

IMAGES IN GYN ULTRASOUND

How to identify and localize IUDs on ultrasound

➡ ObGyns—many of whom have access only to 2D ultrasound—are increasingly called upon to determine the positioning, or malpositioning, of the device. Here, an at-a-glance guide for properly placed and malpositioned IUDs.

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Although an ultrasound is not required after uncomplicated placement of an intrauterine device (IUD) or during routine management of women who are doing well with an IUD, it is invaluable in the evaluation of patients who present with pain or other symptoms suggestive of IUD malpositioning.

In this article, we outline the sonographic features of the IUDs available today in the United States and describe the basics of localization by ultrasound.

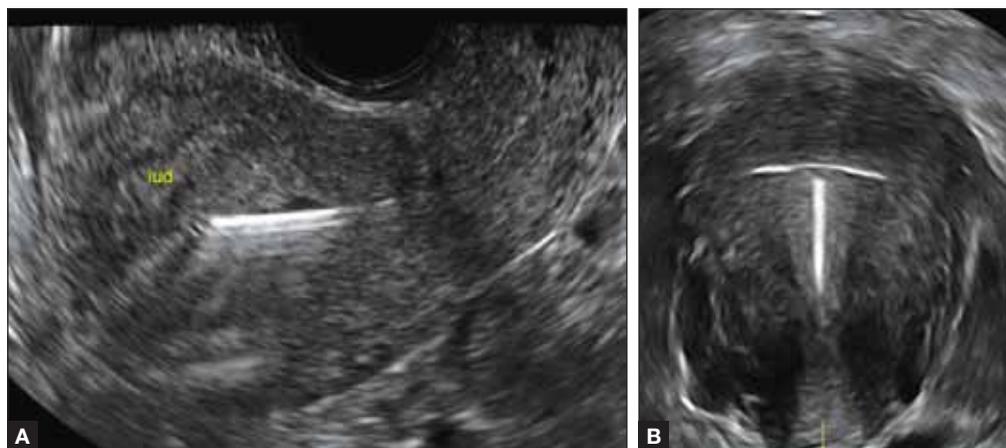
Ultrasound features of IUDs

When positioned normally, an IUD is centrally located within the endometrial cavity, with

ILLUSTRATION: CHRISTY KRAMES FOR OBG MANAGEMENT

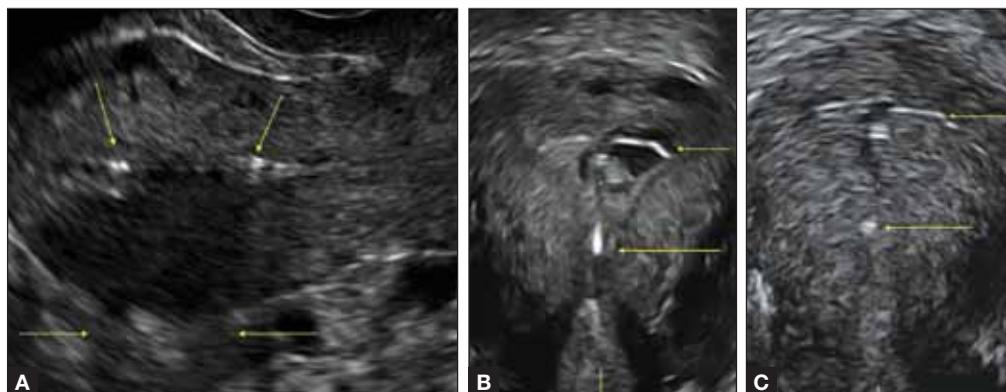
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FIGURE 1 Well-positioned copper IUD



A. 2D (sagittal) and (B.) 3D images show the uniformly echogenic stem.

FIGURE 2 Well-positioned Mirena IUD



Note the echogenic superior and inferior ends of the stem with posterior acoustic shadowing in 2D view (A.) and 3D views (B. and C.).

FAST TRACK

If a patient's IUD cannot be visualized by 3D ultrasound or plain radiography, consider that it may have been expelled

the crossbar positioned in the fundal area.¹ Copper and progestin-releasing IUDs can be identified easily on ultrasound if one is familiar with their basic sonographic features:

- **Copper IUD:** The central stem is uniformly echogenic due to its copper coils (FIGURE 1)
- **Levonorgestrel-releasing intrauterine system (LNG-IUS):** The LNG-IUS consists of a plastic sleeve that contains the progestin and surrounds a central stem. This configuration causes acoustic shadowing and has a characteristic "laminated" sonographic appearance with parallel lines (FIGURE 2). The Mirena IUD has

echogenic arms due to barium sulfate, as well as an echogenic distal tip, with acoustic shadowing from the stem. Skyla is similar except for a highly echogenic silver ring on the stem approximately 3 to 4 mm inferior to the crossbar. On occasion, the echogenic strings of Mirena and Skyla can be mistaken for the device.

Three-dimensional ultrasound is useful in imaging of an IUD. If a patient's IUD cannot be visualized by ultrasound, plain radiography of the kidney, ureter, and bladder may be helpful. If an IUD is not apparent on plain film, consider that it may have been expelled.

CASE 1 Dyspareunia

A patient with a copper IUD reports pain with intercourse. Sagittal and 3D sonographic views show the IUD in the lower uterine segment and endocervical canal. The IUD is removed in the office.



CASE 2 Extrauterine IUD

Upon imaging, a copper IUD is found to be entirely extrauterine, due to perforation, in the region of the right adnexa. The IUD is removed laparoscopically from the right fallopian tube, where it was extruding through the fimbriae.



CASE 3 Incomplete IUD

A patient wishing to conceive requests removal of her copper IUD, which has been in place for 7 years. A non-intact IUD is removed, minus its right arm, which is imaged in the endocervical canal. The fragment can be removed during hysteroscopy or under sonographic guidance.



Potential malpositioning

A malpositioned IUD may be partially expelled, rotated, embedded in the myometrium, or perforating the uterine serosa.

In a retrospective case-control study that compared 182 women with sonographically

identified malpositioned IUDs with 182 women with properly positioned IUDs, Braaten and colleagues found that suspected adenomyosis was associated with malpositioning (odds ratio [OR], 3.04; 95% confidence interval [CI], 1.08-8.52), but a

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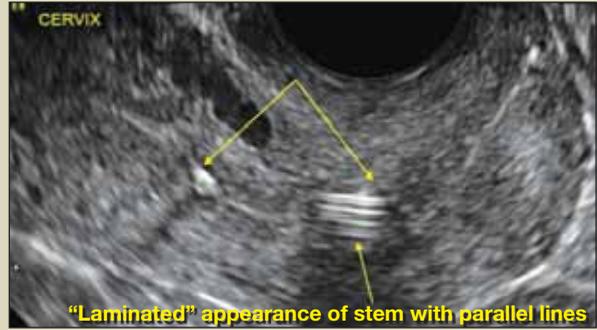
Suspected adenomyosis increases the likelihood of malpositioning

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CASE 4 IUD in lower uterine segment

During imaging, the superior component of the Mirena IUD is found to be in the lower uterine segment, with the inferior component located in the endocervix.



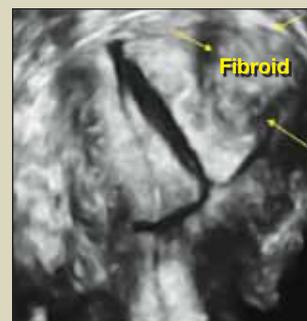
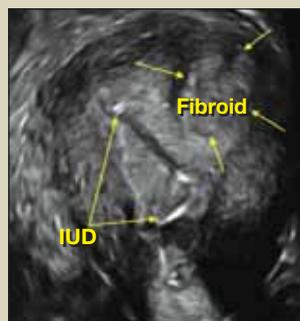
CASE 5 Displaced IUD

A patient with prominent posterior adenomyosis has a Mirena IUD displaced into the cervix. Adenomyosis increases the likelihood of IUD expulsion.⁴



CASE 6 IUD displaced by fibroid

A patient with a malrotated Mirena IUD is found to have a submucosal fibroid, which has displaced the IUD. After removal of the IUD, the fibroid is resected hysteroscopically.



history of vaginal delivery was protective (OR, 0.53; 95% CI, 0.32-0.87).² A distorted uterine cavity also increases the risk of malpositioning.³

Although no uterine perforations were reported in a review of the LNG-IUS,

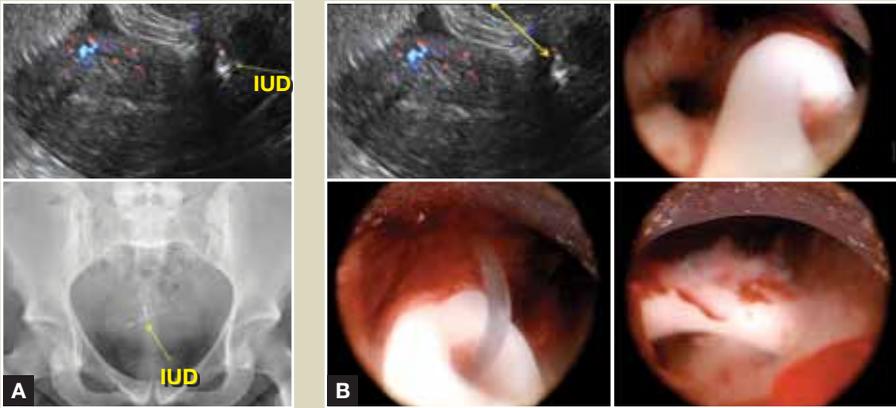
expulsions were reported and may be more common among women who use the IUD for heavy menstrual bleeding.⁴

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CASE 7 Patient referred for additional imaging

A patient who reports dysmenorrhea 2 years after placement of a Mirena IUD brings outside ultrasound and computed tomography (CT) reports that conflict. The ultrasound report says no IUD was found in the uterus, and the CT report says “IUD noted in uterus.” A. Abdominal flat plate radiography and a new transvaginal ultrasound are performed. The IUD is not imaged in the endometrial cavity, but hyperechoic structures are noted in the endocervix. B. A hysteroscopy of the same patient reveals the Mirena IUD curled up with both ends of the crossbar and the inferior end of the stem embedded at the internal cervical os, consistent with the ultrasound imaging. 

ADDITIONAL IMAGES ONLINE

For additional images of malpositioned IUDs, see the Web version of this article at obgmanagement.com

References

1. Peri N, Graha D, Levine D. Imaging of intrauterine contraceptive devices. *J Ultrasound Med.* 2007;26(10):1389-1401.
2. Braaten KP, Benson CB, Maurer R, Goldberg AB. Malpositioned intrauterine contraceptive devices: Risk factors, outcomes, and future pregnancies. *Obstet Gynecol.* 2011;118(5):1014-1020.
3. Braaten KP, Goldberg AB. Malpositioned IUDs: When you should intervene and when you should not. *OBG Manag.* 2012;24(8):39-46.
4. Kaunitz AM, Inki P. The levonorgestrel-releasing intrauterine system in heavy menstrual bleeding: a benefit-risk review. *Drugs.* 2012;72(2):193-215.