

CLINICAL INQUIRIES

From the Family Practice Inquiries Network

What is the appropriate diagnostic evaluation of fibroids?

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EVIDENCE-BASED ANSWER

Although transvaginal sonography (TVS) has inconsistent sensitivity (0.21–1.00) and specificity (0.53–1.00), its cost-efficiency and noninvasiveness make it the best initial test for ruling in fibroid disease (strength of recommendation [SOR]: **B**, based on expert opinion, a systematic review, and prospective studies).

Sonohysterography (SHG) and hysteroscopy have superior sensitivity, specificity, and more discriminating positive and negative likelihood ratios for diagnosing fibroids than does TVS

(SOR: **B**, systematic review). SHG is less painful, less invasive, and more cost-effective than hysteroscopy (SOR: **B**; single, prospective comparative study and cost comparison).

Magnetic resonance imaging (MRI) had comparable precision to TVS in a single study, but it is too expensive to be a good initial test for fibroids (SOR: **C**, expert opinion and an uncontrolled prospective study). One study reported a strong correlation between ultrasound and bimanual examination (SOR: **C**, retrospective case review).

CLINICAL COMMENTARY

When evaluating potential fibroids, a reasonable first step is a sonogram

In the asymptomatic patient with an enlarged, irregularly contoured uterus on routine exam, the differential includes fibroids, fibroids, and fibroids. My usual next step is to get a sonogram. The test is noninvasive, well-tolerated by patients, and significantly less expensive than the alternatives. It quickly and easily gives a great deal of useful information regarding the size, shape, consistency of the myometrium and the

endometrium, from which we can reassure the patient regarding the benign natural history of this finding, especially in the perimenopausal woman. If the patient presents with symptoms of abnormal bleeding, pelvic pressure, or adnexal findings on exam, the review suggests that further workup may be indicated. However, the sonogram remains a very useful initial test even in this case.

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■ Evidence summary

Uterine myomas are usually diagnosed by incidental visualization during pelvic sonography or bimanual palpation of an enlarged, mobile uterus with irregular contours.¹ In a retrospective chart review of obese and nonobese patients with known

uterine fibroids, clinical estimate of uterine size by bimanual examination correlated with both ultrasound fibroid sizing and posthysterectomy pathology analysis.² Additional diagnostic testing is indicated for patients with suspected fibroids and abnormal uterine bleeding, increased pelvic girth,

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pelvic pressure contributing to urinary frequency or constipation, or pelvic pain with intercourse or other physical activity.³

TVS has high sensitivity for detecting myomas in a uterus of <10-week size. The use of high-frequency probes improves the sensitivity for diagnosing small myomas, although their precise location with respect to the uterine cavity often remains uncertain. Localization of fibroids in a larger uterus or when there are many tumors is limited.⁴ Also, TVS may fail to detect small fibroids and subserosal myomas. A systematic review of 9 heterogeneous studies evaluating TVS found wide ranges for sensitivity and specificity (TABLE).⁵ The cost of TVS is less than half of sonohysterography or diagnostic hysteroscopy, based on Medicare allowable pricing data.⁶

SHG uses an intrauterine saline contrast medium with transvaginal ultrasonography. This office-based procedure is more invasive than TVS but requires no anesthesia. SHG is more sensitive and specific than TVS in detecting submucous myomas and focal endometrial lesions.⁷ In a prospective study of 81 symptomatic patients, using a gold standard of surgical pathology, SHG demonstrated more discriminating positive and negative likelihood ratios (LR+, LR-) for detecting myomata than did TVS or hysteroscopy.⁸ A prospective study of 56 symptomatic patients with a gold standard of hysteroscopic or surgical pathology similarly found SHG to be superior to TVS.⁷ In a systematic review of 7 studies, SHG demonstrated a clinically significant LR+ of 29.7. There was too much heterogeneity in the data to calculate an LR- (TABLE).⁵

Hysteroscopy is as accurate but more invasive than SHG in evaluating uterine myomata. In a systematic review of 4 studies, hysteroscopy had a pooled LR+ of 29.4 for diagnosing fibroids. Due to study heterogeneity, a pooled LR- could not be calculated.⁵ A prospective, blinded comparative study of SHG and hysteroscopy for diagnosing fibroids in 117 women found SHG to have a higher failure rate (22% vs 6%) but a statistically significant lower median pain score: 1.6 (interquartile range

0.48–3.03) vs 3.2 (1.58–5.18) ($P<.001$)—than hysteroscopy.⁹ Failure of SHG was most commonly due to cervical stenosis.

In a double-blinded comparative study of 106 consecutive premenopausal women undergoing hysterectomy for benign reasons, MRI and TVS detected myomas with equal precision (TABLE). MRI is preferred in cases for which exact myoma mapping is necessary and those with multiple myomas or large uteri who are scheduled for advanced surgical procedures.⁴ MRI costs up to twice as much as sonohysterography or diagnostic hysteroscopy, when comparing Medicare allowable pricing data.⁶

Recommendations from others

A 1994 American College of Obstetrics and Gynecology (ACOG) bulletin stated that uterine fibroids can be diagnosed with 95% certainty by examination alone.¹⁰ ACOG recommends augmenting physical examination with ultrasonography in cases involving obese women or when adnexal pathology cannot be excluded based on examination alone. This bulletin also points out that routine ultrasonography does not improve long-term clinical outcomes for fibroids. A more recent bulletin (2000) addressed management but not evaluation or diagnosis of leiomyomas.¹¹

A 2003 guideline from the Society of Obstetrics and Gynecology of Canada recommends against routine ultrasonography, since it rarely affects the clinical management of uterine fibroids. However, it emphasizes the importance of ruling out underlying endometrial pathology in women with abnormal uterine bleeding.¹²

REFERENCES

1. Mayer DP, Shipilov V. Ultrasonography and magnetic resonance imaging of uterine fibroids. *Obstet Gynecol Clin North Am* 1995; 22:667–725.
2. Cantuarua GH, Angioli R, Frost L, Duncan R, Penalver MA. Comparison of bimanual examination with ultrasound examination before hysterectomy for uterine leiomyoma. *Obstet Gynecol* 1998; 92:109–112.
3. Becker E Jr, Lev-Toaff AS, Kaufman EP, Halpern EJ, Edelweiss MI, Kurtz AB. The added value of transvaginal sonohysterography over transvaginal sonography alone in women with known or suspected leiomyoma. *J Ultrasound Med* 2002; 21:237–247.
4. Dueholm M, Lundorf E, Hansen ES, Ledertoug S, Olesen F. Accuracy of magnetic resonance imaging and transvaginal ultrasonography in the diagnosis,

FAST TRACK

With equivocal sonogram findings, or with abnormal uterine bleeding or other symptoms, further workup with SHG or hysteroscopy may be indicated

C O N T I N U E D

TABLE

Evaluations of diagnostic tools for fibroids

DIAGNOSTIC TOOL	PASRIJA ET AL ⁷	BONNAMY ET AL ⁸	DUEHOLM ET AL ⁴	FARQUHAR ET AL ⁵	ROGERSON ET AL ⁹
Summary characteristics of trial	Prospective, 56 pts, symptomatic, gold standard hysteroscopy or hysterectomy pathology	Prospective, 81 symptomatic pts, gold standard of "clinical survey" or histopathology	Double-blind, 106 premenopausal pts undergoing hysterectomy for benign reasons	Systematic review including 19 studies with significant heterogeneity	117 women; SHG compared with outpatient hysteroscopy (gold standard)
TVS				(9 studies)	
Sensitivity	84.8	65 (43–84)	99 (92–100)	21–100	
Specificity	79	94 (79–99)	91 (75–98)	53–100	
PPV	82.4		96 (88–99)		
NPV	82		97 (82–100)		
LR+	4.0	10 (2.6–4.1)	11 (3.0–50)	1.61–62.25	
LR-	0.19	0.4 (0.2–0.7)	0.01 (0.11–0)	0.03–0.80	
SHG				(7 studies)	
Sensitivity	94.1	91 (72–99)		57–100	85.2
Specificity	88.5	94 (79–99)		96–100	87.3
PPV	91.4				74.3
NPV	92				93.2
LR+	8.2	15 (3.8–56)		29.7 (17.8–49.6)	6.7
LR-	0.067	0.1 (0.02–0.4)		0.06–0.47	0.17
Hysteroscopy				(4 studies)	
Sensitivity		88 (62–98)		53–100	
Specificity		94 (79–99)		97–100	
LR+		14 (3.5–52)		29.4 (13.4–65.3)	
LR-		0.1 (0.04–0.5)		0.08–0.48	
MRI					
Sensitivity			99 (92–100)		
Specificity			86 (71–94)		
PPV			92 (83–97)		
NPV			97 (85–100)		
LR+			7.1 (0.32–16.7)		
LR-			0.012 (0.11–0)		

Italicized values were not reported in the original studies, but calculated for this review. Numbers in parentheses represent 95% confidence levels.

LR+ = positive likelihood ratio (a value greater than 10 is clinically significant and the higher the value, the more helpful the test at ruling in the diagnosis); LR- = negative likelihood ratio (a value less than 0.1 is clinically significant and the lower the value, the more helpful the test at ruling out the diagnosis).

PPV, positive predictive value; NPV, negative predictive value; TVS, transvaginal sonography; SHG, sonohysterography; MRI, magnetic resonance imaging.

- mapping, and measurement of uterine myomas. *Am J Obstet Gynecol* 2002; 186:409–415.
- Farquhar C, Ekeroma A, Furness S, Arroll B. A systematic review of transvaginal ultrasonography, sonohysterography and hysteroscopy for the investigation of abnormal uterine bleeding in premenopausal women. *Acta Obstet Gynecol Scand* 2003; 82:493–504.
- 2004 Interactive Physician Fee Schedule. Missouri Medicare Services. Available at: www.momedicare.com/provider/disclosure/fee2004.asp.
- Pasrija S, Trivedi SS, Narula MK. Prospective study of saline infusion sonohysterography in evaluation of premenopausal and postmenopausal women with abnormal bleeding. *J Obstet Gynaecol* 2004; 30:27–33.
- Bonnamy L, Marret H, Perrotin F, Body G, Berger C, Lansac J. Sonohysterography: a prospective survey of results and complications in 81 patients. *Eur J Obstet Gynecol Reprod Biol* 2002; 102:42–47.
- Rogerson J, Bates J, Weston M, Duffy S. A comparison of outpatient hysteroscopy with saline infusion hysterosonography. *BJOG* 2002; 109:800–804.
- ACOG. ACOG Technical Bulletin no. 192. Uterine leiomyomata. *Int J Gynaecol Obstet* 1994; 46:73–82.
- ACOG. ACOG Practice Bulletin no. 16. Surgical alternatives to hysterectomy in the management of leiomyomas. May 2000.
- Society of Obstetricians and Gynaecologists of Canada (SOGC). SOGC Clinical Practice Guideline no. 128. The management of uterine leiomyomas. May 2003.