

Ob/Gyn experts recommend 'ultrasound first' for imaging the female pelvis

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Ultrasound technology has evolved dramatically in recent years. A group of noted obstetricians and gynecologists maintain that ultrasound is more cost-effective and safer than other imaging modalities for imaging the female pelvis and should be the first imaging modality used for patients with pelvic symptoms. Writing in the *American Journal of Obstetrics & Gynecology* and supporting an American Institute of Ultrasound in Medicine (AIUM) initiative, they urge practitioners to "put ultrasound first."

In 2012, the AIUM launched "Ultrasound First, which advocates the use of ultrasound examinations before other imaging modalities, when evidence shows that ultrasound is at least equally, if not more effective, for the target anatomic area.

"This recommendation applies particularly to obstetric and gynecologic patients. A skillfully performed and well-interpreted ultrasound usually eliminates the need to perform additional more costly and complex cross-sectional [imaging techniques](#)," explained lead author and AIUM president Beryl R. Benacerraf, MD, Clinical Professor in Obstetrics, Gynecology, and Reproductive Biology and Radiology at Harvard Medical School, and Brigham and Women's Hospital. She pointed out that, still today, many women presenting with pelvic pain, masses, or flank pain first undergo CT (computerized tomography) scans and those with Müllerian duct anomalies typically have MRIs ([magnetic resonance imaging](#)). CT or MRI of the pelvis often yields indeterminate and confusing findings that require further clarification using ultrasound.

Immediate Past-President of AIUM and co-author Steven R. Goldstein, MD, Professor of Obstetrics and Gynecology at the NYU School of Medicine and Director of Gynecologic Ultrasound and Co-Director of Bone Densitometry, highlighted the safety concerns when using other modalities: "The use of CT scans has tripled since 1993. An estimated 29,000 future cancers could be related to CT done in the U.S. in 2007. The largest contribution to this projected risk of cancer (14,000 cancers) was attributed to CT of the pelvis and abdomen.

"For example, patients with suspected kidney stones frequently have a CT scan first, despite the associated radiation burden. In a recent study, most of the patients evaluated first by ultrasound did not ultimately need a CT scan, sparing radiation exposure."

Ultrasound has evolved very rapidly from the early days of black dots on a white screen, said the experts. Several key technical advances such as 3D volume imaging (similar to CT and MR), real time evaluation of pelvic organs along the physical examination, and Doppler blood flow mapping (without contrast) have rendered ultrasound an effective first line (and often only) imaging modality for most gynecologic patients.

Ultrasound exams used to require filling a woman's bladder and obtaining a series of 2D images one at a time, which was operator-dependent and limited to certain views that did not require reconstruction. Today, 3D volume ultrasound allows the automated acquisition of an entire volume that in turn can generate hundreds of images and be used to reconstruct any view in any orientation. It is less expensive and less time-consuming than MRI. Images are of comparable quality and orientation to those of MRI and CT but without radiation, and at relatively lower cost. "Doing a CT scan first for female patients with lower abdominal pain is dangerous, wasteful, and expensive," noted Dr. Benacerraf. "We must educate the medical community to consider adopting 3D ultrasound as the first assessment tool for specific

gynecologic indications, such as evaluating the uterus for Müllerian anomalies or localization of IUDs or other intracavitary lesions."

The transvaginal ultrasound transducer is one of the most important innovations in pelvic imaging in recent decades as it allows the operator to place a probe in close proximity to target pelvic organs and to examine and image the patient at the same time. Ultrasound has proved accurate for evaluating deep infiltrating endometriosis and for patients with pain due to extensive pelvic adhesions.

The third development described is Doppler Interrogation, which provides information about the location and degree of blood flow in and around pelvic lesions without the need to inject contrast. Cancers characteristically have abundant and disorganized blood flow patterns, whereas benign lesions have limited flow, and cysts lack flow altogether. Color Doppler mapping often furnishes the key to the evaluation of an adnexal mass and differentiating an endometrioma from an ovarian tumor or an ovarian fibroma.

AIUM Past-President Alfred Z. Abuhamad, MD, Professor and Chairman of Obstetrics and Gynecology and Vice Dean for Clinical Affairs at Eastern Virginia Medical School, commented, "In this era of cost concerns, it is very important to recognize that [ultrasound technology](#) now offers multiple applications. Many practitioners still provide basic 2D [ultrasound](#), emphasizing the need for education and dissemination of this information."

The richly illustrated Clinical Opinion article is openly available and accompanied by a PowerPoint presentation.

More information: "Consider ultrasound first for imaging the female pelvis," by Beryl R. Benacerraf, MD, Alfred Z. Abuhamad, MD, Bryann Bromley, MD, Steven Goldstein, MD, Yvette Groszmann, MD, MPH,

Thomas D. Shipp, MD, and Ilan Timor-Tritsch, MD (DOI: [dx.doi.org/10.1016/j.ajog.2015.02.015](https://doi.org/10.1016/j.ajog.2015.02.015)), *American Journal of Obstetrics & Gynecology*, published online in advance of Volume 212, Issue 4 (April 2015)

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