Postpartum intrauterine devices: clinical and programmatic review

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The immediate postpartum period is a critical moment for contraceptive access and an opportunity to initiate long-acting reversible contraception, which includes the insertion of an intrauterine device. The use of the intrauterine device in the postpartum period is a safe practice with few contraindications and many benefits. Although an intrauterine device placed during the postpartum period is more likely to expel compared with one placed at the postpartum visit, women who initiate intrauterine devices at the time of delivery are also more likely to continue to use an intrauterine device compared with women who plan to follow up for an interval intrauterine device insertion. This review will focus on the most recent clinical and programmatic updates on postpartum intrauterine device practice. We discuss postpartum intrauterine device expulsion and continuation, eligibility criteria and contraindications, safety in regards to breastfeeding, and barriers to access. Our aim is to summarize evidence related to postpartum intrauterine devices and encourage those involved in the healthcare system to remove barriers to this worthwhile practice.

Key words: contraception, intrauterine device, postpartum

The immediate postpartum period is a critical moment for contraceptive access and an opportunity to initiate long-acting reversible contraception (LARC). Women who are known to not be pregnant and who have ready access to their obstetrical providers are often highly motivated to avoid another pregnancy and are likely to have insurance coverage. Yet, despite this fortuitous arrangement of essential factors for contraceptive access, as many as 62% of women globally have an unmet need for contraception in the postpartum period.[1] A short interval between births has been associated with increased risk for maternal and infant morbidity and death.[2-5] For this reason the American College of Obstetricians and Gynecologists (ACOG) and the World Health Organization (WHO) recommend pregnancy spacing of at least 6−24 months between a delivery and next conception; women who are not using reliable contraception in the extended postpartum period often conceive much sooner.[6,7] Even waiting to address contraception until the first postpartum visit can be problematic, because ovulation can resume soon after delivery, yet more than one-half of women report unprotected intercourse before the 6 week postpartum visit,[8] and nearly 40% of women do not ultimately attend a postpartum visit.[6]

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In the most recent Practice Bulletin on LARC, ACOG supports immediate postpartum LARC insertion (ie, intrauterine device [IUD] before hospital discharge) as a best practice, recognizing its role in preventing rapid repeat and unintended pregnancy.[9] However, rates of postpartum IUD insertion remain low in the United States, with recently published estimates of a national sample at fewer than 10 postpartum IUD insertions for every 10,000 deliveries, as compared with 683 tubal sterilizations for every 10,000 deliveries.[10] This review will focus on the most recent clinical and programmatic updates on postpartum IUD practice. We will discuss postpartum IUD expulsion and continuation, eligibility criteria and contraindications, safety in regards to breastfeeding, and barriers to access. Our aim is to summarize evidence related to postpartum IUDs and encourage those involved in the healthcare system to remove barriers to this highly worthwhile practice.

Expulsion and Continuation

The use of the postpartum IUD began internationally in the 1960s; however, the use of this contraceptive approach slowed in the 1980s after a multinational trial by the WHO was stopped because of IUD expulsions that exceeded the predetermined termination index of 20%.[11,12] In addition, the 1970−1980s lawsuits related to the Dalkon Shield IUD and associated infections created a lasting clinical and cultural fear of IUDs for decades to come.[13,14] More recently, there has been a resurgence of interest and research into IUD use in general and in postpartum IUD use specifically. Expulsion remains a primary variable of interest in studies of the postpartum IUD that is balanced by an evaluation of IUD continuation, which may be the more clinically relevant outcome. When accounting for expulsions, requested removals, and reinsertions of IUDs in the postpartum period, many studies show high rates of continuation, despite expulsions. In a metaanalysis that was included in the most recent Cochrane review of immediate postpartum IUDs, IUD expulsion by 6 months was more likely for women who were assigned randomly to the immediate insertion group in which IUDs were placed within 10 minutes of placental delivery (17%), compared with those women assigned

randomly to receive the IUD at the postpartum visit (3%; odds ratio, 4.89; 95% confidence interval, 1.47−16.32).[15] However, IUD use at 6 months was also more likely in the immediate insertion group compared with the standard insertion group (81% vs 67%; odds ratio, 2.04; 95% confidence interval 1.01−4.09).[15] A shift from focusing exclusively on expulsion rates to a broader view of IUD continuation in general has allowed for expansion of postpartum IUD research and services in recent years.

Postpartum IUD expulsion risk is postulated to be affected by features inherent in the insertion process. Many elements of insertion have been investigated with the aim of reducing expulsion rates, including insertion technique, insertion at the time of vaginal or cesarean delivery, and insertion timing relative to delivery. IUD insertion can be accomplished with the use of a number of techniques that include forceps (standard ring forceps or the Kelly placental forceps), the insertion device from the manufacturer, or the hand of the obstetrics provider. Recently, a dedicated postpartum IUD insertion instrument has been developed and tested.[16,17] An IUD can be placed subsequent to both vaginal and cesarean deliveries. In addition, IUD insertion can occur at different times relative to delivery: (1) "postplacental" IUD insertion, with the patient still in the delivery room (commonly described as insertion within the first 10 minutes after placental delivery) or (2) an "immediate postpartum" insertion, generally meaning placement after delivery room departure but within 48 hours of delivery.

The issue of expulsion itself is challenging because of inconsistent study designs, definitions, and whether it is a meaningful clinical or programmatic outcome. Expulsion was identified historically by patient report or on clinical examination. Given ultrasound use in more recent studies as well as more active clinical follow-up evaluation, the categories of complete and partial expulsion have been used to differentiate between an IUD that has expelled completely vs one that is visible in the cervix. The clinical utility of the identification of partial expulsions remains unclear, as does the appropriate management.

Insertion technique

Each of the various insertion techniques has benefits and limitations, and they have been studied primarily with the goal of minimizing expulsion rates. The manual insertion technique, where the provider's hand attempts to deliver the IUD to the uterine fundus, is simple and intuitive. It does not require additional equipment, which makes it appealing in low resource settings. However, because a hand is larger than forceps, the patient may experience more discomfort, particularly if she does not have effective anesthesia. In addition, without adequate personal protective equipment, the provider may be at increased risk of infectious exposures. Conversely, insertion of an IUD with the use of forceps or a dedicated inserter may be more comfortable for a woman and may be associated with less exposure risk to the provider. Finally, the insertion of an IUD at any time other than postplacental, the contraction, and the immediate involution of the uterus may preclude the ability for a provider to use his/her hand to place the device. In regards to expulsion, Xu et al[18] found that there was no difference in expulsion rates between devices placed by the manual method and the forceps method. Additionally, in a recent study that compared the use of the dedicated insertion device with the forceps insertion technique, there was no comparative difference between complete expulsion rates for these 2 insertion methods.[19]

The use of ultrasound to guide the postpartum IUD insertion has also been explored. Although ensuring that an IUD reaches the fundus may theoretically help with device retention, the impact of ultrasound use in ensuring fundal placement and on subsequent outcomes has not been studied specifically. In 1 trial that evaluated the position of an IUD at 24-48 hours after placement, the position of the device within the uterus before hospital discharge was not associated with subsequent expulsion, because some fundal-placed devices were expelled ultimately and some lower-lying devices were retained.[20] Thus, without studies that will assess specifically the value of ultrasound relative to expulsion or continuation, its utility at time of insertion cannot be determined.

Vaginal or cesarean delivery

Studies consistently have demonstrated lower expulsion rates with IUDs placed during a cesarean delivery compared with vaginal delivery.[21,22] There is no clear reason for this difference, but it may be related to true fundal IUD position at insertion, to the fact that the uterus is more contracted after cesarean deliveries than within 10 minutes of a vaginal delivery, or to the increased likelihood of a less dilated cervix at the time of delivery.

Timing of insertion

In an effort to determine whether expulsion rates are related to insertion timing, Chi et al[12] investigated the insertion of the Lippes Loop D and the Copper T-220 IUDs (neither of which are in current use) at 2 defined time points: during and after the first 10 minutes after placental delivery. They concluded "immediate insertions (within 10 minutes after placenta delivery) are possibly associated with lower expulsion rates than later insertions (eg, 2−72 hours after placental delivery)." Based on this study's findings and with expulsion rates as the only outcome of interest, subsequent research and many guidelines have incorporated the "postplacental" 10-minute window approach.[23]

Physiologically, there is biologic plausibility that the larger the uterus at the moment of insertion and the more open the cervix, the more likely an IUD is to expel. This relationship can be seen clearly when considering the range of expulsion rates that have been seen in studies when IUDs are placed at a time point unrelated to pregnancy (0−4%),[24-27] after a first trimester abortion (2−5%),[28,29] after a second trimester abortion (3−7%),[29-31] after a cesarean delivery when the uterus is also more contracted and the cervix is often