CONTRACEPTION

Does immediate postpartum insertion of a contraceptive implant reduce the repeat pregnancy rate in teens? What makes the copper IUD the best emergency contraceptive? How does hysteroscopic sterilization compare with the laparoscopic approach?

›› Melissa J. Chen, MD, MPH
Dr. Chen is a Family Planning Fellow in the Department of Obstetrics and Gynecology at the University of California, Davis, in Sacramento, California.

›› Mitchell D. Creinin, MD
Dr. Creinin is Professor and Chair of the Department of Obstetrics and Gynecology at the University of California, Davis, in Sacramento, California.

Dr. Chen reports no financial relationships relevant to this article. Dr. Creinin reports that he receives research funding from Medicines360 and is a consultant for Merck.

IN THIS ARTICLE

Unintended pregnancy remains an important public health priority in the United States. Correct and consistent use of effective contraception can help women achieve appropriate interpregnancy intervals and desired family size, whereas inconsistent or non-use of contraceptive methods contributes to the majority of unintended pregnancies.

Long-acting reversible contraceptive (LARC) methods, such as implants and intrauterine devices, have effectiveness rates similar to those of permanent sterilization, and these methods are becoming more popular among American women. The proportion of women using LARC methods increased from 2.4% in 2002 to 8.5% in 2009.[1]

Sterilization continues to be a common method of contraception, with 32% of women relying on female or male sterilization in 2009.[1] For women who are not using contraception regularly or who experience a failure in their method, emergency contraception is a viable back-up plan.

In this article, we will review the latest data on contraceptive efficacy in three different contexts:

- implant placement in the immediate postpartum period
- emergency contraception (EC) with the copper intrauterine device (IUD)
- sterilization via hysteroscopic versus laparoscopic approaches.

CONTINUED ON PAGE 16

CONTINUED FROM PAGE 14

Immediate postpartum placement of the contraceptive implant saves money

Tocce KM, Sheeder JL, Teal SB. Rapid repeat pregnancy in adolescents: Do immediate postpartum contraceptive implants make a difference? Am J Obstet Gynecol. 2012;206(6):481.e1–e7.

Han L, Teal SB, Sheeder J, Tocce K. Preventing repeat pregnancy in adolescents: Is immediate postpartum insertion of the contraceptive implant cost effective? [published online ahead of print March 11, 2014]. Am J Obstet Gynecol. doi:10.1016/j.ajog.2014.03.015.

FAST TRACK

Immediate postpartum placement of a contraceptive implant can reduce the risk of rapid repeat pregnancy in adolescents

Although teen birth rates have been declining in the United States in recent years, repeat teen births still pose significant health and socioeconomic challenges for young mothers, their children, and society. Adolescent mothers face barriers in completing their education and obtaining work experience. Repeat teen mothers are also more likely to experience adverse pregnancy outcomes, including preterm birth or delivery of a low-birth-weight infant. Families of adolescent mothers are not the only ones who are affected by teen childbearing. In fact, US taxpayers spend about $11 billion each year on costs related to teen pregnancy.[2]

The immediate postpartum period is a time when effective LARC methods can be initiated to decrease the risk of rapid repeat pregnancy.

Details of the study by Tocce and colleagues

Tocce and colleagues report the results of a prospective observational study that compared adolescents who chose postpartum etonogestrel implant insertion with those who elected to use no contraception or initiate contraception at the usual interval (condoms, depot medroxyprogesterone acetate, and progestin-only pills at any time after delivery, combined hormonal contraception after 4 weeks postpartum, implant insertion after 4 weeks postpartum, and intrauterine device placement at 6 weeks after delivery).

Of adolescents who chose immediate postpartum implant placement, 88.6% were still using this method at 12 months postpartum. In comparison, only 53.6% of adolescents in the control group were using a highly effective contraceptive method at 12 months postpartum (**TABLE**, page 18).

The difference in *repeat* pregnancy rates was even more compelling. At 12 months postpartum, the pregnancy rate was 2.6% for women who had chosen an immediate postpartum implant, compared with 18.6% in the control group ($P<.001$).

One significant barrier to immediate postpartum LARC placement is reimbursement policies; hospitals are reimbursed a single global fee for all of the hospital care, so insertion of an expensive contraceptive implant during the hospital stay is not reimbursed.

WHAT THIS EVIDENCE MEANS FOR PRACTICE

Among adolescents who received immediate postpartum implant placement, contraceptive continuation rates were higher and repeat teen birth rates were lower, translating into overall cost savings for state Medicaid programs. Furthermore, young mothers and their families also experience health, social, and economic benefits from a delay in childbearing.

In accordance with the findings of Han and colleagues, the South Carolina Medicaid program is the first to implement reimbursement for inpatient postpartum LARC insertion. Other states should evaluate their own policies for inpatient LARC reimbursement and take into consideration the potential for cost savings.

CONTINUED ON PAGE 18

CONTINUED FROM PAGE 16

Use of highly effective contraception in adolescents 12 months after delivery

Contraceptive method	Immediate postpartum implant (n = 149)	Control* (n = 166)
Implant	132 (88.6%)	35 (21.1%)
Intrauterine device	6 (4.0%)	51 (30.7%)
Female sterilization	0	3 (1.8%)
Total using highly effective method†	138 (92.6%)	89 (53.6%)

* The control group consisted of women who elected to use no contraception or initiate contraception at the usual postpartum interval (condoms, depot medroxyprogesterone acetate, and progestin-only pills at any time after delivery, combined hormonal contraception after 4 weeks postpartum, implant insertion after 4 weeks postpartum, and intrauterine device placement at 6 weeks after delivery).

† $P<.0001$, Fisher exact test.

Adapted from: Tocce KM, Sheeder JL, Teal SB. Rapid repeat pregnancy in adolescents: do immediate postpartum contraceptive implants make a difference? Am J Obstet Gynecol. 2012;206(6):481.e1–e7.

However, if a woman returns to the office for insertion, the provider receives full reimbursement if she has coverage for the product.

A look at cost effectiveness

With this in mind, Han and colleagues determined the cost effectiveness of immediate postpartum implant placement using the results from the observational study from Tocce et al. The costs of implant insertion and removal were calculated, as well as the costs associated with various obstetric or gynecologic outcomes, including prenatal care, vaginal or cesarean delivery, infant medical care for the first year of life, and management of ectopic pregnancy or spontaneous miscarriage. The contraceptive costs for the comparison group were not included in the analysis because these costs would represent baseline contraceptive costs incurred by Medicaid.

Significant cost savings were found with immediate postpartum implant placement over time; specifically, $0.78, $3.54, and $6.50 were saved for every dollar spent at 12, 24, and 36 months, respectively. To be clear, this analysis was limited to contraceptive implant placement, and cannot be directly applied to immediate postpartum intrauterine device insertion.

FAST TRACK

The copper IUD, inserted as emergency contraception, can be continued as regular contraception

More evidence suggests the copper IUD is the preferred emergency contraceptive

Turok DK, Jacobson JC, Dermish Amna I, et al. Emergency contraception with a copper IUD or oral levonorgestrel: An observational study of 1-year pregnancy rates. Contraception. 2014;89(3):222–228.

Several options for EC exist, but only the copper IUD also can be continued as an effective method of contraception. Despite its dual roles in pregnancy prevention, the copper IUD remains underutilized, compared with oral EC methods. Women who seek EC are motivated to reduce their risk of pregnancy. However, they may not be receiving the most effective method to avoid pregnancy. A survey of 816 emergency

CONTINUED ON PAGE 20

CONTINUED FROM PAGE 18

WHAT THIS EVIDENCE MEANS FOR PRACTICE

When given the option, almost 50% of women chose the copper IUD to reduce their risk of pregnancy. Women who received a copper IUD were more likely to be using a highly effective method of contraception and less likely to experience an unintended pregnancy at 1 year than women who chose LNG EC.

We need to counsel our patients on the differences in efficacy between the methods and offer copper IUDs to eligible women.

contraception providers revealed that 85% of respondents had never offered the copper IUD as a method of EC to their patients.[3] This represents a lost opportunity, as the copper IUD would be ideal for women who desire an effective form of EC that also can be continued as contraception.

Details of the trial

Turok and colleagues conducted a prospective observational trial comparing oral levonorgestrel (LNG) with copper IUD insertion in women seeking EC. Women who were interested in participating received scripted counseling on both methods and were given their desired method free of charge.

In this study, almost 40% (215/542) of women chose the copper IUD for EC. However, the providers in this study were unable to place the IUD in 20% of these women. The women who chose not to receive an IUD or who did not have an IUD placed received LNG EC.

There were four pregnancies from EC failures in the first month in the LNG group, compared with none in the IUD group. After 1 year, the risk of pregnancy in women who chose the copper IUD (including the women who were unable to have the device placed) was lower than in women who chose LNG (odds ratio [OR], 0.50; 95% confidence interval [CI], 0.26–0.96).

In an analysis based on the actual method received, the risk of pregnancy in the IUD group was even lower (OR, 0.38; 95% CI, 0.18–0.80).

At 1 year, 60% of women in the copper IUD group were using a highly effective method of contraception, specifically an IUD, implant, or sterilization, compared with 10% in the LNG group.

FAST TRACK

60% of women who chose the copper IUD as emergency contraception were still using a highly effective method at 1 year, compared with only 10% of women who chose LNG

Hysteroscopic sterilization may not be as effective as we thought

Gariepy AM, Creinin MD, Smith KJ, Xu X. Probability of pregnancy after sterilization: A comparison of hysteroscopic versus laparoscopic sterilization [published online ahead of print April 24, 2014]. Contraception. doi:10.1016/j.contraception.2014.03.010.

Since its introduction in 2002, hysteroscopic sterilization has become a popular method of sterilization. It has many potential advantages over laparoscopic sterilization, including the ability to perform the procedure in an office setting without general anesthesia or abdominal incisions. However, there are also disadvantages to hysteroscopic sterilization, as we pointed out in this Update last year, such as a risk of unsuccessful procedure completion on the first attempt and the need for contraception until tubal occlusion is confirmed.

There are limited data on the effectiveness of hysteroscopic sterilization, and there are no prospective studies comparing hysteroscopic and laparoscopic sterilization.

Given the rare outcome of unintended pregnancy with both procedures, based on published literature, a prospective study is unfeasible. An inherent weakness of large clinical trials or retrospective reports of hysteroscopic sterilization success is that only women who had successful completion of the procedure can be included. Two recent reports that demonstrate that completed hysteroscopic sterilization procedures are highly effective highlighted this "weakness."[4,5] However, these data do not reflect "real-life" practice; there are no intent-to-treat data on pregnancy rates among women who choose this option but are unable to fully complete the procedure.

Details of the study

To evaluate real-life outcomes, Gariepy and colleagues performed a decision analysis to estimate the probability of pregnancy after hysteroscopic sterilization and laparoscopic approaches with silicone rubber band application and bipolar coagulation. Using a Markov state-transition model, the authors could determine the probability of pregnancy over a 10-year period for all types of sterilization. For hysteroscopic sterilization, each of the multiple steps, from coil placement to use of alternative contraception in the interim period to follow-up confirmation of tubal occlusion, could be included.

At 10 years, the expected cumulative pregnancy rates per 1,000 women were 96, 24, and 30 for hysteroscopic sterilization, laparoscopic silicone rubber band application, and laparoscopic bipolar coagulation, respectively. For hysteroscopic and laparoscopic sterilization to be equal in effectiveness, the success of laparoscopic sterilization would need to decrease to less than 90% from 99% and hysteroscopic coil placement or follow-up would need to improve.

The authors concluded that the effectiveness of sterilization does vary significantly by the method used, and rankings of effectiveness should differentiate between hysteroscopic and laparoscopic sterilization.

WHAT THIS EVIDENCE MEANS FOR PRACTICE

When counseling women about sterilization, we should discuss the advantages and disadvantages of hysteroscopic versus laparoscopic approaches and disclose the efficacy rates of each method.

The issue is not that the hysteroscopic sterilization procedure is less effective than laparoscopic sterilization. The real take-home point is that women choosing to attempt hysteroscopic sterilization are more likely to experience an unintended pregnancy within the next 10 years than women presenting for laparoscopic sterilization.

Each year, 345,000 US women undergo interval sterilization.[6] If hysteroscopic sterilization were attempted as the preferred method for all of these women (as compared with laparoscopic sterilization) in just 1 year, then an additional 22,770 pregnancies would occur for this group of women over the ensuing 10 years. With the current technology, hysteroscopic sterilization should be reserved for appropriate candidates, such as women who may face higher risks from laparoscopy.

FAST TRACK

Hysteroscopic sterilization should be reserved for appropriate candidates, such as women who may face higher risks from laparoscopy

References

1. Finer LB, Jerman J, Kavanaugh ML. Changes in use of long-acting contraceptive methods in the United States, 2007-2009. Fertil Steril. 2012;98(4):893–897.
2. Centers for Disease Control. Vital signs: Repeat births among teens—United States, 2007–2010. MMWR. 2013;62(13):249–255.
3. Harper CC, Speidel JJ, Drey EA, Trussell J, Blum M, Darney PD. Copper intrauterine device for emergency contraception: Clinical practice among contraceptive providers. Obstet Gynecol. 2012;119(2 Pt 1):220–226.
4. Munro MG, Nichols JE, Levy B, Vleugels MP, Veersema S. Hysteroscopic sterilization: 10-year retrospective analysis of worldwide pregnancy reports. J Minim Invasive Gynecol. 2014;21(2):245–251.
5. Fernandez H, Legendre G, Blein C, Lamarsalle L, Panel P. Tubal sterilization: Pregnancy rates after hysteroscopic versus laparoscopic sterilization in France, 2006–2010 [published online ahead of print May 14, 2014]. Eur J Obstet Gynecol Reprod Biol. doi:10.1016/j.ejogrb.2014.04.043.
6. Bartz D, Greenberg JA. Sterilization in the United States. Rev Obstet Gynecol. 2008;1(1):23–32.