The occasional intrauterine device insertion

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This article has been peer reviewed.

INTRODUCTION

The intrauterine device (IUD) and hormone-containing intrauterine system (IUS) are effective, long-lasting and reversible methods of contraception. Failure rates are 0.6–1.2 per 100 woman-years for copper IUDs and 0.04–0.1 per 100 woman-years for levonorgestrel-containing IUSs, as compared with 0.2–2.0 with perfect use of combined oral contraceptives.[1–4] Although more than 26% of women worldwide have used an IUD, in North America less than 2% of women use this form of contraception.[1] Use of IUDs has been affected by economics, beliefs regarding the mechanism of action, the risk of pelvic inflammatory disease (PID) and ectopic pregnancy, and the lack of insertion training for physicians.[5,6] Appropriate education about IUDs is needed to help practitioners provide counselling about, and insertion of, these devices.

Upfront costs of IUDs and IUSs can be striking for patients, because the devices are not usually covered by medicare. However, they become less expensive than combined oral contraceptives after 3 years of use.[7] Copper IUDs are cheaper, ranging from $60 for Mona Lisa 5-year models to $80 for Flexi-T (lasts 5 yr), Mona Lisa 10 (lasts 10 yr) and Liberté (lasts 5–10 yr). Mirena costs about $350 and lasts 5 years. Flexi-T and Liberté UT models are covered by Health Canada's Non-Insured Health Benefits Program for First Nations and Inuit people. Mirena is also occasionally available through the Society of Obstetricians and Gynaecologists of Canada's (SOGC's) Compassionate Contraceptive Assistance Program.

Concerns regarding infection and PID were more significant with old-model IUDs that had a braided string, which may have increased the ability of bacteria to ascend into the uterine cavity, and a former lack of testing methods for asymptomatic sexually transmitted infections (STIs).[8] New IUD models do not have braided strings, and studies have shown that the risk of infection is increased only in the first 20 days following insertion, when the uterus becomes contaminated with endocervical bacteria.[6,9] This risk is only 9.7 cases per 1000 woman-years, and drops to 1.4 after 20 days.[6]

Copper IUDs cause changes to the endometrium in response to the copper that inhibits sperm transport and have direct effects on sperm motility.[1,10–12] Progesterone IUSs cause changes to endometrial thickness, thickened cervical mucous and, in some women, ovulation suppression.[1]

Insertion of these devices is a relatively simple procedure that can be performed by rural physicians in the office setting. The focus of this article is the levonorgestrel-containing IUS (LNG-IUS) by Mirena and the copper-containing IUDs Flexi-T, Mona Lisa 10 and Liberté UT380. Other copper IUDs share insertion methods with one of the 3 devices described in this article. New IUDs are coming on the market; one of these, Jaydess, has already been approved for use in Canada. Jaydess also contains levonorgestrel but is smaller than Mirena and lasts 3 years. Insertion is identical to that for Mirena.

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INDICATIONS FOR IUD INSERTION

There are many indications for IUD insertion. Despite popular belief, IUDs can be used in nulliparous women and adolescents, as well as multiparous women, as a method of long-lasting contraception, particularly in women with adherence issues.[6,8,13] Intrauterine devices can be inserted postpartum in breastfeeding women.

Levonorgestrel-containing IUSs can also be used for menorrhagia in perimenopausal women, including those with fibroidal bleeding, and for dysmenorrhea in all age groups. There is a substantial reduction in blood loss, up to 97%, and improvement in hemoglobin levels.[1] Newer evidence has shown it may be used for endometrial protection during estrogen replacement therapy or tamoxifen use.

The copper IUD has a unique role in postcoital emergency contraception and can be inserted within 7 days of unprotected intercourse.[1,14]

Copper IUDs and LNG-IUSs can also be used in women with contraindications to estrogen-containing contraception, including those with a history of thromboembolism.[8]

CONTRAINDICATIONS FOR IUD INSERTION

The World Health Organization and SOGC have supported a list of absolute and relative contraindications to IUD or IUS insertion.[1,6]

Absolute contraindications are

- pregnancy
- current, recurrent or recent (3 mo) PID or STI
- puerperal or postabortal sepsis
- severely distorted uterine cavity
- unexplained vaginal bleeding
- cervical or endometrial cancer
- gestational trophoblastic disease
- copper allergy (for copper IUD)
- breast cancer (for LNG-IUS)

Relative contraindications include risk factors for HIV or STI, HIV seropositive status, recent (48 hr to 4 wk) childbirth, ovarian cancer and benign gestational trophoblastic disease.[1]

PREPROCEDURE ASSESSMENT AND COUNSELLING

Women should be informed of the risks of IUD insertion. These risks include uterine perforation (0.6–1.6 per 1000 insertions), infection (as discussed above, due mostly to contamination with endocervical bacteria and exposure to STIs), expulsion (10% in the first year, declining to 6% in the first 5 years) and failure of device (in women who become pregnant with IUD in place, ectopic pregnancy should be excluded and referral for consideration of removal of IUD should be arranged).[1,9]

Routine testing for STIs before insertion will depend on the patient and provider; however, evidence has shown that testing for chlamydia and gonorrhea at the time of insertion is reasonable, given the low risk of PID when IUDs are inserted with infection present (0%–5%).[6,9,13] If chlamydia or gonorrhea cultures return positive after insertion, the infections can be treated early, leaving the IUD in place.[6,9,13]

Women should also be counselled that initially bleeding patterns may be irregular and that, with levonorgestrel IUS, they may become amenorrheic after several months of use. Menstrual pain can worsen with the copper IUD but usually lessens with the LNG-IUS. Although the concentration of hormone in Mirena is low, patients may also experience some adverse effects, such as acne and breast tenderness.[1] Finally, patients should be counselled that IUDs do not protect against STIs, and thus they should continue barrier methods such as condoms to prevent these infections.[8]

Although it is common practice to insert during menstruation, an IUD may be inserted at any time during the menstrual cycle, provided pregnancy has been ruled out.[1] If the LNG-IUS is inserted more than 7 days after the menstrual cycle, backup contraception should be used for 1 week after insertion.[6] Postpartum insertion is usually best performed 4–6 weeks after delivery to reduce the risk of perforation and expulsion. However, emerging evidence suggests insertion may occur immediately postpartum or postabortion.[6]

EQUIPMENT

Aside from the IUD or IUS, the following should be gathered for the procedure (Fig. 1):

- sterile gloves
- 4 × 4 gauze pads soaked in povidone–iodine
- speculum and light source
- ringed forceps
- single-toothed tenaculum
- uterine sound
- cervical dilator (optional)
- scissors

PROCEDURE

After reviewing the procedure with the patient, obtaining consent and ensuring that pregnancy is ruled out, place the patient, draped, in the lithotomy position.[15]

1. After donning gloves, insert the sterile speculum and visualize the cervix. If indicated, samples for a Pap smear and chlamydia and gonorrhea tests can be obtained at this point.
2. Use ringed forceps with iodine-soaked gauze to clean the surface of the cervix 3 times.
3. Grasp the anterior rim of the cervix with the tenaculum, enough to prevent tearing out during insertion (this step is optional if the cervix is less mobile but preferred to help guide insertion).
4. Gently pull on the tenaculum to straighten the cervical canal, insert the uterine sound into the cervix and apply steady, firm pressure to advance it through the canal into the uterine fundus (generally 5–8 cm) (Fig. 2).
5. If the sound does not advance easily, the smallest cervical dilator or os finder can be tried. If this is successful, use progressively larger dilators until the sound will pass.
6. Once the uterus is successfully sounded, have an assistant open the IUD package, or do this yourself and then reglove.
7. For the Mirena IUS (EvoInserter):[16]
   a. Slide the slider to the most distal position to load the IUS into the inserter.
   b. Set the flange to the depth sounded.
   c. Grasp the tenaculum and provide counterpressure while using steady gentle pressure to advance the inserter into the cervix, not quite all the way up to the flange (Fig. 3).
   d. Move the slider part way back to the mark, to release the Mirena arms.
   e. Gently advance the inserter so the flange is at the cervix.
   f. Pull the slider all the way back to release the device into the uterine cavity.
   g. Carefully remove the inserter, sliding it all the way off the strings.
   h. Using scissors, cut the threads 2–3 cm from the cervix.
   i. Carefully remove the tenaculum and the speculum.
8. For the Flexi-T 300:[10]
   a. Slide the cervical stop to the centimetre mark corresponding to the depth sounded; in this model the arms will still be in a T position outside of the inserter and the strings will be visible at the end of the insertion tube.
   b. Grasp the tenaculum and provide countertraction while inserting the whole device into the uterine cavity, until you reach the fundus and the cervical stop rests against the external os.
   c. Gently pull on the strings to ensure the arms

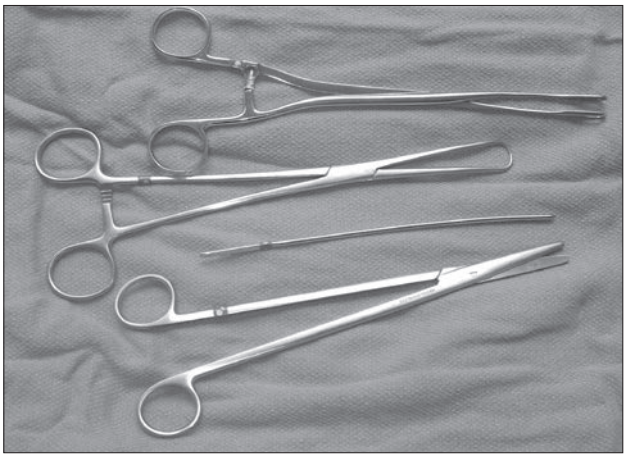


Fig. 1. Equipment for insertion of an intrauterine device, from top to bottom: ringed forceps, tenaculum, uterine sound and curved scissors.

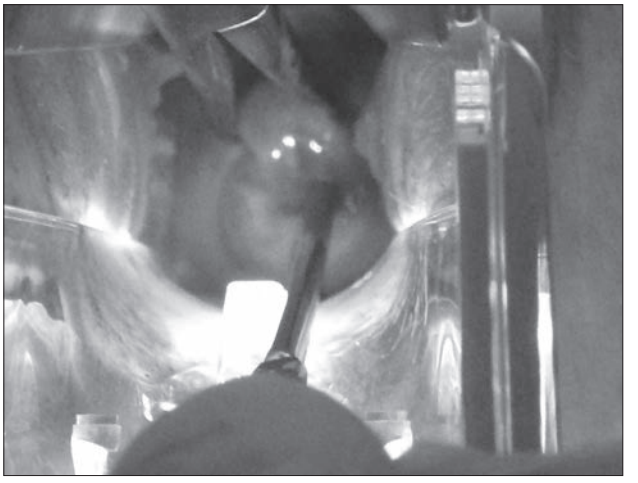


Fig. 2. Tenaculum applied to anterior lip of the cervix and pulled gently to straighten the cervical canal, while the uterine sound is advanced with steady pressure into the uterine cavity.

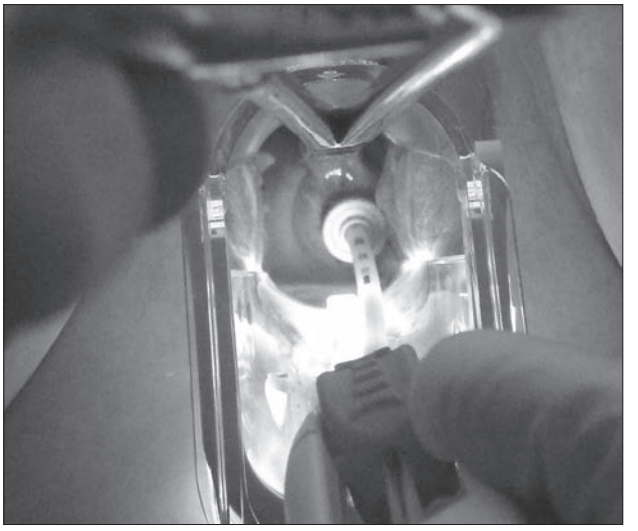


Fig. 3. Steady counterpressure is applied to the tenaculum while the inserter is advanced into the uterine cavity with steady pressure.

are unfolded and the device is stable within the uterus.
   d. Gently push the inserter toward the fundus, then rotate and pull out to remove the inserter, while leaving the IUD in place.
   e. Cut the strings 2–3 cm from the cervix.
   f. Carefully remove the tenaculum and the speculum.
9. For the Liberté UT380:[12]
   a. Position the flange at the distance sounded.
   b. Pull the nylon threads at the bottom of the inserter to pull the IUD into the inserter (Fig. 4).
   c. Gently insert the plunger into the insertion tube to the base of the IUD; be careful not to expel the IUD out the end of the inserter.
   d. Grasp the tenaculum and provide countertraction while inserting the device into the uterine cavity until the flange is about 1.5 cm from the external cervical os (Fig. 5).
   e. Push the plunger farther into the inserter, up to the black mark, to release the arms of the IUD.
   f. Gently advance the whole device to the fundus; the flange should move closer to the external os.
   g. Holding the plunger steady, pull the inserter back until it touches the ring on the plunger to release the IUD from the insertion tube (Fig. 6).
   h. Pull out the plunger.
   i. Gently remove the insertion tube.
   j. Cut the strings 2–3 cm from the cervix.
   k. Carefully remove the tenaculum and the speculum.
10. For the Mona Lisa 10:[11]
   a. Slide the flange to the distance sounded.
   b. Ensure the strings are hanging straight out the bottom of the device and gently insert the plunger, pushing the IUD up into the insertion tube until the ends of the arms project just past the end of the tube, giving a rounded end.
   c. Grasp the tenaculum to provide countertraction while inserting the device into the uterine cavity until the flange is flush with the external os.
   d. Holding the plunger steady, pull the insertion tube back to the base of the plunger, to expel the IUD into the uterus.
   e. Remove the plunger, keeping the insertion tube steady.
   f. Gently remove the insertion tube.
   g. Cut the strings 2–3 cm from the cervix.
   h. Carefully remove the tenaculum and the speculum.

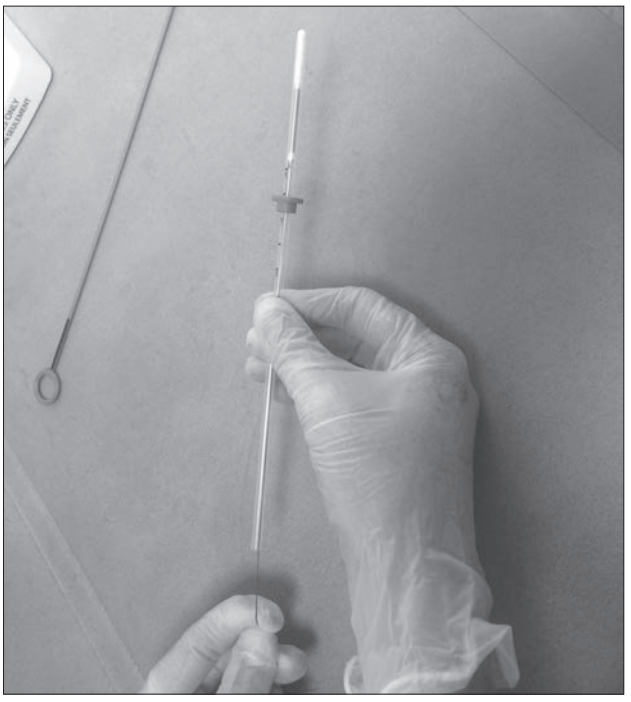


Fig. 4. Load the intrauterine device by pulling the strings while holding the inserter tube. You will see the arms of the device tucked into the inserter and the flange set to the appropriate uterine depth.

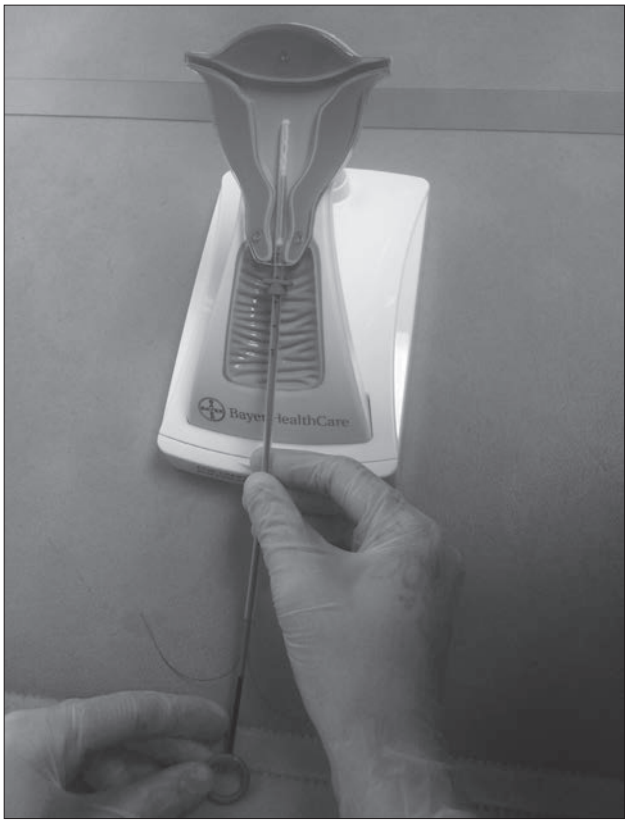


Fig. 5. Insert the intrauterine device (IUD) inserter into the uterus. You can see in this step, the flange is not quite flush with the surface of the cervix; the plunger is advanced into the tube to release the IUD and the entire device is advanced to the fundus. Pull back the tube until it touches the ring and remove the plunger and then the insertion tube.

OTHER CONSIDERATIONS

Insertion of an IUD can cause pain, particularly if cervical dilation is required. Predictors for increased pain include nulliparity, history of dysmenorrhea, and increased time since last pregnancy or last menses.[6,13,17] Many providers have used nonsteroidal antiinflammatory drugs pre- and postprocedure, although there is little evidence to support the effectiveness of this practice. Paracervical blocks are used by many gynecologists during insertion, but again studies are lacking. The best evidence comes from communication of the steps of the procedure and reassurance to decrease anxiety.

Difficult insertions can also be encountered with tight cervical canals. These are more common in nulliparous women and adolescents. Some providers have attempted to circumvent this by prescribing misoprostol before insertion to ripen the cervix. Again, few studies have been completed; however, one study using 400 μg sublingual misoprostol before insertion improved ease of insertion and did not increase expulsion rates after 1 month.[6] Further studies are needed before this becomes routine practice. Using a tapered os finder before uterine sounding may also help.

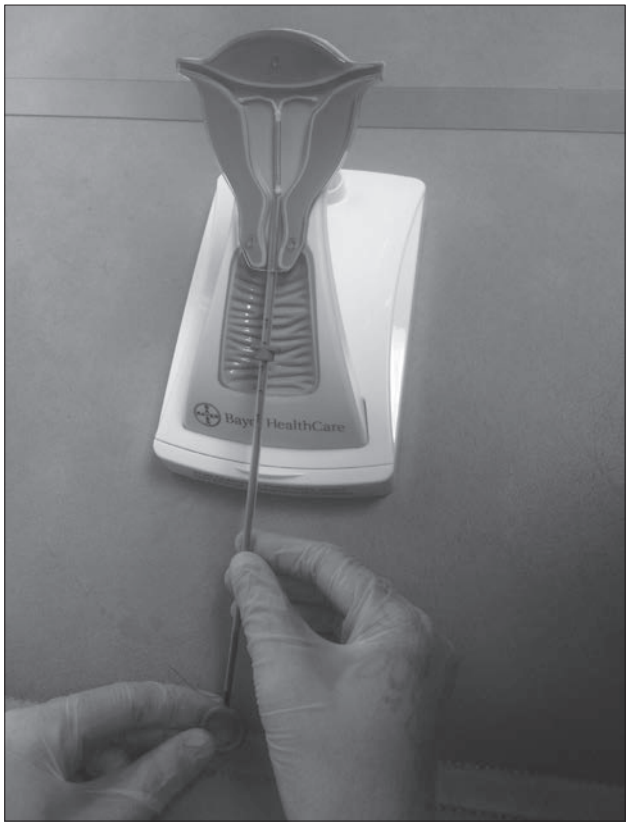


Fig. 6. Intrauterine device in situ with strings exiting the cervix. These are trimmed to the appropriate length.

Amenorrhea can occur with LNG-IUS. Women should be counselled that this is a normal occurrence and should also have a pregnancy test completed at first onset of amenorrhea to rule out pregnancy.

Testing for STIs does not need to be completed before IUD insertion. If you elect to screen for STIs, swabs may be done just before insertion at the same visit. If the results are positive, the patient can receive antibiotics with the IUD left in place.[1,9] However, in women who have a known STI, the insertion should be delayed until 3 months after treatment. In the event of PID, the patient should be given appropriate antibiotics; in mild to moderate cases, the IUD may be left in place unless there is no improvement after 72 hours of treatment.[9,18]

CONCLUSION

Intrauterine devices and systems are underused methods of contraception and menstrual cycle control. Misinformation about IUDs and lack of provider confidence in counselling about these devices have limited their use. Rural physicians can become more comfortable with counselling about, and insertion of, these devices to help decreased barriers to access.

Competing interests: None declared.

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