Case Report

Inadvertent use of a levonorgestrel-releasing intrauterine device as postcoital contraception

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The intrauterine device (IUD) is an effective means of contraception,1,2 and insertion is a procedure that is commonly performed in a family physician’s office. Standard practice requires that a current pregnancy be excluded before insertion; on-site urine testing is the most obvious way to do this. This case describes an instance of inadvertent insertion of an IUD in a woman who was already pregnant, resulting in an interruption of pregnancy that was not intended but was nonetheless welcomed by the patient. Although IUDs have been used for some time as a means of postcoital contraception,3,6 the levonorgestrel-releasing intrauterine system (LNR-IUS) is specifically excluded from use for this purpose (presumably because of the ethical difficulties of conducting prospective trials of such use; moreover, the device has not been in existence long enough to accumulate case reports attesting to its efficacy and safety in this context).7 A search of MEDLINE and EMBASE, using the terms intrauterine devices; contraception, postcoital; contraceptives, postcoital; inadvertent; accidental; unintentional; and case report, failed to uncover any cases of inadvertent or emergency use of an IUD, particularly an LNR-IUS, as a postcoital contraceptive, in any context.

Case description

On March 3, a 27-year-old mother of 2 has an appointment with her family physician to discuss contraception. She has previously delivered 2 healthy children after full-term pregnancies, with no history of miscarriages or abortions. Her children are 12 and 10 years old. She has one steady male sexual partner and reports using condoms consistently since her last menses, which began 5 days before, on February 27. A Papanicolaou smear and swabs for chlamydia and gonorrhea were taken 2 months before by one of the clinic’s nurse practitioners as part of the patient’s yearly health examination; all test results were negative. After some discussion, she decides she would like an IUD inserted and is given a prescription for an LNR-IUS and a return appointment. She is advised to continue using condoms.

On March 12, the patient attends her appointment and, upon questioning, reports no episodes of unprotected intercourse since her last menses. A urine sample is obtained and tested for ß-human chorionic gonadotropin (ß-hCG) levels, using a test with a sensitivity of 20 mIU/mL. Results of the pregnancy test are read by the clinic nurse as negative at 3 minutes, as per the product insert.

On examination, the uterus is small, firm, non-tender, and anteverted, with a longitudinal lie. The vagina is cleansed with povidone-iodine, a tenaculum is applied to the anterior lip of the cervix, and the fundus is sounded to 7.5 cm. The LNR-IUS is inserted easily, with the strings cut at 2 cm. After assisting with the insertion, the nurse returns to the laboratory to deposit the equipment and dispose of the urine sample and notices that there is a faint second line on the strip, suggesting that it was in fact positive for ß-hCG. When the patient is informed of this, she once again confirms that she has not had unprotected intercourse since her last period and no intercourse at all since her initial visit 9 days before when the LNR-IUS had been prescribed. The possibilities of ectopic pregnancy or miscarriage are discussed and she is advised to go to the emergency department should she experience heavy vaginal bleeding or pelvic pain. In the interim, she agrees to return to the clinic for reassessment sometime in the next week.

She returns 6 days later, as arranged, and provides a urine sample. She reports having had some vaginal bleeding and mild cramping after the IUD insertion. The urine sample is tested with the same brand of pregnancy test strips as before, and after prolonged exposure a faint second line is seen. A serum sample is taken for quantitative ß-hCG, which is later reported as 86 IU/L (nonpregnant levels are less than 5 IU/L). The patient is informed of this result and agrees to return for serial serum measurements of ß-hCG in order to exclude ectopic pregnancy. Another sample is drawn 5 days later, on March 23, which gives a result of 108 IU/L; one week after that, on March 30, her ß-hCG levels have decreased to 93 IU/L. She remains clinically well, and reports no further cramping or vaginal bleeding.

On April 15, one month after insertion of the IUD, a transvaginal ultrasound is performed at a local facility, which shows the IUD within the endometrial canal. The endometrium is reported as otherwise unremarkable. There is no intrauterine gestational sac and the ovaries are of normal size and configuration.

Two months after insertion of the IUD and 1 month after her ultrasound, the patient returns for final testing.
of quantitative β-hCG, which is subsequently reported as less than 5 IU/L. She reports no further cramping or intermenstrual bleeding, and is satisfied with the IUD as a means of contraception.

Discussion
This case illustrates that although it is important to exclude pregnancy before inserting an IUD, it might be impossible to do so definitively, despite diligent history-taking, physical examination, and diagnostic testing. The patient under discussion had just finished menstruating 8 days before having the IUD inserted and was not aware of any incidents of condom failure. The fact that results of her initial urine test for β-hCG were interpreted as negative for pregnancy, while subsequent serum tests showed a pattern of rise then fall in quantitative β-hCG levels, suggests that she had conceived just before insertion and that the IUD might have prevented implantation and ongoing pregnancy. However, it is possible that the outcome was due to an inherent abnormality in the conceptus. She elected to keep the IUD in place, as one would have expected her to do if it had been knowingly inserted as a means of postcoital contraception.

Conclusion
When planning to insert an IUD, relying on sexual history and on-site urine testing might not be adequate to exclude the possibility that the patient is already pregnant. Ideally, this could be avoided if insertion were delayed until the onset of menses, but the difficulties involved in anticipating the right time and scheduling an appointment accordingly—not to mention the concern that the woman might conceive in the interim—sometimes make this approach impossible. The case presented here suggests that the LNR-IUS might, in fact, work effectively as a postcoital contraceptive in cases in which it has not been possible to exclude an early pregnancy before insertion. Owing to the cost of this device, it is unlikely that it will ever be widely used in this context. However, given the popularity of this method, its beneficial side effects, and its usefulness as a long-term means of contraception, further study is warranted to establish its efficacy as well as optimal timing for insertion. Furthermore, it would be a valuable addition to the list of options available for emergency postcoital contraception.

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Competing interests
None declared.

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References

EDITOR’S KEY POINTS

• The intrauterine device (IUD) is an effective contraceptive method but has also been used as a means of postcoital contraception; however, the levonorgestrel-releasing intrauterine system (LNR-IUS) has never been reported to have been deliberately or inadvertently used for this purpose.
• Although standard practice requires that a current pregnancy be excluded before insertion of an IUD, this might be impossible to definitively ascertain, even with diligent history-taking, physical examination, and diagnostic testing.
• In this case study, the patient had a negative pregnancy test result, but β-human chorionic gonadotropin levels that rose then fell after insertion of an LNR-IUS; it is possible that she might have conceived just before the procedure and that the IUD prevented implantation and ongoing pregnancy.
• These results suggest that the LNR-IUS might work effectively as a postcoital contraceptive in cases for which it has not been possible to exclude an early pregnancy before insertion; although not cost-effective, the method warrants further study, given the popularity of the LNR-IUS, its beneficial side-effects, and its usefulness as a long-term means of contraception.

POIITS DE REPÈRE DU RÉDACTEUR

• Le stérilet est une méthode contraceptive efficace, mais il a aussi été utilisé comme moyen de contraception post-coïtale: on n’a toutefois jamais rapporté que le système intra-utérin à libération de lévonorgestrel (SIU-LLN) aurait été utilisé délibérément ou par inadvertance à cette fin.
• Même si la norme de pratique exige d’exclure une grossesse avant d’insérer un stérilet, il se pourrait qu’il soit impossible de le faire en toute certitude, malgré une anamnèse rigoureuse, un examen physique et des analyses diagnostiques.
• Dans le cas à l’étude, la patiente avait un test de grossesse négatif, mais son taux de β-gonadotrophine chorionique humaine a augmenté puis baissé après l’insertion d’un SIU-LLN; il est possible qu’elle ait conçu juste avant l’intervention et que le stérilet ait empêché l’implantation et la poursuite de la grossesse.
• Ces résultats font valoir que le SIU-LLN pourrait fonctionner efficacement comme contraceptif post-coïtal dans les cas où il n’a pas été possible d’exclure un début de grossesse avant l’insertion; même si ce n’est pas une solution rentable, la méthode mérite d’être étudiée plus en profondeur, étant donné sa popularité, ses effets secondaires bénéfiques et son utilité comme moyen de contraception à long terme.