



Guideline

Society of Family Planning clinical recommendations: contraception after surgical abortion

Andrea Hsu Roe^a, Deborah Bartz^{b,*}^a Department of Obstetrics and Gynecology, Penn Medicine, 3400 Spruce Street, Philadelphia, PA 19104, USA^b Department of Obstetrics, Gynecology, and Reproductive Biology, Brigham and Women's Hospital, Harvard Medical School, 75 Francis Street, Boston, MA 02115, USA

ARTICLE INFO

Article history:

Received 11 July 2018

Received in revised form 22 August 2018

Accepted 29 August 2018

Keywords:

Postabortion contraception

Contraception

Short-acting reversible contraception

Long-acting reversible contraception

Intrauterine device

Surgical abortion

ABSTRACT

These recommendations present an evidence-based assessment of provision of contraceptives at the time of surgical abortion. Most methods of contraception, including the intrauterine devices (IUD), implant, depot medroxyprogesterone injection, oral contraceptive pill, contraceptive patch, monthly vaginal ring, barrier methods and some permanent methods, can be safely initiated immediately after first- or second-trimester surgical abortion. Provision of postabortion contraceptives, particularly IUDs and implants, substantially reduces subsequent unintended pregnancy. IUD insertion immediately following uterine aspiration is safe. While this may be associated with a higher risk of device expulsion than with interval placement, expulsion rates remain low, and this risk must be weighed against the fact that patients often do not receive their desired IUD at an interval insertion and therefore experience higher rates of subsequent unintended pregnancy. Many patients experience barriers that prevent access to the full spectrum of postabortion contraceptive options, particularly IUDs and implants. Advancements in health-systems-based point-of-care provision and policies are needed to improve comprehensive contraceptive availability following surgical abortion. These recommendations will address clinical considerations for postabortion contraceptive provision and recommend interventions to improve contraceptive access following uterine evacuation.

© 2018 Elsevier Inc. All rights reserved.

Background

Ovulation can occur as early as 10 days after surgical abortion [1], and more than 80% of women ovulate within 1 month of a first-trimester surgical abortion [2]. Fifty-one percent of women report having intercourse within 2 weeks after an abortion [3]. Since both ovulation and sexual activity resume quickly, women should be offered the opportunity to discuss contraception if they wish to avoid future pregnancy [4–6]. Women with one unintended pregnancy are at risk for a subsequent unintended pregnancy; subsequent abortion accounts for 45% of all abortions in the United States [7], between 20% and 60% of abortions in the European Union [8,9] and 50% in parts of Asia [10]. Women seeking a subsequent abortion are as likely as [11] or more likely than [12,13] women seeking a first abortion to have been using a contraceptive method at the time of conception but are more likely to have used less-effective methods or to have used their method inconsistently [14,15].

The abortion visit is an optimal time to initiate use of effective contraceptives. The provider can be sure that a woman who has had a surgical abortion is no longer pregnant once uterine evacuation is complete and products of conception are confirmed in the evacuated tissue. The

woman, after experiencing an unintended pregnancy resulting in abortion, may feel an urgent need to avoid a subsequent pregnancy and to leave her abortion appointment with a contraceptive method [16,17]. Many women prefer to receive contraceptive services in the reproductive care setting of abortion clinics rather than at other health care facilities [16]. For women who do not regularly seek or have access to gynecologic or preventive health services, the abortion visit may be one of their only interactions with the health care system and an important opportunity to discuss contraception. Thus, abortion care providers are uniquely positioned to offer counseling on and provision of contraceptives, and these services should be integrated into the surgical abortion counseling and visit. These recommendations provide the evidence for incorporation of contraceptive counseling and provision into the context of first- and second-trimester surgically induced abortion.

Clinical questions

1. How should contraceptive counseling be performed at the time of abortion?

Contraceptive education and counseling should be integrated into the abortion care of women who would like to prevent pregnancy

* Corresponding author.

E-mail address: info@societyfp.org (D. Bartz).

(GRADE 1C) [4,5]. At a minimum, women should be made aware of the imminent return of their fertility and of the contraceptive methods available on the day of abortion. Many women find contraceptive counseling in the abortion setting acceptable: In a large, population-based study of 211,215 women receiving surgical and medical abortion in the United Kingdom, 85% of women accepted contraceptive counseling, which followed a shared decision-making approach, and most of these women then chose to receive a method of contraception from the clinic [18]. In the general population, high-quality interpersonal communication may influence uptake of highly effective contraceptives and continuation of those methods at 6 months [19,20]. This level of patient–provider interaction may be particularly essential in the abortion care setting, where patients are significantly more likely to report a desire for autonomous decision making about contraception than about other health care needs [21].

Motivational interviewing (MI) is a patient-centered counseling approach that uses open-ended questions, reflective listening and patient empowerment to develop a collaborative dialog between clinician and patient and to tailor motivation for behavioral change [22]. Motivational interviewing has been adapted for education about contraception in the abortion setting and has been found to be feasible, acceptable and helpful for continuation of use of effective contraceptives in patients at risk for subsequent pregnancy (GRADE 1B) [23,24]. In a feasibility study assessing this approach, counselors inquired into the level of importance the patient placed on avoiding pregnancy, discussed the patient's contraceptive history and current priorities, and reviewed contraceptive method options. Method effectiveness was emphasized [23]. This collaborative counseling method was tested in a 1:1 pilot randomized controlled trial [24] in which 60 women were randomized to either nonstandardized contraceptive counseling or contraceptive counseling incorporating MI techniques. MI was associated with greater satisfaction: 92.0% of women who received MI vs. 65.4% in the control arm reported being satisfied with their counseling ($p=.04$). Longer-term contraceptive use and satisfaction beyond 4 weeks were not measured. Those who received the MI intervention were also twice as likely as control subjects to obtain a highly effective method, such as an intrauterine device (IUD) or implant, within 4 weeks of the abortion (65.5% vs. 32.3%, $p=.01$), although more women in the intervention group than in the control group had considered an IUD or implant at baseline prior to counseling.

Other studies of contraceptive counseling prior to abortion show mixed effects on contraceptive initiation. Standardization with structured counseling on all methods utilizing a visual aid developed by the World Health Organization [25] or a video that promoted awareness of IUDs and implants [26] resulted in no difference in contraceptive uptake or method choice. A systematic review of periabortion counseling models showed no effect on subsequent unintended pregnancy, although the sample size of studies was small and heterogeneous [27].

Time and patient stress levels may limit the length and depth of contraceptive counseling in the abortion setting. In one study, women were surveyed prior to their counseling and their abortion procedure. Sixty-four percent reported that they did not want to talk to a counselor or physician about contraception; half of these women stated that they already knew which method they wanted [28]. In another study, women who had received an IUD at the time of their abortion were surveyed 2–3 months later. Many of these women were not able to recall important IUD-related counseling information [29].

Appropriate counseling at the time women seek abortion services involves acknowledging that contraception may not be a current priority for some patients. Frequently, obtaining abortion services requires overcoming stressors and barriers that may leave patients fatigued, frustrated and vulnerable on the day of abortion. Some women report feeling pressure from providers to choose a birth control method at the time of abortion [16,30]. Clinicians should respect patient

autonomy, including the choice to not adopt a contraceptive or to choose a less-effective method, and take care to avoid contraceptive coercion [31–33].

2. Which short-acting reversible contraceptive methods can be initiated after surgical abortion?

Any short-acting contraceptive method may be started immediately after first- or second-trimester surgical abortion (GRADE 1B). The Centers for Disease Control's US Medical Eligibility Criteria (US MEC) for Contraceptive Use categorize the hormonal injection, pill, patch and ring under Category 1 for use immediately after an abortion as long as the patient has no medical conditions that contraindicate use [34].

Barrier and spermicidal methods

Abstinence (“pelvic rest”) is often recommended for approximately 1 week following a surgical abortion. The rationale for this practice is that it might minimize the risk of excess bleeding and infection; however, there is no scientific evidence to support this one way or the other. Once patients resume intercourse, spermicide and barrier methods such as diaphragms, male and female condoms, cervical caps and sponges may be used. Providers can recommend and distribute these methods at the time of abortion.

Diaphragms are available in two forms: a round silicon device that is individually fit and a single-size, “one size fits most” device (Caya®). Diaphragms may be initiated immediately after abortion; however, patients may prefer to delay fitting to avoid discomfort. In addition, a new fitting would be required 2 weeks after abortion, once cervical changes of pregnancy have regressed (GRADE 2B) [35]. Devices such as the Caya® diaphragm or the FemCap® cervical cap have not been studied specifically within the context of surgical abortion, but given that they are nonfitted, they can be initiated immediately after first- or second-trimester abortion. The cervical cap is available in three sizes: 22 for nulligravid women, 26 for women with a history of any pregnancy but no vaginal delivery and 30 for women who have had a vaginal birth; the appropriate size should be selected for a woman initiating the cervical cap after surgical abortion.

Emergency contraception

At the time of abortion, advance provision of a prescription for ulipristal acetate or levonorgestrel emergency contraception has been shown to significantly improve emergency contraception use outside abortion care settings (GRADE 2C) [36].

Injectable contraception

Depot medroxyprogesterone acetate (DMPA) is an intramuscular or subcutaneous injection administered every 12–14 weeks and can be initiated immediately after the first- or second-trimester surgical abortion procedure [37]. DMPA has lower continuation rates than IUDs and implants in the US: 26%–54% at 1 year (though higher, 69%, with self-administration) [38,39]. Continuation rates may be even lower when this method is initiated immediately after abortion, with only 22% of women continuing postabortion DMPA at 1 year and up to 22% experiencing new pregnancy within 1 year (GRADE 1A) [37].

Contraceptive pill, patch and ring

The progestin-only pill, combination estrogen and progestin contraceptive pill, monthly vaginal ring and transdermal patch can be safely initiated on the day of a first- or second-trimester surgical abortion (GRADE 1B) [34,40–42]. Although there are no comparative studies of immediate postabortion initiation of combined hormonal contraception, extensive clinical experience supports this practice, and the US MEC classifies first- and second-trimester abortion as category 1 for these methods [34]. While coagulation factors increase with initiation of combined oral contraception after surgical abortion, this has not been shown to be clinically significant [43]. Best estimates suggest that the incidence of

pulmonary embolism is 10–20 per 100,000 abortions; this rate is lower than the incidence of pulmonary embolism after third-trimester delivery, which is fewer than 50 per 100,000 [44,45]. Therefore, estrogen-containing contraception may be used immediately after first- or second-trimester surgical abortion unless prohibited by other medical conditions [34]. Extrapolating from the data on combined hormonal contraceptives [40–42] and the safety data regarding progestin-only pills after third-trimester delivery [46], progestin-only contraceptive pills are assumed to be safe to start immediately after first- and second-trimester surgical abortion.

The use of combined oral contraceptives immediately after surgical abortion is associated with fewer bleeding days following recovery than nonuse [42]. The monthly vaginal ring, when inserted within 5 days of surgical abortion, had no serious adverse events, including no lower or upper genital tract infections on follow-up over the 3 months after abortion [47].

The newly approved annual combined hormonal vaginal ring has not yet been studied after surgical abortion.

3. Can permanent contraception procedures be performed immediately after surgical abortion?

Tubal ligation through laparoscopy or minilaparotomy can be safely performed at the same time as first- and second-trimester surgical abortion (GRADE 2C) [48–50]. Hysteroscopic sterilization should be delayed for at least 6 weeks after interruption of pregnancy to allow time for the endometrial repair needed to adequately visualize the bilateral tubal ostia (GRADE 2C) [51].

In an effort to curtail the practice of involuntary sterilization and coercion among disenfranchised populations in the United States, the federal government enacted a law in 1978 that instated waiting periods, typically 30 days, and specific consent forms for women receiving federal assistance funding for sterilization. As a consequence of this law, women relying on federal funding are prohibited from consenting for sterilization if they are “[s]eeking to obtain or obtaining an abortion at the time of sterilization” [52]. Some states have extended this restriction to women with private insurance as well. A decision analysis estimated the impact of this law in Oregon and found that for every 1000 women who desire but cannot obtain concurrent sterilization with abortion, there would be more than 1200 additional unintended pregnancies, more than \$4 million in additional direct medical costs and a loss of 40 quality-adjusted life years [53].

Therefore, the ability to offer a permanent contraceptive method at the time of an abortion procedure depends on patient insurance and federal and state law. For eligible women who desire sterilization at the time of surgical abortion, providers must also discuss reversible contraceptive alternatives and counseling on the risk of regret, which has been reported to be the same for permanent contraception procedures performed concurrently with surgical abortion and those performed separately [54]. Specialized abortion clinics within the United States are rarely set up to provide sterilization at the time of abortion. This may be more feasible practice in private gynecology practice or in locations where waiting periods are not required.

4. Which long-acting reversible contraceptive methods can be initiated after surgical abortion?

Any long-acting contraceptive method may be started immediately after first- or second-trimester surgical abortion (GRADE 1A). According to the US MEC, levonorgestrel (LNG-IUD) and copper (Cu-IUD) intrauterine devices and subdermal implants are approved for use immediately after abortion as long as the patient has no medical conditions or surgical complications that contraindicate use [34].

Intrauterine devices

LNG-IUDs and Cu-IUDs are highly effective contraceptive methods with 0.2% and 0.8% typical-use failure rates, respectively [38]. Both IUD

types can be safely inserted immediately after surgical abortion with low risk of bleeding, pain and infection (GRADE 1A) [55,56]. IUD insertion adds minimal time and discomfort to the procedure because the cervix is already dilated. Advantages and risks of IUD insertion immediately after abortion are reviewed in detail below. In a study of women receiving the Cu-IUD immediately or 2 weeks after first-trimester surgical abortion, cramping and bleeding length and severity did not differ by timing of insertion [57]. Postabortion continuation does not differ for LNG-IUDs versus Cu-IUDs. Amenorrhea, number of spotting days and hemoglobin levels were higher in the LNG-IUD group than in the Cu-IUD group when those methods were placed immediately postabortion [58].

Subdermal implant

The etonogestrel-releasing subdermal implant boasts the highest effectiveness of any contraceptive method, with typical-use failure rates of 0.05% per year [38]. The implant is placed in the upper arm, and therefore, surgical abortion does not alter the logistics or risks of the insertion process, though sedation provided during the abortion procedure may ease insertion-related discomfort. We are not aware of any data regarding how placement of the implant affects bleeding patterns following abortion.

5. What are the advantages of providing immediate postabortion IUDs and implants?

Up to half of women who have an abortion will not start or will discontinue short-acting methods, such as oral contraceptives, within the first two 2 months after their procedure [59]. The risk of subsequent unintended pregnancy with immediate postabortion initiation of IUDs and implants was lower than with interval initiation (GRADE 1A) [60–63] or with postabortion initiation of less-effective methods (GRADE 1A) [64–66]. In a large retrospective cohort study, 673 women who received an IUD immediately after surgical abortion were compared with 1346 date-matched controls who also had a surgical abortion but initiated another form of contraception (not including the implant); the rate of subsequent abortion over a 3-year follow-up period was more than twice as high in the control group as in the study group (15.3% vs. 6.1%, $p < .001$) [64]. Both a large prospective study ($n = 510$) [65] and a retrospective study ($n = 4698$) [66] of postabortion patients in New Zealand confirm the public health benefits of postabortion IUDs and implants; women who chose these methods at the time of surgical abortion had significantly lower rates of subsequent unintended pregnancy and abortion than women who chose short-acting contraceptive methods.

Women are more likely to initiate use of an IUD or implant if they are available immediately after abortion (GRADE 1A). In a randomized trial of immediate versus delayed postabortion implant initiation, the placement rate was 100% for those who were offered the method immediately after abortion and 42.7% for those who were offered it later ($p < .01$) [67]. In a randomized trial of immediate versus delayed postabortion IUD initiation, 90.1% of those randomized to immediate placement, but only 29.5% of those randomized to delayed placement, received the IUD [61]. Only one third to one half of women who intend to return for interval IUD placement after abortion do so [63,68,69]. In a retrospective study of first-trimester surgical abortion patients in a New York City academic practice, IUD and implant use at 12 months increased from 11% to 46% after immediate postabortion IUD and implant provision was introduced ($p < .001$) [63]. In a second retrospective cohort study from an Oregon abortion clinic, only 19% of women who intended to have an interval IUD insertion actually returned by 6 weeks after their abortion, and 32% returned by 6 months [68]. Lack of time or lack of ability to return for a follow-up appointment were the primary barriers to interval IUD placement in this study [68]. Same-day access is an important factor in preventing future unintended pregnancy: immediate postabortion DMPA initiation was significantly

superior to delayed IUD initiation at preventing unintended pregnancy in the 12 months following surgical abortion [69].

For women who receive immediate postabortion IUDs and implants, method satisfaction and continuation rates are high (GRADE 1B) [67,70–72]. In two prospective studies, the subdermal implant continuation rates at 12 months were similar for women who had the implant placed immediately after abortion and women who had an interval placement [70,72].

Logistically, immediate postabortion placement of an IUD or implant obviates the need to rule out a new pregnancy as is necessary during an interval insertion visit. Eliminating the diagnosis of a new pregnancy prior to interval placement of an IUD or implant can be challenging because of variable return to ovulation and the persistence of positive pregnancy tests after pregnancy termination. Inability to rule out a new pregnancy may further delay IUD or implant initiation and increase the risk of a subsequent unintended pregnancy [73]. Intrauterine device insertion adds minimal time and discomfort to the surgical abortion procedure. Any local or systemic anesthesia provided for the abortion also benefits the IUD insertion.

From an economic perspective, immediate postabortion initiation of an IUD or implant can result in significant public health cost saving (GRADE 1C) [74]. In one analysis, immediate postabortion IUD placement was more effective than interval IUD placement in preventing future direct costs of contraceptive- and pregnancy-related care, saving public health programs \$111 per patient per year. After accounting for the public health insurance that a patient would become eligible for with a subsequent pregnancy, the cost savings amounted to \$4296 over the 5-year life of an IUD [75].

6. What are the risks of providing immediate postabortion IUDs and implants?

The subdermal implant does not raise concerns specific to postabortion initiation. However, the postabortion provision of an IUD needs to be considered in relation to potential risks related to placement at the time of abortion.

Expulsion

Because the cervix is dilated and uterine tone is greater following surgical abortion, there is concern that IUD expulsion occurs more readily after postabortion placement than after interval insertion. While IUD expulsion after postabortion placement is not common, the overall rate may be higher than that after interval insertion (GRADE 2A). In a randomized controlled trial by Bednarek and colleagues [60], 575 women seeking first-trimester aspiration for termination or miscarriage were randomized to immediate or delayed (2–6 weeks postprocedure) insertion of the IUD of their choice: LNG-IUD or Cu-IUD. After 6 months, the expulsion rate was 5.0% in the immediate group and 2.7% in the delayed group ($p=.19$). In a retrospective analysis of 2172 IUD insertions over a 3-year period at a California abortion clinic, rates of expulsion were 2.1% for women who received an IUD immediately after their abortion and 0.7% for women who had an interval insertion [76].

In this same retrospective analysis, the risk of IUD expulsion associated with second-trimester abortion was significantly higher than the risk associated with first-trimester abortion (7.0% vs. 1.6%, $p=.02$) [76]. In a small randomized controlled trial, 88 women undergoing second-trimester dilation and evacuation had an LNG-IUD expulsion rate of 6.8% after immediate postabortion insertion; this was not statistically significantly different from the 5.0% expulsion rate following delayed IUD insertion experienced by women in the same study [77]. Prospective studies of immediate postabortion IUD insertion suggest a trend toward greater risk of expulsion with increasing gestational age, although the differences were not statistically significant: 0.8%–2.0% after first-trimester abortion and 3%–7% after second-trimester abortion [78,79]. The US MEC reflects these differing

expulsion risks by designating first-trimester abortion as category 1 for IUD initiation and second-trimester abortion as category 2 [34]. Expulsion rates after both first- and second-trimester abortion are lower than expulsion after third-trimester postplacental insertion, which can occur in 10%–27% of cases [80].

Patients should be counseled about the possible increased risk of expulsion for IUDs placed immediately after abortion. For most patients, the convenience and effectiveness of immediate postabortion IUD insertion will outweigh a minor increase in expulsion risk. The absolute risk of expulsion after first-trimester surgical abortion remains low. From a public health standpoint, regardless of the expulsion risk, IUD placement at time of surgical abortion ultimately results in a significantly higher rate of IUD initiation for those who desire this method and a significantly lower risk of subsequent unintended pregnancy [60–63].

Pelvic infection

Pelvic infection is uncommon after surgical abortion, and as evidenced by two systematic reviews, immediate postabortion IUD insertion does not appear to increase this risk [55,56]. In a large randomized controlled trial [60], pelvic infection rates within 6 months of IUD insertion were statistically similar for the immediate postabortion insertion arm and the delayed insertion arm (1.9% and 1.6%, respectively, $p=.76$). All patients in the study were screened for *Chlamydia trachomatis* prior to uterine aspiration, and only 1 of the 10 women who subsequently developed pelvic infection had been diagnosed with *Chlamydia*.

To minimize the risk of an upper genital tract infection following postabortion IUD insertion, standard practice for infection prevention at the time of surgical abortion should be followed. The Society of Family Planning recommends universal antibiotic prophylaxis prior to the surgical abortion procedure, as well as screening for *Chlamydia* and gonorrhea in abortion patients who are younger than 25 or are otherwise at increased risk for sexually transmitted infection [81].

Perforation

Myometrial softening during pregnancy may contribute to perforation resulting from IUD placement after delivery [82]. Studies of immediate and delayed IUD insertion after abortion have not reported perforations in either group, and the absolute risk of perforation after postabortion IUD placement is very low [55,56,60,83]. Ultrasound guidance during postabortion IUD insertion may further minimize the risk of perforation.

Contraindications to providing immediate postabortion IUDs

Postabortion IUD insertion should be avoided in the setting of septic abortion (GRADE 1C) [84]. It is also reasonable to defer insertion in the event of a surgical complication at the time of abortion, such as uterine perforation, atony or heavy bleeding, because IUD placement may exacerbate these conditions or complicate postoperative assessment. Furthermore, continued postprocedural atony and heavy bleeding may increase the risk of IUD expulsion or the need to remove the IUD in the setting of reaspiration.

7. How can health systems facilitate provision of immediate postabortion contraception?

A large national cross-sectional study showed that 96% of US abortion clinics incorporate contraceptive counseling into abortion care and that many are able to provide women with short-acting reversible contraception [85]. However, there are significant barriers to provision of IUDs and implants at many clinics (GRADE 1B) [86,87]. In a survey of National Abortion Federation member facilities, 36% provide immediate postabortion IUDs and 17% provide postprocedure implants, with the highest rates noted in states with contraceptive coverage mandates or Medicaid family planning

expansion programs [87]. From the perspective of clinics, the high cost of these contraceptive devices, reimbursement restrictions on contraceptive provision within abortion care and high patient volume that requires efficient flow can all negatively affect access to IUDs and implants at the time of surgical abortion [86,88,89]. Most women pay out of pocket for their abortion care and therefore may not be able to afford the additional cost of an IUD or implant on the same day as the procedure [90], and for women whose procedure is covered by private insurance or Medicaid, additional services are often not included. These restrictions on reimbursement to abortion providers results in denial of postabortion contraception, which in turn increases subsequent unintended pregnancy rates.

Progressive changes to clinic policy and national and local reproductive health care law can improve access to contraceptives. Clinic-based initiatives such as rigorous staff training in contraceptive counseling and IUD and implant placement [76,90,91] (GRADE 1B) and simplified STI screening protocols [76] (GRADE 1C) have increased access to IUDs and implants and decreased pregnancy rates. Other clinic-based initiatives that may improve contraceptive provision include adjusting patient flow to allow for improved preprocedure contraceptive counseling and ability to place IUDs and implants at time of procedure [88] and conducting educational outreach via phone, text or e-mail prior to the clinic appointment to aid decision making [92–94].

When patients are offered immediate postabortion IUDs and implants at no cost, they are significantly more likely to select these methods [95]. Therefore, expansion of contraceptive insurance coverage, under the Affordable Care Act or through other funding initiatives, gives patients a wider range of contraceptive options at the time of their abortion. As postabortion IUD and implant placement becomes more common, Medicaid and other insurance plans may improve reimbursement models by designating specific billing codes for postabortion insertions.

8. Which methods of postabortion contraception are appropriate for adolescents?

Adolescents are more likely than adult women to become pregnant while using contraceptives; in the first year of reversible contraceptive use, the failure rate is 13% for women younger than 20 and 8% for women older than 30 [96]. Adolescents may safely initiate any contraceptive method immediately after their abortion [96,97] (GRADE 1A). However, while only 11% of adolescents who initiate such short-acting hormonal methods as the pill, the patch, the ring and the injection continue to use these methods after 1 year [98–100], 82%–86% of those who start an IUD or implant continue to use these methods after 1 year [99]. In a recent meta-analysis examining social and reproductive predictors of multiple pregnancies among general adolescent populations [101], use of an IUD or implant was the most influential factor in reduction of subsequent pregnancy (pooled odds ratio, 0.19; 95% confidence interval, 0.08–0.45) (GRADE 1A). However, young women may be less aware than older women of the option of IUDs and implants for contraception [102]. Since adolescents have high fertility rates and since IUDs and implants are effective and safe for young, nulliparous women, adolescents presenting for abortion should be offered and counseled on IUDs and implants in addition to other methods [103].

Conclusions

There is good and consistent evidence that initiation of a contraceptive method immediately after surgical abortion reduces the risk of future unintended pregnancy. This is true regardless of the method of contraception adopted. Hormonal methods of contraception have been used widely immediately after surgical abortion. Despite the lack of formal comparative studies, there is no evidence of any harmful effect

of immediate use of hormonal contraceptives. Immediate use of all short-acting forms of combined and progestin-only hormonal contraceptives after surgical abortion at any gestational age meets the criteria for Category 1 in the US MEC. The use of implants and IUDs has been examined in formal studies of safety, which show no increase in adverse events after immediate postabortion initiation. IUDs can be safely placed at the time of surgical abortion and do not increase the risk of infection or perforation. IUD expulsion rates are significantly higher after second-trimester surgical abortion than after first-trimester surgical abortion, but expulsion rates after first-trimester surgical abortion may not differ significantly from interval placement. Continuation rates of IUDs and implants placed immediately after abortion are high.

Recommendations

The following recommendations are based primarily on good quality scientific evidence:

- All reversible hormonal contraceptive methods can be started immediately after first- or second-trimester surgical abortion (GRADE 1A).
- Women who desire an IUD or implant should be offered placement at the time of abortion (GRADE 1A).
- Adolescents can safely initiate any reversible contraceptive, including IUDs and implants, at the time of abortion (GRADE 1A).

The following recommendations are based primarily on moderate- or low-quality scientific evidence:

- Dedicated contraceptive counseling at the time of abortion can improve contraceptive use. Patient-centered approaches, such as MI, may be the most successful approach (GRADE 1B).
- Staff training in contraceptive counseling and IUD placement and simplified STI screening protocols are associated with increased access to IUDs after abortion (GRADE 1B).
- Permanent contraception via laparoscopy or minilaparotomy can be provided immediately after abortion (GRADE 1C).

The following recommendations are based primarily on consensus and expert opinion:

- IUD insertion should be deferred in the setting of septic abortion or such abortion complications as hemorrhage or perforation (GRADE 1C).

Recommendations for future research

- Methods of periabortion contraceptive counseling that balance contraceptive use and reproductive autonomy
- Optimal timing of periabortion contraceptive counseling
- Approaches to contraceptive counseling for adolescents
- Initiation of barrier methods, fertility-tracking applications and the annual vaginal ring after surgical abortion
- Clinic-based, local, state and federal initiatives that expand access to the full range of contraceptive options on the day of surgical abortion
- Factors that influence expulsion of IUDs placed immediately after abortion

Sources

The authors used the following search terms in the Ovid MEDLINE databases to identify relevant references published from 1946 to 2017:

contraception counseling, patient-centered counseling, motivational interviewing + contraception, induced abortion + contraception, post-abortion contraception, combined hormonal contraception, contraceptive patch, contraceptive ring, sterilization, intrauterine devices, contraceptive implant, intrauterine device expulsion, abortion + contraception provision, adolescent contraception. Search terms were used singly and in combination with each other to optimize the search. English- and Spanish-language abstracts were reviewed and relevant articles obtained. Authors used similar search terms in PubMed to identify articles in press. Authors used the citations within those references to supply additional sources for review.

Intended audience

This guideline is intended for members of the Society of Family Planning and other health care professionals who are involved in the counseling and provision of contraceptive or abortion care. This document may also serve as a resource for health care advocates, clinics or institutions, and insurance companies in determining policies regarding periabortion contraception provision. The purpose of this document is to review the medical literature evaluating contraceptive management following surgical abortion with suction curettage. Although this evidence-based review can be used to guide medical decision making, it is not intended to dictate care.

Authorship

This Clinical Recommendation was prepared by Andrea Hsu Roe, M.D., M.P.H., and Deborah Bartz, M.D., M.P.H., and was reviewed and approved by the Board of the Society of Family Planning.

Conflict of interest

Andrea Hsu Roe, M.D., M.P.H., and Deborah Bartz, M.D., M.P.H., report no relevant conflicts of interest with industry. The Society of Family Planning receives no direct support from pharmaceutical companies or other industries.

References

- Boyd Jr EF, Holmstrom EG. Ovulation following therapeutic abortion. *Am J Obstet Gynecol* 1972;113:469–73 [Evidence Grade: II-2].
- Lahteenmaki P, Luukkainen T. Return of ovarian function after abortion. *Clin Endocrinol* 1978;8:123–32 [Evidence Grade: II-2].
- Boesen HC, Rorbye C, Norgaard M, Nilas L. Sexual behavior during the first eight weeks after legal termination of pregnancy. *Acta Obstet Gynecol Scand* 2004;83:1189–92 [Evidence Grade: II-2].
- Health worker roles in providing safe abortion care and post-abortion contraception. Geneva, Switzerland: World Health Organization; 2015 http://www.who.int/reproductivehealth/publications/unsafe_abortion/abortion-task-shifting/en/. Accessed date: 22 November 2017.
- World Health Organization. Family planning: a global handbook for providers: evidence-based guidance developed through worldwide collaboration: Johns Hopkins Ccp-Info; 2007.
- Lule E, Singh S, Chawdhury SA. Fertility regulation behavior and their behavior and their costs: Contraception and unintended pregnancies in Africa and Eastern Europe and Central Asia. Washington, DC: World Bank; 2007.
- Jones R, Jerman J, Ingerick M. Which abortion patients have had a prior abortion? Findings from the 2014 U.S. Abortion Patient Survey. *J Womens Health* 2018;27(1):58–63 [Evidence Grade: II-2].
- Heikinheimo O, Gissler M, Suhonen S. Age, parity, history of abortion and contraceptive choices affect the risk of repeat abortion. *Contraception* 2008;78:149–54 [Evidence Grade: II-2].
- Gissler M, Fronteira I, Jahn A, Karro H, Moreau C, Oliveira da Silva M, et al, The REPROSTAT Group. Terminations of pregnancy in the European Union. *BJOG* 2012;119:324–32 [Evidence Grade: II-2].
- Nobuhiro K. Evaluation of abortion in Nghe An province. *JICA* 2000 [Evidence Grade: II-2].
- Fisher WA, Singh SS, Shuper AP, Carey M, Otchet F, MacLean-Brine D, et al. Characteristics of women undergoing repeat induced abortion. *CMAJ* 2005;172:637–41 [Evidence Grade: II-2].
- Cameron ST, Glasier A, Chen ZE, Johnstone A, Dunlop C, Heller R. Effect of contraception provided at termination of pregnancy and incidence of subsequent termination of pregnancy. *BJOG* 2012;119:1074–80 [Evidence Grade: II-2].
- Westfall JM, Kallail KJ. Repeat abortion and use of primary care health service. *Fam Plann Perspect* 1995;27:162–5 [Evidence Grade: II-2].
- Jones RK, Singh S, Finer LB, Frohworth LF. Repeat abortion in the United States. New York: Guttmacher Institute; 2006 [Evidence Grade: II-2].
- Jones RK, Frohworth L, Moore AM. More than poverty: disruptive events among women having abortions in the USA. *J Fam Plann Reprod Health Care* 2013;39(1):36–43 [Evidence Grade: II-2].
- Kavanaugh ML, Carlin EE, Jones RK. Patients' attitudes and experiences related to receiving contraception during abortion care. *Contraception* 2011;84(6):585–93 [Evidence Grade: II-2].
- Madden T, Secura GM, Allsworth JE, Peipert JF. Comparison of contraceptive method chosen by women with and without a recent history of induced abortion. *Contraception* 2011;84(6):571–7 [Evidence Grade: II-1].
- Aiken A, Lohr PA, Aiken CE, Forsyth T, Trussell J. Contraceptive method preferences and provision after termination of pregnancy: a population-based analysis of women obtaining care with the British Pregnancy Advisory Service. *BJOG* 2016;124(5):815–24 [Evidence Grade: II-2].
- Dehlendorf C, Henderson JT, Vittinghoff E, Grumbach K, Levy K, Schmittlief J, et al. Association of the quality of interpersonal care during family planning counseling with contraceptive use. *Am J Obstet Gynecol* 2016;215(1):78.e1–9 [Evidence Grade: II-2].
- Abdel-Tawab N, RamaRao S. Do improvements in client-provider interaction increase contraceptive continuation? Unraveling the puzzle. *Patient Educ Couns* 2010;81(3):381–7 [Evidence Grade: III].
- Dehlendorf C, Diedrich J, Drey E, Postone A, Steinauer J. Preferences for decision-making about contraception and general health care among reproductive age woman at an abortion clinic. *Patient Educ Couns* 2010;81:343–8 [Evidence Grade: II-2].
- Miller WR, Rollnick R. Motivational interviewing: helping people change. 3rd ed. Gilford Press; 2013.
- Whitaker AK, Quinn MT, Martins SL, Tomlinson AN, Woodhams EJ, Gilliam M. Motivational interviewing to improve postabortion contraceptive uptake by young women: development and feasibility of a counseling intervention. *Contraception* 2015;92(4):323–9 [Evidence Grade: II-2].
- Whitaker AK, Quinn MT, Munroe E, Martins SL, Mistretta SQ, Gilliam ML. A motivational interviewing-based counseling intervention to increase postabortion uptake of contraception: a pilot randomized controlled trial. *Patient Educ Couns* 2016;99(10):1663–9 [Evidence Grade: I].
- Langston AM, Rosario I, Westhoff CL. Structured contraceptive counseling: a randomized controlled trial. *Patient Educ Couns* 2010;81(3):362–7 [Evidence Grade: I].
- Davidson AS, Whitaker AK, Martins SL, Hill B, Kuhn C, Hagbom-Ma C, et al. Impact of a theory-based video on initiation of long-acting reversible contraception after abortion. *Am J Obstet Gynecol* 2015;212(3):310.31–7 [Evidence Grade: I].
- Stewart H, McCall SJ, McPherson C, Towers LC, Lloyd B, Fletcher J, et al. Effectiveness of peri-abortion counselling in preventing subsequent unplanned pregnancy: a systematic review of randomised controlled trials. *J Fam Plann Reprod Health Care* 2016;42(1):59–67.
- Matulich M, Cansino C, Culwell KR, Creinin MD. Understanding women's desires for contraceptive counseling at the time of first-trimester surgical abortion. *Contraception* 2014;89(1):36–41 [Evidence Grade: II-2].
- Diedrich JT, Drey EA, Dehlendorf C, Steinauer JE. Women's questions after post-abortion insertion of intrauterine contraception. *Contraception* 2013;88(3):396–400 [Evidence Grade: II-2].
- Brandt K, Woodhams E, White KO, Mehta PK. An exploration of perceived contraceptive coercion at the time of abortion. *Contraception* 2018;97(4):329–34 [Evidence Grade: II-2].
- Holt K, Dehlendorf C, Langer A. Defining quality in contraceptive counseling to improve measurement of individuals' experience and enable service delivery improvement. *Contraception* 2017;96(3):133–7 [Evidence Grade: III].
- Gomez AM, Fuentes L, Allina A. Women or LARC first? Reproductive autonomy and the promotion of long-acting reversible contraceptive methods. *Perspect Sex Reprod Health* 2014;46(3):171–5 [Evidence Grade: III].
- Moniz MH, Spector-Bagdady K, Heisler Michele, Harris LH. Inpatient postpartum long-acting reversible contraception. *Obstet Gynecol* 2017;130:783–7 [Evidence Grade: III].
- Curtis KM, Tepper NK, Jatlaoui TC, et al. U.S. medical eligibility criteria for contraceptive use, 2016. *MMWR Recomm Rep* 2016;65(RR-3):1–104.
- Kaunitz AM. In: Schreiber C, editor. Postabortion contraception. UpToDate; 2017 [Retrieved November 28, 2017, Evidence Grade: III].
- Rodriguez MI, Curtis KM, Garfield MI, Jackson E, Kapp N. Advance supply of emergency contraception: a systematic review. *Contraception* 2013;87:590–601.
- Goldberg AB, Cardenas LH, Hubbard AE, Darney PD. Post-abortion depot medroxyprogesterone acetate continuation rates: a randomized trial of cyclic estradiol. *Contraception* 2002;66(4):215–20 [Evidence Grade: I].
- Hatcher RA, Trussell J, Nelson AL, Cates W, Kowal D, Policar MS, editors. Contraceptive technology. 20th ed. Atlanta: Ardent Media; 2011.
- Kohn JE, Simons HR, Della Badia L, Draper E, Morfesis J, Talmont E, et al. Increased 1-year continuation of DMPA among women randomized to self-administration: results from a randomized controlled trial at Planned Parenthood. *Contraception* 2018;97(3):198–204 [Evidence Grade: I].
- Peterson WF. Contraceptive therapy following therapeutic abortion: an analysis. *Obstet Gynecol* 1974;44(6):853–7 [Evidence Grade: II-3].

- [41] Steinauer JE, Sokoloff A, Roberts EM, Drey EA, Dehlendorf CE, Prager SW. Immediate versus delayed initiation of the contraceptive patch after abortion: a randomized trial. *Contraception* 2014;89(1):42–7 [Evidence Grade: I].
- [42] Gaffield ME, Kapp N, Ravi A. Use of combined oral contraceptives post abortion. *Contraception* 2009;80(4):355–62.
- [43] Lahteenmaki P, Rasi V, Luukainen T, Mylly G. Coagulation factors in women using oral contraceptives or intrauterine contraceptive devices immediately after abortion. *Am J Obstet Gynecol* 1981;141:175–9 [Evidence Grade: II-2].
- [44] Second-trimester abortion Practice bulletin no 135 American College of Obstetricians and Gynecologists. *Obstet Gynecol* 2013;121:1394–406.
- [45] American College of Obstetricians and Gynecologists, editor. Thromboembolism in pregnancy Practice bulletin no 123. *Obstet Gynecol* 2011;118:718–29.
- [46] Phillips SJ, Tepper NK, Kapp N, Nanda K, Temmerman M, Curtis KM. Progestin-only contraceptive use among breastfeeding women: a systematic review. *Contraception* 2016;94(3):226–52.
- [47] Fine PM, Tryggstad J, Meyers NJ, Sangi-Hagheykar H. Safety and acceptability with the use of a contraceptive vaginal ring after surgical or medical abortion. *Contraception* 2007;75(5):367–71 [Evidence Grade: II-1].
- [48] Kaali SG, Szigetvari I, Bartfai G, Feinman M. Laparoscopic sterilization combined with dilation and evacuation up to 18 weeks' gestation. *J Reprod Med* 1989;34(7):463–4 [Evidence Grade: II-2].
- [49] Cheng MC, Rochat RW. The safety of combined abortion-sterilization procedure. *Am J Obstet Gynecol* 1977;129(5):548–52 [Evidence Grade: II-1].
- [50] Hernandez IM, Perry G, Katz AR, Held B. Postabortal laparoscopic tubal sterilization. Results in comparison to interval procedures. *Obstet Gynecol* 1977;50(3):356–8 [Evidence Grade: II-2].
- [51] Essure permanent birth control system: instructions for use. Silver Spring, Maryland: Food and Drug Administration; 2002 http://www.accessdata.fda.gov/cdrh_docs/pdf2/P020014c.pdf, Accessed date: 24 February 2018.
- [52] Code of Federal Regulations. Sterilization of persons in federally assisted family planning projects. 42 CFR 50.204(e)(2). Accessed at www.hhs.gov/opa/sites/default/files/42-cfr-50-c_0.pdf, [on December 19, 2017].
- [53] Krashin JW, Edelman AB, Nichols MD, Allen AJ, Caughey AB, Rodriguez MI. Prohibiting consent: what are the costs of denying permanent contraception concurrent with abortion care? *Am J Obstet Gynecol* 2014;211:76.e1–10 [Evidence Grade: II-2].
- [54] Hillis SD, Marchbanks PA, Tylor LR, Peterson HB. Poststerilization regret: findings from the United States collaborative review of sterilization. *Obstet Gynecol* 1999;93:889–95.
- [55] Okusanya BO, Oduwale O, Effa EE. Immediate postabortal insertion of intrauterine devices. *Cochrane Database Syst Rev* 2014;7:CD001777.
- [56] Steenland MW, Tepper NK, Curtis KM, Kapp N. Intrauterine contraceptive insertion postabortion: a systematic review. *Contraception* 2011;84(5):447–64.
- [57] El-Tagy A, Sakr E, Sokal DC, Issa AH. Safety and acceptability of post-abortion IUD insertion and the importance of counseling. *Contraception* 2003;67:229–34 [Evidence Grade: II-1].
- [58] Bilgehan F, Dilbaz B, Karadağ B, Deveci CD. Comparison of copper intrauterine device with levonorgestrel-bearing intrauterine system for post-abortion contraception. *J Obstet Gynaecol Res* 2015;41(9):1426–32 [Evidence Grade: I].
- [59] Wiebe ER, Trouton K, Fang ZA. Comparing continuation rates and side effects of hormonal contraceptives in East Asian and Caucasian women after abortion. *Contraception* 2008;78:405–8 [Evidence Grade: II-2].
- [60] Bednarek PH, Creinin MD, Reeves MF, Cwiak C, Espey E, Jensen JT. Immediate versus delayed IUD insertion after uterine aspiration. *N Engl J Med* 2011;364(23):2208–17 [Evidence Grade: I].
- [61] Cremer M, Bullard KA, Mosley RM, Weisberg C, Molaei M, Lerner V, et al. Immediate vs. delayed post-abortion copper T 380A IUD insertion in cases over 12 weeks of gestation. *Contraception* 2011;83(6):522–7 [Evidence Grade: I].
- [62] Reeves MF, Smith KJ, Creinin MD. Contraceptive effectiveness of immediate compared with delayed insertion of intrauterine devices after abortion: a decision analysis. *Obstet Gynecol* 2007;109(6):1286–94 [Evidence Grade: II-2].
- [63] Langston AM, Joslin-Roher SL, Westhoff CL. Immediate postabortion access to IUDs, implants and DMPA reduces repeat pregnancy within 1 year in a New York City practice. *Contraception* 2014;89(2):103–8 [Evidence Grade: II-2].
- [64] Goodman S, Hendlish SK, Reeves MF, Foster-Rosales A. Impact of immediate postabortal insertion of intrauterine contraception on repeat abortion. *Contraception* 2008;78(2):143–8 [Evidence Grade: II-2].
- [65] Rose SB, Lawton BA. Impact of long-acting reversible contraception on return for repeat abortion. *Am J Obstet Gynecol* 2012;206:37.e1–6 [Evidence Grade: II-2].
- [66] Rose SB, Garrett SM, Stanley J. Immediate postabortion initiation of levonorgestrel implants reduces the incidence of births and abortions at 2 years and beyond. *Contraception* 2015;92(1):17–25 [Evidence Grade: II-2].
- [67] Cowett AA, Ali R, Cooper MA, Evans M, Conzuelo G, Cremer M. Timing of etonogestrel implant insertion after dilation and evacuation: a randomized controlled trial. *Obstet Gynecol* 2018;131(5):856–62.
- [68] Stanek AM, Bednarek PH, Nichols MD, Jensen JT, Edelman AB. Barriers associated with the failure to return for intrauterine device insertion following first-trimester abortion. *Contraception* 2009;79(3):216–20 [Evidence Grade: II-2].
- [69] Madden T, Westhoff C. Rates of follow-up and repeat pregnancy in the 12 months after first-trimester induced abortion. *Obstet Gynecol* 2009;113(3):663–8 [Evidence Grade: II-2].
- [70] Madden T, Eisenberg DL, Zhao Q, Buckel C, Secura GM, Peipert JF. Continuation of the etonogestrel implant in women undergoing immediate postabortion placement. *Obstet Gynecol* 2012;120(5):1053–9 [Evidence Grade: II-1].
- [71] Flamant A, Ouldamer L, Body G, Trignol-Viguiet N. Rates of continuation and satisfaction of immediate intrauterine device insertion following first- or second-trimester surgical abortion: a French prospective cohort study. *Eur J Obstet Gynecol Reprod Biol* 2013;169(2):268–74 [Evidence Grade: II-2].
- [72] Mark A, Sonalkar S, Borgatta L. One-year continuation of the etonogestrel contraceptive implant in women with postabortion or interval placement. *Contraception* 2013;88(5):619–23 [Evidence Grade: II-2].
- [73] Stoddard A, Eisenberg DL. Controversies in family planning: timing of ovulation after abortion and the conundrum of postabortion intrauterine device insertion. *Contraception* 2011;84(2):119–21 [Evidence Grade: III].
- [74] Ames CM, Norman WV. Preventing repeat abortion in Canada: is the immediate insertion of intrauterine devices postabortion a cost-effective option associated with fewer repeat abortions? *Contraception* 2012;85:51–5 [Evidence Grade: II-2].
- [75] Salcedo J, Sorensen A, Rodriguez MI. Cost analysis of immediate postabortal IUD insertion compared to planned IUD insertion at the time of abortion follow up. *Contraception* 2013;87:404–8 [Evidence Grade: II-2].
- [76] Goodman S, Hendlish SK, Benedict C, Reeves MF, Pera-Ployd M, Foster-Rosales A. Increasing intrauterine contraception use by reducing barriers to post-abortion and interval insertion. *Contraception* 2008;78:136–42 [Evidence Grade: II-2].
- [77] Hohmann HL, Reeves MF, Chen BA, Perriera LK, Hayes JL, Creinin MD. Immediate versus delayed insertion of the levonorgestrel-releasing intrauterine device following dilation and evacuation: a randomized controlled trial. *Contraception* 2012;85(3):240–5 [Evidence Grade: I].
- [78] Drey EA, Reeves MF, Ogawa DD, Sokoloff A, Darney PD, Steinauer JE. Insertion of intrauterine contraceptives immediately following first- and second-trimester abortions. *Contraception* 2009;79:397–402 [Evidence Grade: II-2].
- [79] Fox MC, Oat-Judge J, Severson K, Jamshidi RM, Singh RH, McDonald-Mosley R, et al. Immediate placement of intrauterine devices after first and second trimester pregnancy termination. *Contraception* 2011;83(1):34–40 [Evidence Grade: II-2].
- [80] American College of Obstetricians and Gynecologists, editor. Immediate postpartum long-acting reversible contraception Committee Opinion No 670. *Obstet Gynecol* 2016;128:e32–7 [Evidence Grade: III].
- [81] Achilles SL, Reeves MF. Society of Family Planning. Prevention of infection after induced abortion: SFP guideline 2012. *Contraception* 2011;83(4):295–309.
- [82] Heinemann K, Reed S, Moehner S, Minh TD. Risk of uterine perforation with levonorgestrel-releasing and copper intrauterine devices in the European Active Surveillance Study on Intrauterine Devices. *Contraception* 2015;91(4):274–9 [Evidence Grade: II-2].
- [83] Kapp N, Curtis KM. Intrauterine device insertion during the postpartum period: a systematic review. *Contraception* 2009;80(4):327–36.
- [84] Curtis KM, Jatlaoui TC, Tepper NK, Zapata LB, Horton LG, Jamieson DJ, et al. U.S. selected practice recommendations for contraceptive use, 2016. *MMWR Recomm Rep* 2016;65(4):1–66.
- [85] Kavanaugh ML, Jones RK, Finer LB. How commonly do U.S. abortion clinics offer contraceptive services? *Contraception* 2010;82(4):331–6 [Evidence Grade: II-2].
- [86] Morse J, Freedman L, Spiedel JJ, Thompson KM, Stratton L, Harper CC. Postabortion contraception: qualitative interviews on counseling and provision of long-acting reversible contraceptive methods. *Perspect Sex Repro Health* 2012;44(2):100–6 [Evidence Grade: II-2].
- [87] Thompson KM, Speidel JJ, Saporta V, Waxman NJ, Harper CC. Contraceptive policies affect post-abortion provision of long-acting reversible contraception. *Contraception* 2011;83:41–7 [Evidence Grade: II-2].
- [88] Donovan MK. Postabortion contraception: emerging opportunities and barriers. *Guttmacher Policy Rev* 2017;20 [<https://www.guttmacher.org/gpr/2017/10/postabortion-contraception-emerging-opportunities-and-barriers>].
- [89] Sonfield A, Gold RB. Beyond consent to sterilization: facing up to the full range of barriers to post-abortion contraception. *Am J Obstet Gynecol* 2014;211(1):3–4 [Evidence Grade: III].
- [90] Jones RK, Upadhyay UD, Weitz TA. At what cost? Payment for abortion care by U.S. women. *Womens Health Issues* 2013;23(3):e173–8.
- [91] Thompson KM, Rocca CH, Kahn JE, Goodman S, Stern L, Blum M, et al. Increasing intrauterine contraception use by reducing barriers to post-abortion and interval insertion. *Contraception* 2008;78(2):136–42 [Evidence Grade: I].
- [92] Harper CC, Rocca CH, Thompson KM, Morfesis J, Goodman S, Darney PD, et al. Reductions in pregnancy rates in the USA with long-acting reversible contraception: a cluster randomized trial. *Lancet* 2015;386:562–8 [Evidence Grade: I].
- [93] Lohr PA, Aiken ARA, Forsyth T, Trussell J. Telephone or integrated contraception counselling before abortion: impact on method choice and receipt. *BMJ Sex Reprod Health* 2018;44(2):114–21 [Evidence Grade: II-2].
- [94] Roe AH, Fortin J, Gelfand D, Janiak E, Maurer R, Goldberg AB. Advance notice of contraceptive availability at surgical abortion: a pilot randomised controlled trial. *BMJ Sex Reprod Health* 2018;44(3):187–92 [Evidence Grade: I].
- [95] Goyal V, Canfield C, Aiken AR, Dermish A, Potter JE. Postabortion contraceptive use and continuation when long-acting reversible contraception is free. *Obstet Gynecol* 2017;129(4):655–62 [Evidence Grade: II-2].
- [96] Kost K, Singh S, Vaughan B, Trussell J, Bankole A. Estimates of contraceptive failure from the 2002 National Survey of Family Growth. *Contraception* 2008;77(1):10–21 [Evidence Grade: II-2].
- [97] Diedrich JT, Klein DA, Peipert JF. Long-acting reversible contraception in adolescents: a systematic review and meta-analysis. *Am J Obstet Gynecol* 2017;216(4):364.e1–264.e12.
- [98] Raine TR, Foster-Rosales A, Upadhyay UD, Boyer CB, Brown BA, Sokoloff A, et al. One-year contraceptive continuation and pregnancy in adolescent girls and women initiating hormonal contraceptives. *Obstet Gynecol* 2011;117(2):363–71 [Evidence Grade: II-2].

- [99] Rose SB, Garrett SM. Postabortion initiation of long-acting reversible contraception by adolescent and nulliparous women in New Zealand. *J Adolesc Health* 2016;58(2):160–6 [Evidence Grade: II-2].
- [100] Abraham M, Zhao Q, Peipert JF. Young age, nulliparity, and continuation of long-acting reversible contraceptive methods. *Obstet Gynecol* 2015;126(4):823–9 [Evidence Grade: II-2].
- [101] Maravilla JC, Betts KS, Couto E, Cruz C, Alati R. Factors influencing repeat teenage pregnancy: a review and meta-analysis. *Am J Obstet Gynecol* 2017;217(5):527–45.
- [102] Whitaker AK, Johnson LM, Harwood B, Chiappetta L, Creinin MD, Gold MA. Adolescent and young adult women's knowledge of and attitudes toward the intrauterine device. *Contraception* 2008;78:211–7 [Evidence Grade: II-2].
- [103] American College of Obstetricians and Gynecologists, editor. Adolescents and long-acting reversible contraception: implants and intrauterine devices Committee Opinion No 539. *Obstet Gynecol* 2012;120:983–8.