



The American College of  
Obstetricians and Gynecologists  
WOMEN'S HEALTH CARE PHYSICIANS

# COMMITTEE OPINION

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## Committee on Gynecologic Practice Long-Acting Reversible Contraception Work Group

*This Committee Opinion was developed by the American College of Obstetricians and Gynecologists' Committee on Gynecologic Practice and the Long-Acting Reversible Contraceptive Expert Work Group in collaboration with committee member David L. Eisenberg, MD, and Expert Work Group members Nichole Tyson, MD and Eve Espey, MD.*

*This document reflects emerging clinical and scientific advances as of the date issued and is subject to change. The information should not be construed as dictating an exclusive course of treatment or procedure to be followed.*

## Clinical Challenges of Long-Acting Reversible Contraceptive Methods

**ABSTRACT:** Long-acting reversible contraceptive methods are the most effective reversible contraceptives and have an excellent safety record. Although uncommon, possible long-acting reversible contraceptive complications should be included in the informed consent process. Obstetrician–gynecologists and other gynecologic care providers should understand the diagnosis and management of common clinical challenges. The American College of Obstetricians and Gynecologists recommends the algorithms included in this document for management of the most common clinical challenges.

### Recommendations

The American College of Obstetricians and Gynecologists makes the following recommendations:

- Routine misoprostol before intrauterine device (IUD) insertion in nulliparous women is not recommended, although it may be considered with difficult insertions.
- When IUD strings are not visualized, pregnancy should be excluded and a backup method of contraception and emergency oral contraceptives (if appropriate) should be recommended until the IUD is confirmed to be properly located in the endometrial cavity.
- Management of the nonfundal IUD varies depending on the position of the device and the patient's symptoms. An IUD located within the cervix is partially expelled; given the increased risk of complete expulsion, the IUD should be removed (and replaced if the patient desires). If the woman is asymptomatic and the IUD is above the internal os, removal of the IUD is more likely to lead to pregnancy than IUD retention.
- If a woman becomes pregnant with an IUD in place, the IUD should be removed if strings are visible or if the IUD is within the cervix.
- Whenever an implant is not palpable, pregnancy should be excluded and the woman should be counseled to use a backup method of contraception until the presence of the implant is confirmed; emergency oral contraceptives, if appropriate, should be recommended.
- When the implant is not palpable, removal should not be attempted until implant location is determined.

The use of long-acting reversible contraception (LARC) has increased in recent years, from 2.4% of all women using contraception in 2002 (1) to 11.6% in 2013 (2). Intrauterine device complications, including uterine perforation and pelvic inflammatory disease, occur in less than 1% of women regardless of age or IUD type. Similarly, implant complications, including hematoma formation, unrecognized noninsertion, and deep insertion leading to removal difficulties, are uncommon (3). As LARC use increases, however, the absolute number

of complications will increase. The purpose of this Committee Opinion is to review the diagnosis and management of LARC clinical challenges and complications not covered in other publications and guidelines. For additional information, see [Practice Bulletin No. 121, Long-Acting Reversible Contraception: Implants and Intrauterine Devices](#) (3) and the Centers for Disease Control and Prevention’s (CDC) *U.S. Medical Eligibility Criteria for Contraceptive Use* ([www.cdc.gov/reproductivehealth/unintendedpregnancy/usmec.htm](http://www.cdc.gov/reproductivehealth/unintendedpregnancy/usmec.htm)).

## Intrauterine Devices

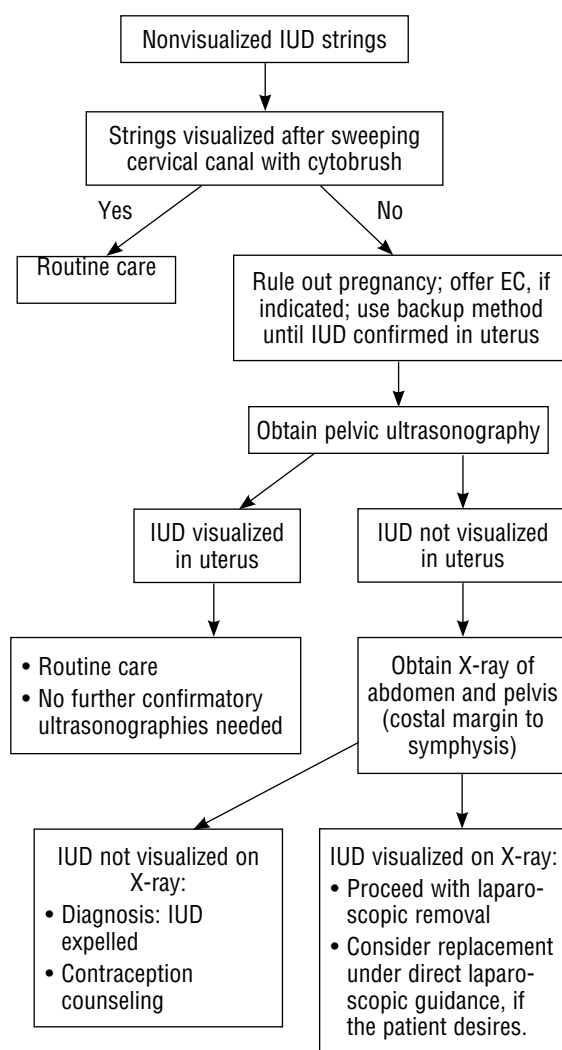
### Pain With Intrauterine Device Insertion

Intrauterine device insertion is painful for many women, particularly nulliparous women; studies have not demonstrated an effective strategy to mitigate this discomfort. Various adjunctive measures for reduction of IUD insertion-related pain have been studied. A 2015 Cochrane Review concluded that lidocaine 2% gel, most nonsteroidal antiinflammatory drugs, and misoprostol for cervical ripening were not effective for reducing pain associated with insertion in nulliparous women (4). In some trials, misoprostol caused nausea and abdominal cramping. Additionally, use of misoprostol requires a delay, which may be a barrier to access. For these reasons, routine misoprostol before IUD insertion in nulliparous women is not recommended, although it may be considered with difficult insertions. Nitroprusside before IUD insertion in nulliparous women was also ineffective in decreasing pain or increasing ease of insertion (5). More research is needed to identify effective options to reduce pain for IUD insertion.

Although a paracervical block has demonstrated effectiveness in other office-based transcervical procedures, its effectiveness in reducing IUD insertion pain is controversial. Studies of paracervical block effectiveness have included nulliparous and parous women. Two randomized studies compared a 10-mL 1% lidocaine paracervical block with no local anesthetic or saline injection before IUD insertion among American women who received the Copper T380a and the 5-year levonorgestrel-releasing IUD (6) and Turkish women who received the Copper T380a (7). Both studies demonstrated a reduction in pain with tenaculum placement after injection of local anesthetic at the tenaculum site. In American women, there were no differences in IUD insertion pain between no treatment and lidocaine paracervical block (6); however, in Turkish women, pain scores were reduced with lidocaine paracervical block, but not with saline or no treatment (7). In two placebo-controlled studies of women undergoing IUD insertion, neither topical nor intracervical 2% lidocaine gel was found to reduce pain compared with placebo gel (8, 9). A meta-analysis of various analgesic measures concluded that lidocaine paracervical block reduces pain scores associated with tenaculum placement and IUD insertion (10).

### Nonvisualized Strings

String retraction into the cervical canal or uterine cavity is the most common reason for “missing” IUD strings (Fig. 1). An endocervical cytobrush sometimes can retrieve strings by simply sweeping them from the cervical canal. Nonvisualized strings also may indicate the uncommon complications of pregnancy, IUD expulsion, or uterine perforation. In one study, 1.2% of women whose IUD strings could not be visualized had confirmed expulsion (11). When IUD strings are not visualized, pregnancy should be excluded and a backup method of contraception and emergency oral contraceptives (if appropriate) should be recommended until the IUD is confirmed to be properly located in the endometrial cavity. If correct intrauterine location is confirmed by ultrasonography, the IUD can be relied on for contraception.



**Figure 1.** Nonvisualized intrauterine device strings. Abbreviations: EC, emergency contraception; IUD, intrauterine device. ↩

### Difficult Removal of Intrauterine Device

When a nonpregnant woman requests removal of an IUD with nonvisualized strings, alligator forceps (Fig. 2), with or without ultrasonographic guidance, can be used to remove the IUD. Before instrumenting the uterus to remove an IUD without visible strings, confirmation of IUD location in the uterus should be demonstrated. Ultrasonographic guidance may be useful to assist with IUD removal. If resistance is encountered during removal or the IUD breaks, hysteroscopy may be performed in the office or in the operating room to facilitate removal. Embedment (IUD penetration into the endometrium or myometrium without extension through the serosa) may be identified on ultrasonography but may not be associated with difficult removal (12).

### Nonfundal Location

Management of the nonfundal IUD varies depending on the position of the device and the patient's symptoms (Fig. 3). The most common locations for nonfundal IUDs are the cervix and lower uterine segment. An IUD located within the cervix is partially expelled; given the increased risk of complete expulsion, the IUD should be removed (and replaced if the patient desires).

Ideal management of low-lying IUDs is less clear; a shared decision-making approach between the patient and the obstetrician-gynecologist or other gynecologic care provider is most appropriate. If the woman is asymptomatic and the IUD is above the internal os, removal of the IUD is more likely to lead to pregnancy than IUD retention. Additional studies are needed to determine whether failure rates of IUDs are higher when the IUD is located in the lower uterine segment and whether there are differences between the copper and hormonal IUD. Given the low rate of initiation of highly effective contraception when low-lying IUDs are removed, retention of a low-lying IUD is associated with lower pregnancy rates than removal (13). Most IUDs that are downwardly displaced but above the level of the internal os (in the lower uterine segment) are not ultimately

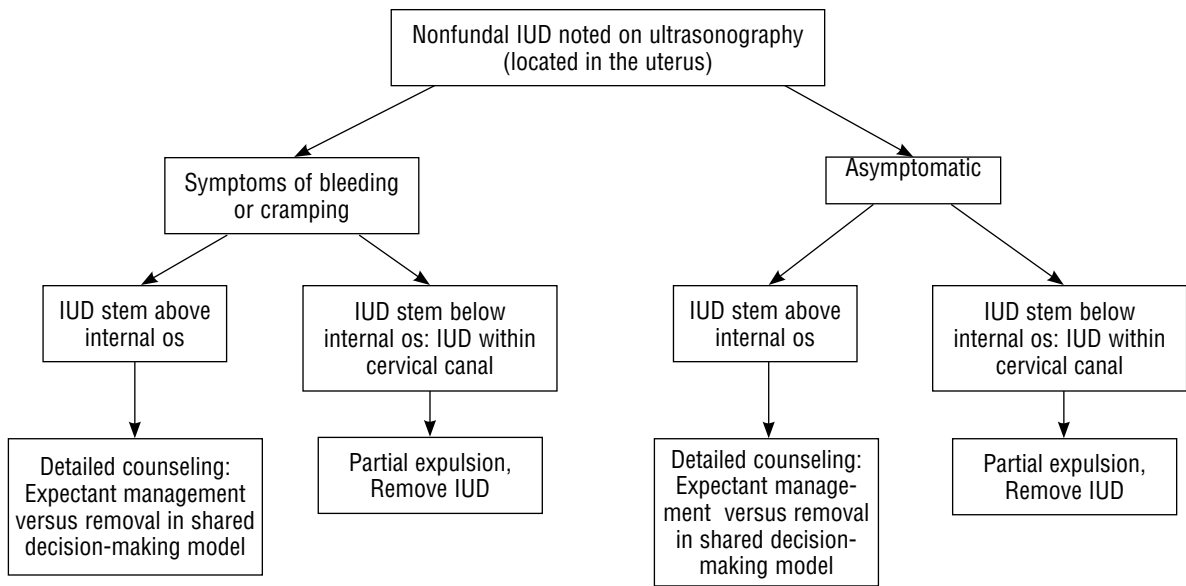
expelled. Removal and replacement of lower uterine segment IUDs to prevent expulsion would result in many unnecessary removals. Additionally, many IUDs that are nonfundal shortly after insertion move to a fundal position within 3 months. (14, 15). If imaging shows an IUD in the lower uterine segment in an asymptomatic woman, expectant management is a reasonable option in the context of shared decision making regarding the risks and benefits of leaving the IUD in this location. The greatest risk of pregnancy may be the unnecessary removal of a nonfundal IUD (13).

### Expulsion

Intrauterine device expulsion occurs in 2–10% of users and varies by IUD type (3). Some unrecognized expulsions are asymptomatic and may result in unintended pregnancy. Reported risk factors for expulsion include age younger than 20 years, heavy menstrual bleeding, and dysmenorrhea (16). Although nulliparity also has been cited as a possible risk factor for expulsion, recent data do not support this finding (17). An analysis of more than 5,000 IUD users 36 months after insertion demonstrated an overall expulsion rate of 10.2 per 100 IUD users; the strongest risk factor for expulsion was younger age (14–19 years) at the time of insertion, with no differences by IUD type or parity (17). Although insertions immediately postpartum and after second trimester abortions have been associated with higher risk of expulsion (3, 5), they are cost effective (18, 19) and decrease the risk of subsequent unintended pregnancy (20). Anatomic distortion of the uterine cavity (eg, a large submucosal leiomyoma) may increase the risk of IUD expulsion. The position of the uterus (anteverted or retroverted) does not affect expulsion rates. Intrauterine device expulsion may be partial—the tip of the IUD extends through the internal os—or complete. If the IUD is palpated or visualized in the cervix, it should be removed and pregnancy ruled out. The woman may opt for another IUD insertion at the same time or opt for another contraceptive method.



**Figure 2.** Alligator forceps. (Reprinted from Monarch Medical Products. Alligator IUD Forceps 8 Inch. Available at: [https://monarchmedicalproducts.com/index.php?route=product/product&product\\_id=262](https://monarchmedicalproducts.com/index.php?route=product/product&product_id=262). Retrieved November 2, 2015.) ◀



**Figure 3.** Management of nonfundal intrauterine device. Abbreviation: IUD, intrauterine device. ↩

### Uterine Perforation

Uterine perforation and extrusion of the IUD into the peritoneal cavity are rare, occurring once in every 1,000 insertions (21). Although significant illness or injury related to intraabdominal IUD location is unusual, case reports of serious complications have been published. Most perforations likely occur at the time of IUD insertion and are asymptomatic (22). Risk factors for perforation include insertion by a less-experienced obstetrician–gynecologist or other gynecologic care provider, postpartum insertion, breastfeeding, and extreme anteversion or retroversion of the uterus (23). A perforated IUD may be free floating in the abdomen or pelvis, encased in adhesions, or adherent to bowel or omentum. The most common management strategy for uterine perforation, recommended by the World Health Organization, is surgical removal preceded by ruling out pregnancy and initiating emergency oral contraception and alternative contraception. Laparoscopic surgery is preferred, but laparotomy may be indicated in the setting of bowel perforation, sepsis, or inability to remove the IUD laparoscopically. Intraoperative fluoroscopy typically is not needed, but sometimes may be necessary to assist with IUD removal. Although a rare occurrence, the location of a perforated IUD may warrant leaving it in place if the surgical risks associated with removal are considered too great for the patient. A new device can be placed under direct laparoscopic guidance, if the patient desires.

### Infections

#### **Pelvic Inflammatory Disease**

Infection after IUD insertion is rare; pelvic inflammatory disease (PID) occurs in up to 1% of users regardless of age

or IUD type (3, 24). Although the risk of developing PID is increased in the first 20 days after IUD insertion, the risk drops to the baseline population risk for the following 8 years (25). Aside from the short-term insertion-related risk, the IUD does not cause PID. Risk of PID is related to a woman’s risk of sexually transmitted infections.

Prophylactic antibiotics at the time of IUD insertion are not recommended (26). Clinicians should screen women for sexually transmitted infections at the time of IUD insertion if recommended per the CDC’s *Sexually Transmitted Diseases Treatment Guidelines* ([www.cdc.gov/std/tg2015/](http://www.cdc.gov/std/tg2015/)) (27).

A woman who develops PID may be treated with the IUD left in situ (3, 28). Outcomes are similar whether the IUD is removed or left in place. A woman diagnosed with PID should be treated with antibiotics according to CDC guidelines (27, 29). If she fails to improve clinically after 48–72 hours, antibiotics should be continued and IUD removal considered (28).

#### **Tuboovarian Abscess**

The CDC does not make recommendations about the management of tuboovarian abscess in a woman with an IUD. There is little evidence on this topic. Current management protocols include inpatient treatment with intravenous antibiotics for tuboovarian abscess with consideration of IUD removal if no clinical improvement.

#### **Vaginosis**

The relationship between bacterial vaginosis and IUD use is unclear. The risk of bacterial vaginosis in IUD users may be slightly increased, but this association may be due to unscheduled bleeding that increases vaginal pH. Irregular bleeding decreases over time, so women may

be informed that the increased risk of bacterial vaginosis may be temporary (30).

### Actinomyces

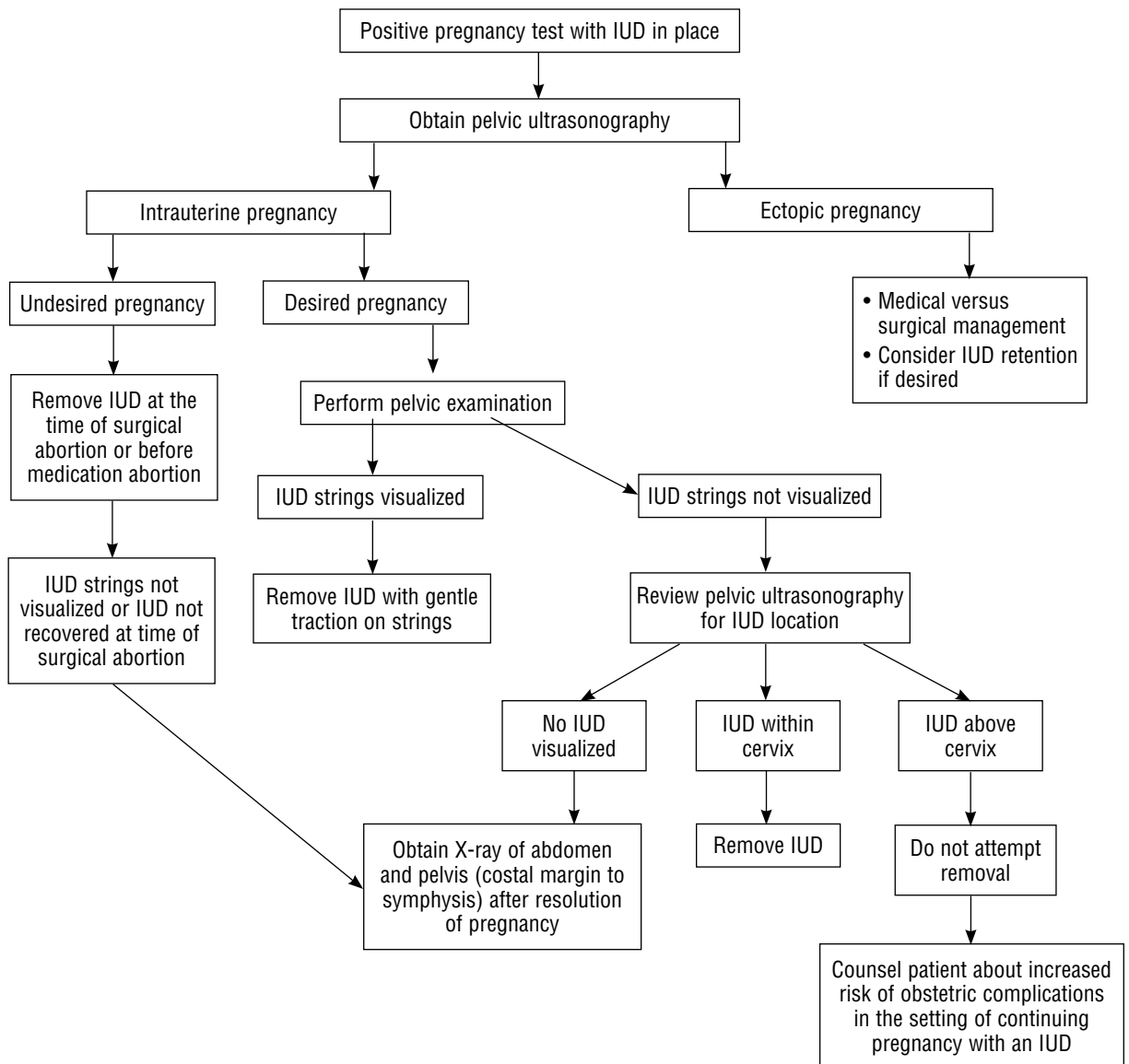
In contrast to the rarity of actinomycosis, a systemic infection associated with *Actinomyces*, approximately 7% of women who use IUDs have *Actinomyces*-like organisms on cytology and are asymptomatic. *Actinomyces* on cytology is considered an incidental finding. In the absence of symptoms, no antimicrobial treatment is needed, and the IUD may be left in place (31).

### Pregnancy and Intrauterine Devices

The cumulative pregnancy risk over 10 years in women who use IUDs is 2%, similar to the risk after tubal ster-

ilization. In the small number of women who become pregnant with an IUD in place, ectopic pregnancy must be ruled out because pregnancies that occur with an IUD in place are more likely to be ectopic.

When an intrauterine pregnancy occurs with an IUD in place, management depends on the woman's desire to continue or terminate the pregnancy, gestational age, IUD location, and whether IUD strings are visible (Fig. 4) (28). The U.S. Food and Drug Administration and the CDC recommend that IUDs be removed from pregnant women when possible without an invasive procedure (3, 28). If a woman becomes pregnant with an IUD in place, the IUD should be removed if strings are visible or if the IUD is within the cervix.



**Figure 4.** Management of intrauterine device when pregnancy occurs. Abbreviation: IUD, intrauterine device. ↩

For women who choose pregnancy termination, the IUD can be removed at the time of surgical abortion and before medication abortion. If a woman decides to continue the pregnancy, she should be counseled regarding the increased risks of spontaneous abortion, infection, and preterm delivery (28). Removing the IUD reduces, but does not eliminate, these risks (32). Figure 4 presents an algorithm for management of an IUD when pregnancy occurs.

## Implant

### Insertion-Related Adverse Events

Complications due to insertion and removal of contraceptive implants are rare. These complications can include pain, paresthesia, bleeding, bruising, infection, and scarring.

#### Infection

Generally, antiseptic technique and covering the insertion or removal site with a sterile bandage can preclude infection. If a woman reports signs or symptoms of infection in the first few days after implant insertion or removal, skin infection must be ruled out. The most common cause of infection is normal skin flora; if needed, antibiotics should cover gram-positive skin flora. If infection does not resolve, it may be necessary to remove the implant.

#### Bruising

Mild bruising after implant placement is common. Rarely, a large hematoma develops. Applying sterile gauze with a pressure bandage for 24 hours may minimize bruising. Discomfort from bruising can be alleviated with ice and antiinflammatory medications.

### Nonpalpable Implant and Deep Insertions

Whenever an implant is not palpable, pregnancy should be excluded and the woman should be counseled to use a backup method of contraception until the presence of the implant is confirmed; emergency oral contraceptives, if appropriate, should be recommended. Reports document failed insertions with the single-rod etonogestrel implant available in the United States. The inclusion of barium in the currently marketed implant allows for easier localization with radiographic techniques.

When the implant is not palpable, removal should not be attempted until implant location is determined. Imaging with high frequency (at least 10 MHz), linear ultrasound probe (used for vascular access and breast biopsies) or magnetic resonance imaging can identify both types of single-rod etonogestrel implants; however, identification can be particularly challenging with the single-rod etonogestrel implant without the added barium if the radiologist is not experienced in the imaging of implants (33). As a result of the barium in the implant, two-dimensional X-ray, computerized tomography scan,

and fluoroscopy can be used to locate the implant, and ultrasonography and magnetic resonance imaging localization also may be used. For women with deep implants, referral to a consultant with experience in deep implant removal, such as a family planning specialist, may be appropriate. When radiologic studies are negative or equivocal, a serum etonogestrel level may be obtained (see the product insert for details at [www.accessdata.fda.gov/drugsatfda\\_docs/label/2016/021529s013lbl.pdf](http://www.accessdata.fda.gov/drugsatfda_docs/label/2016/021529s013lbl.pdf)) to demonstrate the implant is in situ. If the serum assay is negative for etonogestrel, then no implant is present in the woman's body.

If a woman with a nonpalpable implant desires removal, attempt at removal should occur only after the implant has been located through imaging (see Fig. 5). Attempting removal without clearly palpating the implant rarely results in success and can cause neural, muscular, or vascular damage. After confirming location of the implant, removal still may be difficult and should be managed as described in Figure 5.

### Pregnancy and Implants

The risk of pregnancy during contraceptive implant use is very low (less than 1%). When an implant user becomes pregnant, ectopic pregnancy may occur more frequently and should be ruled out. If a woman desires to continue the pregnancy, the implant should be removed and the woman reassured that the implant is not teratogenic (see the product insert for prescribing information at [www.accessdata.fda.gov/drugsatfda\\_docs/label/2016/021529s013lbl.pdf](http://www.accessdata.fda.gov/drugsatfda_docs/label/2016/021529s013lbl.pdf)). If the woman decides to terminate the pregnancy, the implant may be retained for ongoing contraception.

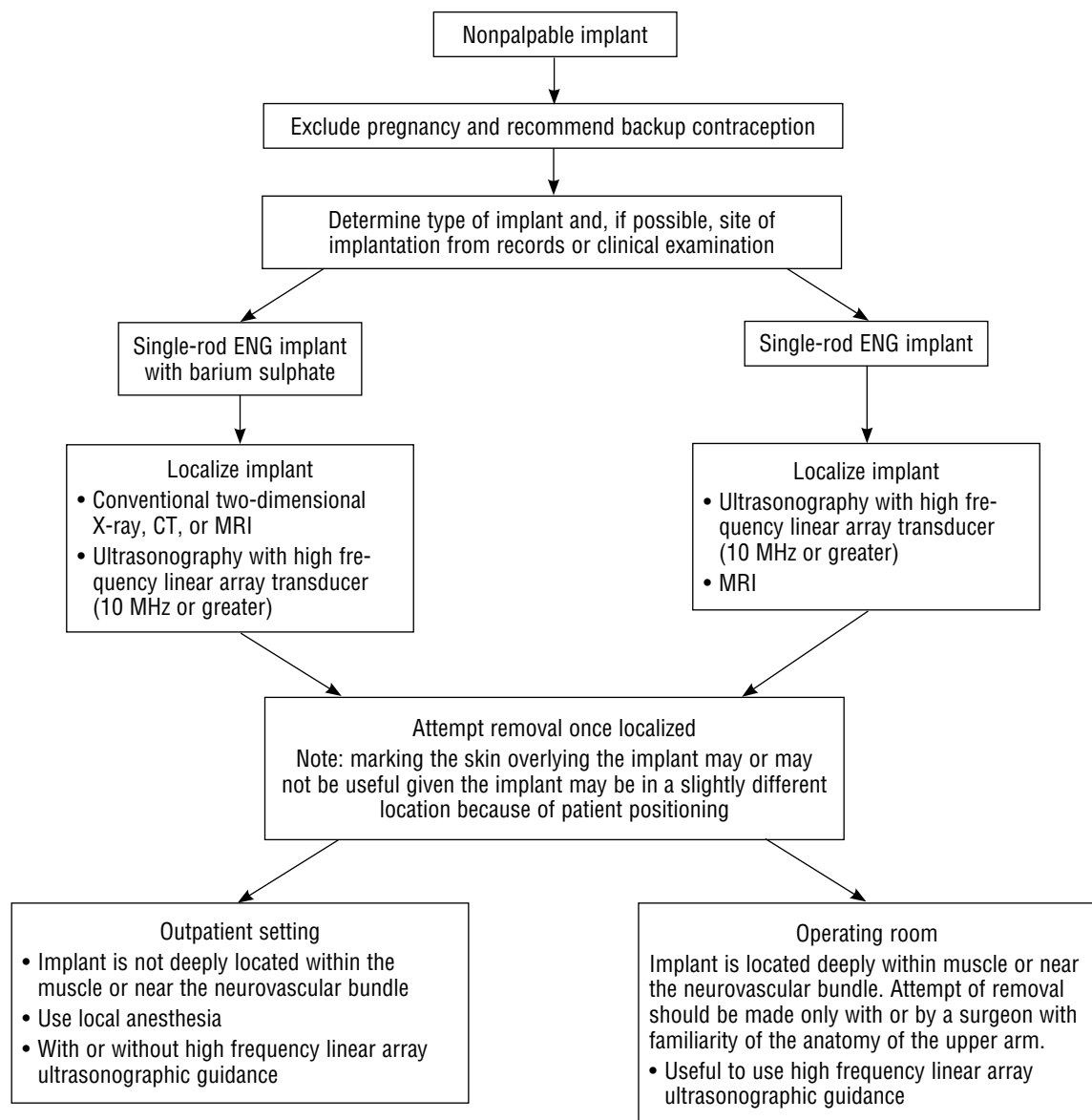
## Conclusions

Long-acting reversible contraceptive methods are the most effective reversible contraceptives and have an excellent safety record. Although uncommon, possible LARC complications should be included in the informed consent process. Obstetrician-gynecologists and other gynecologic care providers should understand the diagnosis and management of common clinical challenges. The American College of Obstetricians and Gynecologists recommends the algorithms included in this document for management of the most common clinical challenges.

## For More Information

The American College of Obstetricians and Gynecologists has identified additional resources on topics related to this document that may be helpful for ob-gyns, other health care providers, and patients. You may view these resources at [www.acog.org/More-Info/LARC](http://www.acog.org/More-Info/LARC) Challenges.

These resources are for information only and are not meant to be comprehensive. Referral to these resources does not imply the American College of Obstetricians



**Figure 5.** Management of nonpalpable implant. Abbreviations: CT, computed tomography; ENG, etonogestrel; MRI, magnetic resonance imaging. ↩

and Gynecologists' endorsement of the organization, the organization's web site, or the content of the resource. The resources may change without notice.

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