American College of Radiology
ACR Appropriateness Criteria®

Postmenopausal Subacute or Chronic Pelvic Pain

Variant: 1 Adult postmenopausal female. Subacute or chronic pelvic pain. Suspected gynecologic etiologies. Initial imaging.

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

Variant: 2 Adult postmenopausal female. Subacute or chronic pelvic pain. Suspected gynecologic etiologies. US indeterminate. Next imaging study.

Procedure	Appropriateness Category	Relative Radiation Level
MRI pelvis without and with IV contrast	Usually Appropriate	O
MRI pelvis without IV contrast	Usually Appropriate	O
CT pelvis with IV contrast	Usually Appropriate	☢☢☢
CT pelvis without IV contrast	May Be Appropriate	☢☢☢
CT pelvis without and with IV contrast	Usually Not Appropriate	☢☢☢☢

Panel Members

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Summary of Literature Review

Introduction/Background

Chronic pelvic pain, defined by the American College of Obstetrics and Gynecology as at least 6 months of pain severe enough to necessitate medical attention or result in functional disability, is a common condition among women [1, 2]. It is the leading indication for gynecologic clinic referrals, with a reported prevalence of up to 26% in women globally, with significant impact on health care costs and patient quality of life [3-5]. Targeted clinical evaluation of chronic pelvic pain is challenging because the source of pain may be located within the pelvis, lower anterior abdominal wall, buttocks, and lumbosacral spine of gynecologic, gastrointestinal, urinary, musculoskeletal, or neurologic etiology [6].

This document will focus on appropriate imaging for suspected gynecologic origin of chronic pelvic pain in the postmenopausal setting. Such entities include chronic pelvic inflammatory disease with associated findings such as tubo-ovarian abscess, hydrosalpinx, pyosalpinx, or intraperitoneal adhesions; postsurgical changes with resultant intraperitoneal adhesions or loculated fluid; vaginal or vulvar cysts; and pelvic venous congestion disorder. This document will not address pain that is superficial and located to the vagina, vulva or perineum which can often be evaluated by physical examination.

Existing ACR Appropriateness Criteria are available for clinical scenarios in which nongynecologic etiologies are suspected as the cause of chronic pelvic pain (Appendix 1). There are also existing ACR Appropriateness Criteria documents on acute and chronic pelvic pain in the reproductive age group and for acute pain in the postmenopausal population (Appendix 1). Endometriosis will not be covered in this document because it is discussed in detail in the dedicated endometriosis ACR Appropriateness Criteria document (Appendix 1). If presenting symptoms raise concern for malignancy (i.e., vaginal bleeding, palpable mass, bloating, unexplained weight loss), please refer to the relevant dedicated ACR Appropriateness Criteria documents (Appendix 1).

This document will address the imaging workup of chronic pelvic pain in the postmenopausal patient by focusing first on the initial imaging to obtain in these patients and then follow-up imaging when initial findings are inconclusive.

Initial Imaging Definition

Initial imaging is defined as imaging at the beginning of the care episode for the medical condition defined by the variant. More than one procedure can be considered usually appropriate in the initial imaging evaluation when:

- There are procedures that are equivalent alternatives (ie, only one procedure will be ordered to provide the clinical information to effectively manage the patient's care)

OR

- There are complementary procedures (ie, more than one procedure is ordered as a set or simultaneously wherein each procedure provides unique clinical information to effectively manage the patient's care).

Discussion of Procedures by Variant

Variant 1:Adult postmenopausal female. Subacute or chronic pelvic pain. Suspected gynecologic etiologies. Initial imaging.

The goal of imaging is to identify possible gynecologic sources of subacute or chronic pelvic pain in postmenopausal patients. This imaging information can help guide timely patient management.

Variant 1:Adult postmenopausal female. Subacute or chronic pelvic pain. Suspected gynecologic etiologies. Initial imaging.
A. CT pelvis with IV contrast

To our knowledge, there is currently no evidence to support CT pelvis with IV contrast as the initial

imaging modality for subacute or chronic pelvic pain of suspected gynecologic etiologies in the adult postmenopausal women.

Variant 1:Adult postmenopausal female. Subacute or chronic pelvic pain. Suspected gynecologic etiologies. Initial imaging.
B. CT pelvis without and with IV contrast

To our knowledge, there is currently no evidence to support CT pelvis without and with IV contrast as the initial imaging modality for subacute or chronic pelvic pain of suspected gynecologic etiologies in the adult postmenopausal women.

Variant 1:Adult postmenopausal female. Subacute or chronic pelvic pain. Suspected gynecologic etiologies. Initial imaging.
C. CT pelvis without IV contrast

To our knowledge, there is currently no evidence to support CT pelvis without IV contrast as the initial imaging modality for subacute or chronic pelvic pain of suspected gynecologic etiologies in the adult postmenopausal women.

Variant 1:Adult postmenopausal female. Subacute or chronic pelvic pain. Suspected gynecologic etiologies. Initial imaging.
D. MRI pelvis without and with IV contrast

To our knowledge, there is currently no evidence to support MRI pelvis without or with IV contrast as the initial imaging modality for subacute or chronic pelvic pain of suspected gynecologic etiologies in the adult postmenopausal women.

Variant 1:Adult postmenopausal female. Subacute or chronic pelvic pain. Suspected gynecologic etiologies. Initial imaging.
E. MRI pelvis without IV contrast

To our knowledge, there is currently no evidence to support MRI pelvis without intravenous (IV) contrast as the initial imaging modality for subacute or chronic pelvic pain of suspected gynecologic etiologies in the adult postmenopausal women. Based on expert consensus from the panel, this procedure may be useful based on expert opinion.

Variant 1:Adult postmenopausal female. Subacute or chronic pelvic pain. Suspected gynecologic etiologies. Initial imaging.
F. Radiography abdomen and pelvis

To our knowledge, there is currently no evidence to support radiography of the abdomen and pelvis as the initial imaging modality for subacute or chronic pelvic pain of suspected gynecologic etiologies in the adult postmenopausal women.

Variant 1:Adult postmenopausal female. Subacute or chronic pelvic pain. Suspected gynecologic etiologies. Initial imaging.
G. US duplex Doppler pelvis

Although ultrasound (US) duplex Doppler pelvis is rated as a separate imaging procedure from US pelvic transabdominal and transvaginal, this modality is often performed together with the combined transvaginal and transabdominal pelvic US [7].

Duplex Doppler imaging are a routine component of pelvic US and can be used to distinguish vascularized soft tissue from nonvascular echogenic material such as blood products [7]. Color and spectral Doppler is of particular importance in patients suspected of chronic pain due to pelvic

venous congestion. Evidence supporting the diagnosis of pelvic congestion syndrome include ovarian vein dilation >5 mm in diameter, ovarian vein flow reversal, change of flow with dynamic maneuvers, and presence of tortuous pelvic and parauterine veins [8-10]. Interrogation of the uterine artery demonstrating low resistive and pulsatility index is also suggestive of pelvic congestion syndrome [8].

Variant 1:Adult postmenopausal female. Subacute or chronic pelvic pain. Suspected gynecologic etiologies. Initial imaging.
H. US pelvis transabdominal

Combined transabdominal and transvaginal US is considered appropriate initial imaging in this clinical scenario and should be jointly performed when feasible. Transabdominal imaging offers a wider field of view than transvaginal imaging, which can be used to assess anatomy of the pelvic organs, larger masses, and fluid collections.

Variant 1:Adult postmenopausal female. Subacute or chronic pelvic pain. Suspected gynecologic etiologies. Initial imaging.
I. US pelvis transabdominal and US pelvis transvaginal

Combined transabdominal and transvaginal pelvic US is the initial imaging of choice in postmenopausal women with subacute or chronic pelvic pain with suspected gynecologic etiologies [11, 12]. The transabdominal and transvaginal approaches are considered complementary. Transabdominal imaging offers a global overview of the pelvis, which can be used to assess anatomy of the pelvic organs, larger masses, and fluid collections. Transvaginal imaging offers higher spatial resolution, which is often required for adequate assessment of certain pelvic structures such as the endometrium or ovary. Transvaginal imaging with modified bimanual examination technique can be used to determine a mass's site of origin as well as to assess structural mobility [13].

Pelvic US is also considered the first-line imaging modality when evaluating chronic pelvic pain of suspected gynecologic origin, which is localized deeper within the pelvis. In addition to potentially evaluating for gynecologic masses and other indicators of malignancy such as endometrial thickening or heterogeneity, US can demonstrate imaging manifestations of subacute or chronic pelvic inflammatory disease including dilated fallopian tubes (indicating hydrosalpinx/pyosalpinx), inflammatory lesions such as tubo-ovarian abscess, and pelvic fluid (either free or loculated) [14, 15]. Although pelvic inflammatory disease is more common in women of reproductive age, history of prior pelvic inflammatory disease can result in chronic pelvic pain.

If adhesive disease related to chronic or postsurgical inflammation is suspected, US to assess organ mobility can be used, although reliability of this practice still lacks strong supportive evidence [16, 17]. Hydrosalpinx, seen in the setting of chronic adnexal torsion, can also be assessed with US [18].

Variant 1:Adult postmenopausal female. Subacute or chronic pelvic pain. Suspected gynecologic etiologies. Initial imaging.
J. US pelvis transvaginal

Combined transabdominal and transvaginal US is considered useful initial imaging in this clinical scenario and should be jointly performed when feasible. Compared with transabdominal imaging, transvaginal imaging offers higher spatial resolution for detailed evaluation of structures such as the endometrium and ovaries. Transvaginal imaging with modified bimanual examination technique can be used to determine a mass's site of origin as well as to assess structural

mobility [13].

Variant 2:Adult postmenopausal female. Subacute or chronic pelvic pain. Suspected gynecologic etiologies. US indeterminate. Next imaging study.

Although US can be a useful initial screening examination in postmenopausal patients with subacute or chronic pain pelvic pain with suspected gynecologic source, additional imaging studies can be needed if these US findings are indeterminate or inconclusive. This additional imaging can be used for further assessment in guiding patient management.

Variant 2:Adult postmenopausal female. Subacute or chronic pelvic pain. Suspected gynecologic etiologies. US indeterminate. Next imaging study.
A. CT pelvis with IV contrast

Contrast-enhanced CT pelvis can be of use in cases of suspected chronic pelvic inflammatory disease. Findings of peritoneal thickening and enhancement, hydrosalpinx or pyosalpinx, tubo-ovarian abscess, and loculated or complex pelvic fluid support this diagnosis and can further guide treatment options. Although abnormal tethering or distortion of pelvic structures and anatomic landmarks can suggest underlying adhesions, potentially due to chronic pelvic inflammatory disease, CT has not been shown to have high specificity or sensitivity for these findings; additionally, adhesive disease itself is not specific for chronic pelvic inflammatory disease and can be due to other etiologies such as prior surgical intervention or fibrotic deeply infiltrating endometriosis [15, 16, 30, 31].

If a pelvic venous disorder is suspected, CT pelvis with IV contrast may demonstrate supportive evidence such as dilated periovarian and periuterine veins as well as asymmetrically dilated left pelvic veins in cases of left renal vein compression [9, 10, 32].

Variant 2:Adult postmenopausal female. Subacute or chronic pelvic pain. Suspected gynecologic etiologies. US indeterminate. Next imaging study.
B. CT pelvis without and with IV contrast

In clinical scenarios in which CT pelvis is indicated, the use of an iodine-based contrast-enhanced CT is preferred. To our knowledge, the use of CT pelvis without and with IV contrast is not supported for evaluation of chronic pelvic pain in the postmenopausal woman when initial US is indeterminate.

Variant 2:Adult postmenopausal female. Subacute or chronic pelvic pain. Suspected gynecologic etiologies. US indeterminate. Next imaging study.
C. CT pelvis without IV contrast

Contrast-enhanced CT pelvis is the preferred CT imaging modality of choice when initial US is inconclusive as discussed in the "CT Pelvis with IV Contrast" section. CT pelvis without IV contrast can be used, although it is less sensitive than CT pelvis with IV contrast, to potentially demonstrate findings of chronic inflammatory disease or venous disorder described in the "CT Pelvis with IV Contrast" section.

Variant 2:Adult postmenopausal female. Subacute or chronic pelvic pain. Suspected gynecologic etiologies. US indeterminate. Next imaging study.
D. MRI pelvis without and with IV contrast

MRI pelvis is often the imaging modality of choice for cases of postmenopausal chronic pelvic pain for further evaluation of symptoms in the setting of indeterminate US findings [19, 20]. MRI provides superior spatial and temporal resolution, allowing for more detailed evaluation of pelvic

structures. Use of gadolinium-based contrast is recommended when using MRI [21].

MRI can be useful in demonstrating sequelae of chronic pelvic inflammatory disease, often illustrating findings that are more subtle or unable to be seen on US [20]. Hydrosalpinx can be best visualized on T2-weighted images as fluid-filled fallopian tubes with additional signs of fallopian tube inflammation or internal debris indicative of pyosalpinx. Long-standing disease can result in fibrous adhesions and inflammatory masses, the former seen as dark signal bands on T2-weighted images and the latter best seen on postcontrast T1-weighted fat saturated images [15, 16]. Peritoneal inclusion cysts, which can develop in the setting of adhesions, are also seen best on T2-weighted images [16, 22].

Lesions in the more superficial pelvic tissues including the vulva, vagina, and perineum can sometimes be identified but incompletely characterized on US, with MRI serving as an adjunct troubleshooting tool. Postcontrast T1-weighted images are particularly useful in distinguishing benign cystic superficial masses from those containing solid, enhancing components, which raise concern for neoplasm or malignancy [20, 23-25].

Vascular conditions, mainly pelvic venous congestion, have increasingly become recognized and treated as causes of chronic pelvic pain, with MRI playing a primary role in imaging workup [26, 27]. This practice has allowed for less invasive diagnostic venous imaging than conventional venography with similar sensitivities and specificities, with venography now often reserved for cases with intent to treat simultaneously [26, 28].

Postcontrast T1-weighted imaging is particularly useful in identifying supporting evidence such as varices as demonstrated by venous conspicuity and congestive flow issues seen as flow directionality on time-resolved imaging and ovarian vein reflux. T2-weighted imaging can also be used to identify varices, albeit with greater variability than postcontrast images due to inconsistent, flow velocity-dependent signal intensity [9, 29].

Variant 2:Adult postmenopausal female. Subacute or chronic pelvic pain. Suspected gynecologic etiologies. US indeterminate. Next imaging study.
E. MRI pelvis without IV contrast

When pelvic MRI is performed in the workup of chronic pelvic pain in which initial US has been inconclusive, MRI pelvis without IV contrast can be performed to assess for chronic pelvic inflammatory disease, superficial lesions, and pelvic venous conditions, with particular attention paid to findings seen best on T2-weighted images, although contrast-enhanced MRI is the preferred MRI technique.

Summary of Highlights

This is a summary of the key recommendations from the variant tables. Refer to the complete narrative document for more information.

- **Variant 1**: For initial imaging when evaluating subacute or chronic pelvic pain in the adult postmenopausal female patient with suspected gynecologic etiologies, transabdominal US of the pelvis, transvaginal US of the pelvis, combined transabdominal and transvaginal US of the pelvis, and US duplex Doppler of the pelvis are usually appropriate studies and allow for evaluation of overall pelvic anatomy in addition to findings of malignancy, inflammation, and

pelvic venous congestion. Combined transabdominal and transvaginal US is considered complementary, with transabdominal images allowing for a global understanding of larger scale anatomy with transvaginal images providing more detailed assessment of certain pelvic structures. US duplex Doppler is also considered a complementary approach, often combined with anatomic transabdominal and transvaginal pelvic US imaging to assess for vascular etiology of pain.

- **Variant 2**: For the next imaging study when US is indeterminate when evaluating subacute or chronic pelvic pain in the adult postmenopausal female patient with suspected gynecologic etiologies, MRI pelvis without and with IV contrast, MRI pelvis without IV contrast, and CT pelvis with IV contrast are usually appropriate studies. These are typically performed as alternative studies in evaluating for findings of chronic inflammatory disease, lesions in the superficial tissues, and vascular pathologies which are incompletely assessed on initial US.

Supporting Documents

The evidence table, literature search, and appendix for this topic are available at https://acsearch.acr.org/list. The appendix includes the strength of evidence assessment and the final rating round tabulations for each recommendation.

For additional information on the Appropriateness Criteria methodology and other supporting documents, please go to the ACR website at https://www.acr.org/Clinical-Resources/Clinical-Tools-and-Reference/Appropriateness-Criteria.

Gender Equality and Inclusivity Clause

The ACR acknowledges the limitations in applying inclusive language when citing research studies that predates the use of the current understanding of language inclusive of diversity in sex, intersex, gender, and gender-diverse people. The data variables regarding sex and gender used in the cited literature will not be changed. However, this guideline will use the terminology and definitions as proposed by the National Institutes of Health.

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.

Relative Radiation Level Information

Potential adverse health effects associated with radiation exposure are an important factor to consider when selecting the appropriate imaging procedure. Because there is a wide range of radiation exposures associated with different diagnostic procedures, a relative radiation level (RRL) indication has been included for each imaging examination. The RRLs are based on effective dose, which is a radiation dose quantity that is used to estimate population total radiation risk associated with an imaging procedure. Patients in the pediatric age group are at inherently higher risk from exposure, because of both organ sensitivity and longer life expectancy (relevant to the long latency that appears to accompany radiation exposure). For these reasons, the RRL dose estimate ranges for pediatric examinations are lower as compared with those specified for adults (see Table below). Additional information regarding radiation dose assessment for imaging examinations can be found in the ACR Appropriateness Criteria® Radiation Dose Assessment Introduction document.

Relative Radiation Level Designations

Relative Radiation Level*	Adult Effective Dose Estimate Range	Pediatric Effective Dose Estimate Range
O	0 mSv	0 mSv
☢	<0.1 mSv	<0.03 mSv
☢☢	0.1-1 mSv	0.03-0.3 mSv
☢☢☢	1-10 mSv	0.3-3 mSv
☢☢☢☢	10-30 mSv	3-10 mSv
☢☢☢☢☢	30-100 mSv	10-30 mSv

*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 (e.g., 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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Appendix 1. Related ACR Appropriateness Criteria Topics

Disclaimer

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