (≥ 2 complete septations)	± internal echoes, incomplete septa, or wall/septal irregularity (< 3 mm in height)
	With solid component(s)	As above and includes solid tissue ≥ 3 mm in height	
Solid (≥ 80%)		Lesion with at least 80% solid tissue (based on echogenicity and echotexture)	- ± internal vascularity - May use term **solid-appearing** if no internal vascularity
Size			
Maximum diameter		Largest diameter regardless of the plane in which it is obtained	Used for risk stratification
Average linear dimension		(Maximum length + height + width)/3	Used to assess interval change
Solid or Solid-Appearing Lesions			
External Contour			
Smooth		Uniform/even outer margin	
Irregular		Non-uniform/uneven outer margin	Includes lobulated
		Posterior Acoustic Features	
Shadowing		**Broad or diffuse** hypoechogenicity posterior to a lesion due to sound attenuation	- Associated with calcifications and fibromatous lesions - Relevant for solid smooth - **Differs from refractive artifact** due to differences in attenuation by adjacent tissues, typically seen as linear shadowing from within or at edge of a lesion
Cystic Lesions			
Inner Walls or Septations			

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Smooth		Uniform/even inner margin or septation	
Irregular		Non-uniform/uneven inner margin or septation	Focal wall or septal thickening < 3 mm in height
Calcifications		High-level echogenicity within wall associated with posterior shadowing	Risk assessment based upon smooth or irregular margin
Internal Content			
Hemorrhagic cyst descriptors	Unilocular, no internal vascularity		May have peripheral flow in wall or surrounding ovarian tissue
	Reticular pattern	Fine, thin, intersecting lines	Represents fibrin strands, not septations
	Retractile clot	Avascular component with echogenicity higher than adjacent fluid and angular, straight, or concave margins	
Dermoid cyst descriptors	≤ 3 locules, no internal vascularity		May have flow in walls or intervening septa
	Hyperechoic component (diffuse or regional) with shadowing	Focal hyperechoic component within cystic fluid, or completely hyperechoic lesion, with posterior acoustic shadowing	Represents fat, cartilage, bone
	Hyperechoic lines and dots	Bright, linear, and punctate echoes within cystic component	Represents coiled hair
	Floating echogenic spherical structures	Non-dependent, hyperechoic, round structures within cyst fluid ± posterior acoustic shadowing	Highly characteristic, albeit uncommon
Endometrioma descriptors	≤ 3 locules, no internal vascularity		May have flow in walls or intervening septa
	Homogeneous low-level internal echoes	Homogeneous and evenly dispersed echoes throughout entire cyst	Ground glass echoes = synonym
	Peripheral punctate echogenic foci	Punctate echogenic foci in cyst wall which typically do not shadow, however may demonstrate twinkling artifact	- Highly characteristic albeit uncommon - Represents hemosiderin byproducts
Septations	Complete	Linear tissue within cyst cavity extending from wall to wall in all planes	
	Incomplete	Linear tissue within cyst cavity not extending from wall to wall in all planes	
Solid or Solid-Appearing Component			
Solid component		Focal wall thickening or solid tissue arising from cyst wall/septation that protrudes into cyst cavity ≥ 3 mm in height	- Excludes blood products and dermoid cyst contents - May use term **solid-appearing** if no internal vascularity
Papillary projection		As above and surrounded by fluid on 3 sides	Number important for risk stratification (< 4 vs. ≥ 4)
Vascularity			
Color Score (CS)		Numeric overall subjective assessment of lesion vascularity on color or power Doppler CS 1 = No flow CS 2 = Minimal flow CS 3 = Moderate flow CS 4 = Very strong flow	- Applies to some cystic and all solid smooth lesions - Does not include flow in surrounding ovarian parenchyma
Peripheral flow		Circumferential flow on color or power Doppler	Typical pattern with corpus luteum and hemorrhagic cyst
General and Extra-Ovarian Findings			
Cysts	Paraovarian cyst	Simple cyst separate from the adjacent ovary	- Includes paratubal cyst - Moves independent of ovary with transducer pressure
	Peritoneal inclusion cyst	Fluid collection with ovary at margin or suspended within that conforms to adjacent pelvic organs	- ± septations representing adhesions - Associated with prior surgery or inflammatory processes

Hydrosalpinx	Anechoic, fluid-filled tubular structure	Fluid-distended fallopian tube without internal echoes that has an elongated tubular shape	
	Incomplete septation(s)	Internal linear tissue that does not extend from wall to wall in all planes	Represents folds; may be better appreciated on cine clips
	Endosalpingeal folds	Short round projections around inner walls of fluid-filled tube often equidistantly spaced	Represents internal tubal infoldings seen in short axis
Peritoneal Fluid	Physiologic	Confined to pouch of Douglas and below uterine fundus when anteverted/anteflexed or between uterus and urinary bladder when retroverted/retroflexed	Considered non-pathologic
	Ascites	Fluid extends beyond pouch of Douglas or cul-de-sac and above uterine fundus when anteverted/anteflexed, and anterior/superior to uterus when retroverted/retroflexed	± internal echoes; more suspicious for malignancy if echoes present
Peritoneal nodules		Nodularity or focal thickening of the peritoneal lining or along the serosal surface of bowel	Associated with peritoneal carcinomatosis