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Post-Pregnancy Intrauterine Devices: Strategies for Provision of Services

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Abstract The insertion of an intrauterine device (IUD) immediately following an obstetric event (vaginal delivery, cesarean section, or abortion) has been shown to be safe and effective. Despite its feasibility, however, this procedure is underutilized in the United States. Immediate insertion postpartum and post-abortion removes some of the barriers women face when trying to obtain these highly effective forms of contraception.

Keywords Postpartum intrauterine device · IUD insertion · Post-abortion IUD · Post-placental IUD · Immediate IUD insertion · Post-cesarean IUD · Post-pregnancy IUD · Postpartum IUD

Introduction

The insertion of an intrauterine device (IUD) is routinely performed in the office setting when a practitioner can be reasonably sure a woman is not pregnant [1•]. This is typically referred to as an interval insertion. Traditionally, women who are postpartum or who have undergone an abortion and are interested in an IUD are advised to return to the practitioner's office for a follow-up visit and IUD insertion. However, studies have demonstrated that when women must wait until a subsequent visit for IUD insertion, many do not return and instead rely on less effective forms of contraception [2•, 3•]. The ability to provide immediate postpartum and post-abortion insertion of IUDs leads to increased utilization of long-acting reversible contraception (LARC) methods and reduces the rates of unintended pregnancy [4•, 5•, 6]. This review will focus on the evidence and current best practices for postpartum and post-abortion initiation of IUD use.

The immediate postpartum insertion of an IUD is an underutilized service in the United States [7]. The immediate post-pregnancy period is a uniquely opportune time frame during which to facilitate IUD uptake: women are known not to be pregnant, are often highly motivated to avoid pregnancy, and the postpartum and post-abortion settings are often convenient for both patients and providers [5•, 8]. Practitioners who provide obstetric and abortion care have an important opportunity to offer immediate post-pregnancy IUDs to help women plan or limit future pregnancies.

More than half (51 %) of all pregnancies in the Unites States are unintended, making this one of the highest rates of unplanned pregnancy among developed countries [9, 10]. Many experts in family planning, with increasing support from the published literature, suggest that LARCs, including IUDs and subdermal implants, play a significant role in the effort to reduce the number of unplanned pregnancies and, subsequently, improve maternal and reproductive health [4•, 8, 11]. LARCs have many advantages over the more commonly used contraceptive methods in the Unites States (mainly the oral contraceptive pill and female tubal sterilization) in the areas of safety, efficacy, user acceptability, compliance, and cost effectiveness [12, 13]. Both the American Congress of Obstetricians and Gynecologists (ACOG) and the American Academy of Pediatrics have endorsed LARC devices as first-line methods of contraception for women, including adolescents [8, 14]. The proportion of U.S. women using

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contraception who rely on LARC methods has increased substantially, from 2.4 % in 2002 to 8. 5 % in 2009 [15] However, these numbers are still very low for a "first-line" method. Expanding the opportunities to provide IUDs to women, including immediately postpartum and post-abortion, may allow for greater utilization of this effective method of contraception.

IUDs Available in the U.S

Three IUDs are currently approved by the Food and Drug Administration (FDA) for use in the United States. One device is non-hormonal, the copper T 380A (ParaGard®; Teva Pharmaceutical Industries, Petah Tikva, Israel) and is approved for 10 years of use. In addition, there are two hormone-containing devices: the 52-mg levonorgestrel (LNG)-containing intrauterine system (Mirena®; Bayer HealthCare Pharmaceuticals, Wayne, NJ, USA) which is FDA-approved for five years; and the 13.5-mg LNG- IUD (Skyla®, Bayer HealthCare Pharmaceuticals), which is approved for three years of use.

Post-Placental IUD Insertion

Safety

The *U.S. Medical Eligibility Criteria for Contraceptive Use, 2010* (US MEC) is a set of guidelines developed by the Centers for Disease Control and Prevention (CDC) that give evidence-based recommendations regarding the safety of using a particular contraceptive method for women with various medication conditions. Recommendations are classified using categories from 1 through 4. Methods within the Category 1 group are considered safe to use, with no restrictions. With Category 2 methods, the advantages are deemed to outweigh the theoretical or proven risks, and the method is safe to use, whereas with Category 3, the risks generally outweigh the advantages, and use of the method should be avoided. For methods classified as Category 4, the level of risk is considered unacceptable risk, and the method should not be used [16•]. For both breastfeeding and non-breastfeeding postpartum women, including those post-cesarean, the US MEC places no restrictions on the use of a copper IUD (Cu-IUD) if placed less than 10 minutes after delivery of the placenta (US MEC Category 1). The LNG-IUD is classified as Category 2, if placed within 10 minutes after delivery of the placenta. In this instance, the Category 2 designation is based on a lack of data rather than a real or theoretical concern for safety associated with placement of the device [16•]. If placement of either IUD occurs after this 10-minute window, but less than 4 week postpartum, device insertion is categorizes as Category 2 [16•]. The primary reason for this distinction in timing is that studies have shown higher IUD expulsion rates if the device is inserted more than 10 minutes after the placenta is delivered [17–19].

The safety and feasibility of immediate insertion of IUDs postpartum has been evaluated by multiple research groups around the world. However, most of those data are from non-U.S. studies where the types of IUDs studied are not used in the United States [20]. The most recent Cochrane review, which was published in 2010, reviewed nine randomized controlled trials and concluded that IUD insertion was safe but that expulsion rates were higher for IUDs placed immediately postpartum as compared to interval insertion [21•]. Reported expulsion rates in these cases varied widely, from 5 to 24 % [3•, 20, 22]. Adverse events, including infections, were rare [20, 21•].

A recent randomized controlled trial conducted in the U.S. compared immediate postpartum insertion (within 10 minutes of delivery of the placenta) of the 52-mg LNG-IUD with delayed insertion (6–8 weeks postpartum) [3•]. This trial once again demonstrated the safety and feasibility of immediate postpartum LNG IUD insertion. Over 98 % of the patients randomized to immediate insertion were able to receive the IUD immediately post-placental delivery, and there were no IUD perforations or infections noted. The expulsion rate was higher for immediate versus delayed insertion (24 % vs. 4.4 %, $p=0.008$). However, despite the higher rate, IUD use at 6 months was equal between the two groups (84.3 % in the immediate group versus 76.5 % in the delayed group, $p=0.32$) [3•]. Importantly, among patients desiring an IUD who were screened but were ineligible for trial enrollment (but who were eligible for later insertion), only 26.8 % returned for interval IUD insertion. Together, the high IUD use at 6 months and the poor follow-up for IUD insertion among study-ineligible patients suggest that immediate post-placental insertion, despite the higher expulsion rate, may be of great benefit, particularly for patients unable to return for delayed insertion.

The safety and feasibility of post-placental IUD insertion at the time of cesarean delivery has also been well documented [18, 20, 23•]. Two recent systematic reviews of post-cesarean IUD insertion identified five studies that directly compared insertions after cesarean versus vaginal deliveries [20, 23•]. The expulsion rates in each of the five studies were lower in the case of cesarean deliveries. A large multi-center prospective cohort study in Mexico compared 554 women who received an IUD immediately post-cesarean delivery with 804 women who had immediate IUD insertion after vaginal delivery. The 3-month cumulative expulsion rate was 10.9 % post-cesarean delivery and 16.4 % post vaginal delivery ($p<0.05$) [24].

Eligibility

There are very few medical restrictions for the use of either the Cu-IUD or the LNG-IUD. Women who are immediately postpartum (after either vaginal or cesarean delivery) who desire

an IUD for postpartum contraception are generally eligible. Contraindications to immediate postpartum insertion of either device include chorioamnionitis, mucopurulent discharge (or other evidence of current infection), puerperal sepsis, severe postpartum hemorrhage, and cavity-distorting uterine anomalies [8, 16•]. Table 1 outlines a more complete list of conditions under which the use of IUDs either carries unacceptable risk or is generally not recommended, according to the US MEC, regardless of postpartum status [16•].

Technique

There are limited data describing the ideal method for insertion of an IUD immediately postpartum. After delivery of the placenta and routine obstetric evaluation for postpartum hemorrhage, the physician should confirm with the patient that she still desires the IUD. The vagina should be prepped with an antiseptic, and attention should be paid to ensuring a sterile technique. A speculum may or may not be required to visualize the cervix. A ring forceps can be placed on the anterior lip of the cervix to help guide the IUD to the fundus. IUDs have been inserted using the manufacturers' inserters, ring forceps, special postpartum IUD forceps, and by hand [25–27]. Regardless of the method used, high fundal placement is recommended in order to decrease the risk of expulsion [28]. After the IUD is placed through the cervix, the non-dominant hand can be placed on the abdomen, just above the pubic bone, to elevate the uterus and extend the lower uterine segment. This can be helpful when passing the IUD through the vagino-uterine angle to reach the fundus [27]. Some providers may find it helpful to use ultrasound guidance to verify proper fundal placement, but ultrasound is not a necessary component of insertion [26]. Special attention should be given to ensure release of the IUD strings from the insertion device (inserter, forceps, or hand) when removing it from the uterus, as this may pull the IUD into the lower uterine segment. After the IUD is placed at the fundus, the strings can be trimmed at the level of the external os [27]. It is important to educate patients on the signs and symptoms of IUD expulsion and that follow-up after insertion can be an opportunity to ensure correct placement of the IUD. In addition, as the uterus involutes after delivery, the IUD strings in the vagina can lengthen, causing the patient to feel uncomfortable.

Follow-up

Appropriate follow-up for post-placental IUD insertion has not been evaluated in clinical trials. The *U.S. Selected Practice Recommendations for Contraceptive Use* (US SPR) states that routine follow-up after interval IUD insertion in not required, but that special populations may benefit from more frequent follow-up visits [1•]. The routine postpartum visit (4–8 weeks) may be a convenient time for IUD follow-up, and can provide an important opportunity to evaluate for IUD expulsion. ACOG has suggested that patients could be seen 1–2 weeks after postpartum insertion for trimming of the

Table 1 Conditions for which the use of levonorgestrel-containing (LNG-IUD) or copper-bearing (Cu-IUD) intrauterine devices represents unacceptable health risks (4) or generally should not be used (3), according to the *U.S. Medical Eligibility Criteria for Contraceptive use, 2010* (US MEC)

Condition*	LNG-IUD	CU-IUD	Condition*	LNG-IUD	CU-IUD
Puerperal Sepsis	4	4	Systemic lupus erythematous WITH positive (or unknown) antiphospholipid antibodies	3	1
Immediate post-septic abortion	4	4	Severe thrombocytopenia	2	3(I) 2(C)
Unexplained vaginal bleeding (prior to evaluation)	4(I) 2(C)	4(I) 2(C)	Current and history of ischemic heart disease	2(I) 3(C)	1
Cervical cancer (awaiting treatment)	4(I) 2(C)	4(I) 2(C)	Migraine with aura	2(I) 3(C)	1
Endometrial cancer	4(I) 2(C)	4(I) 2(C)	Gestational trophoblastic disease with decreasing or undetectable β-hCG levels	3	3
Anatomic abnormalities distorting the uterine cavity	4	4	AIDS	3(I) 2(C)	3(I) 2(C)
Current pelvic inflammatory disease (PID)	4(I) 2(C)	4(I) 2(C)	Severe cirrhosis	3	1
Current purulent cervicitis of chlamydial infection or gonorrhea	4(I) 2(C)	4(I) 2(C)	Hepatocellular adenoma	3	1
Pelvic tuberculosis	4(I) 3(C)	4(I) 3(C)	Malignant hepatoma	3	1
Gestational trophoblastic disease with persistently elevated β-hCG levels or malignant disease	4	4	Complicated solid organ transplant	3(I) 2(C)	3(I) 2(C)

*For certain conditions, the safety of initiating (I) use of an IUD for women suffer from that condition may differ from continuing (C) IUD use if she develops that condition while she is using the IUD. Thus, for these conditions, the US MEC gives two separate recommendations: one for initiation (I) and one for continuation (C) of the use of an IUD.

IUD strings [8]. When the strings are long, either the IUD is in the correct place and the lengthening is due to uterine involution, or the IUD is partially expelled. If the IUD stem is visible or palpable, the IUD is partially expelled and should be removed. It can be replaced immediately with a new IUD if the patient desires. In cases where partial expulsion is not certain, a transvaginal ultrasound may be useful. If the IUD is fully within the uterine cavity, it is effective and should be left in place. If part of the IUD is in the cervical canal, it is likely less effective and should be removed [29].

Post-Abortion IUD Insertion

Half of all women presenting for an abortion in the U.S. have experienced a previous abortion [30], and immediate post-abortion IUD insertion has been shown to reduce the rates of repeat abortions [4•, 31]. In the first or second trimester, abortions can be performed either medically or surgically. In the case of medical abortions performed during this time, IUDs can be safely inserted during a scheduled follow-up visit once it has been confirmed that the abortion is complete [32]. One recent observational study followed 118 women who underwent IUD insertions at their scheduled follow-up appointment 14 days or less after a medical abortion (using a mifepristone and misoprostol regimen). The investigators reported an expulsion rate of 4.1 % during 3 months of follow up, and there were no cases of infection, perforation, or other adverse events [32]. IUD insertion immediately post-surgical abortion will be addressed in the following sections.

Safety

The US MEC classifies both LNG-IUD and Cu-IUD insertion immediately after a first-trimester abortion as Category 1. Given the concern for higher expulsion rates, insertion immediately after a second-trimester abortion is classified as Category 2 [16•]. In a recent U.S.-based multi-center trial, 575 women were randomized to either immediate or delayed (2–6 weeks) IUD insertion after a first-trimester abortion. Of those in the immediate group, all were able to have IUD inserted , while only 71.3 % of the delayed group had an IUD inserted [2•]. The expulsion rate for the immediate group was higher but statistically non-inferior to the delayed-insertion group (5.0 % vs. 2.7 %, respectively). IUD use at 6 months was significantly higher for women in the immediate versus delayed group (92.3 % vs. 76.6 %, $p<0.001$). There were no uterine perforations reported in either group, and there were no significant differences in any adverse event, including risk of infection [2•]. In a 2012 clinical trial, 88 women were randomized to either immediate or delayed insertion of the LNG-IUD at the time of a second-trimester abortion, between 15 and 23 weeks. Investigators found no difference in expulsion rates between the immediate and delayed groups (6.8 % and 5.0 %, respectively), no difference in infection (0 vs. 1 case, respectively, $p=0.43$), and no adverse events [33]. These randomized controlled trials confirmed findings previous studies that immediate post-abortion IUD insertion in the first or second trimester is safe and feasible, and provides patients with immediate access to highly effective contraception [2•, 34•, 35].

Eligibility

Women who desire an IUD for contraception after either first- or second-trimester abortion are generally eligible for immediate insertion. In addition to the above-stated contraindications for post-placental IUD insertion, contraindications unique to the post-abortion setting include hemorrhage, confirmed or suspected uterine perforation, and septic abortion [16•, 33]. In addition, for women with certain medical conditions, independent of post-abortion status, the use of an IUD either carries an unacceptable level of risk or is generally not recommended Table 1 outlines a list of these conditions.

Technique

Insertion of either the Cu-IUD or LNG- IUD after a first-trimester abortion is similar to routine interval insertion. When all products of conception are removed and the patient's bleeding is normal, the cervix is cleaned with an antiseptic, and the IUD can be inserted in the standard fashion using the manufacturer's inserter [2•, 36]. The IUD strings should be trimmed 2–3 cm from the external cervical os [12].

IUD insertion immediately following second-trimester surgical abortion can be accomplished with transabdominal ultrasound guidance. For the Cu-IUD, a sterile ring forceps can be used to place the IUD at the fundus. For the LNG-IUD, the prepackaged inserter can often be used, although in some cases a sterile ring forceps may be helpful to navigate the IUD to the fundus. The IUD strings can be trimmed at the level of the external cervical os [33, 36].

Follow-up

Routine post-abortion follow-up is typically recommended 1–2 weeks after the procedure [37]. Given the US SPR advice that no routine follow-up is needed after IUD insertion, it seems reasonable to conclude that no additional routine follow-up is needed for women who receive an IUD post-abortion. At the routine post-abortion follow-up, providers may consider performing an examination to check for the presence of the IUD strings [1•]. However, patients should be counseled to monitor for signs and symptoms of expulsion, including heavy bleeding and pain, and to return at any time to discuss side effects or other method-related problems [1•].

Barriers to Post-Pregnancy IUD Insertion in the United States

While immediate post-pregnancy IUD insertion is a common practice in many areas of the globe, in the Unites States it remains relatively rare [7]. Several factors have been proposed that may contribute to this low use. In the U.S., both public and private insurance companies have historically combined services related to pregnancy care, often referred to as a global fee or global billing. Under this system, providers are not reimbursed for additional procedures such an IUD insertion, and this likely discourages the practice. In addition, providers may continue to hold misconceptions about risks of infection and other adverse events with IUD use, perhaps leading to fewer providers who are willing to routinely offer IUDs post-pregnancy. These factors, and potentially others, contribute to the dearth of trained providers and the limited use of post-placental IUDs in the U.S. However, the growing recognition of the high safety, efficacy, and user satisfaction of modern IUDs has led to increased use and an interest in both post-placental and post-abortion insertion [15]. States and insurers have begun to revise their reimbursement policies for immediate post-placental IUD insertion, allowing for policies that promote the practice [38].

Insurance coverage for post-abortion IUD insertion is complex, given the rapidly changing set of state and federal laws around providing abortion services [39]. In many settings, these laws have severely limited women's access to government funding for contraception that would have allowed them to receive an IUD at the time the abortion was performed. Instead, women are often required to go to a separate facility or to return at a later date to receive and initiate a preferred method of contraception. As this represents a medically unnecessary delay, and restricts abortion care, ACOG is opposed to these types of laws [40]. Special grants and private insurance companies in some states may provide coverage for IUD insertion at the time of abortion for some patients. However, due to fluctuations in laws and funding, coverage may be limited and difficult to find.

Conclusions

Post-placental and post-abortion IUD insertion is safe, and provides patients with a highly effective form of reversible contraception. While immediate insertion postpartum and following a second-trimester abortion likely have higher expulsion rates than traditional "interval" insertions, the practice have many potential benefits. Women who receive their IUDs immediately post-pregnancy tend to have higher rates of IUD use at 6 months than women who are asked to wait and return at a later time, and thus are at less risk of unintended pregnancy. Facilitating postpartum and post-abortion initiation of IUD use has the potential to increase the number of women who receive their preferred method of contraception, and may greatly aid in the efforts to reduce rates of unintended pregnancy in the Unites States.

Compliance with Ethics Guidelines

Conflict of Interest Erin Berry-Bibee and Eva Lathrop each declare that they have no conflict of interest.

Human and Animal Rights and Informed Consent This article does not contain any studies with human or animal subjects performed by any of the authors.

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