Inserting the levonorgestrel intrauterine system

Off-label use

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The levonorgestrel-containing intrauterine system (LNG-IUS), or Mirena, is an extremely effective method of birth control with an efficacy of 99.5% (Pearl index 0.1).[1] One of the side effects of the device is thinning of the endometrium, which causes a decrease in menstrual blood loss of 74% to 97% and a high incidence of amenorrhea. As a result, the LNG-IUS has developed a popular off-label use as a treatment for menorrhagia, dysmenorrhea, and endometriosis.[2]

The unit costs about $380 and is covered under most private insurance plans, the federal health plan, and some provincial health plans.

How the LNG-IUS works

The LNG-IUS is an intrauterine device with a cylindrical progestogen reservoir that releases an average of 14 µg/d of levonorgestrol directly into the intrauterine cavity. The release rate of the hormone starts at 20 µg/d and gradually decreases to 11 µg/d by the end of the device's 5-year lifespan. In contrast, the oral contraceptive pill Loestrin releases 150 µg/d of levonorgestrol into the system.

Despite the low dose of hormone released, patients can still experience progestin-related side effects from the LNG-IUS, particularly during the first few months after insertion. It is helpful to counsel patients that they might initially experience some irregular bleeding and premenstrual-type symptoms that will diminish rapidly 1 to 3 months after insertion.

Contraindications and risks

Absolute contraindications to insertion of the LNG-IUS include pregnancy; uterine cavity depth <5 cm; hormone-responsive tumours, such as cervical cancer; and active liver disease.

There is a small risk of perforation (6/1000) with insertion of the LNG-IUS. The highest risk of perforation is during the postpartum period, and for this reason, the manufacturer suggests that the device not be inserted until at least 8 weeks after delivery. Perforation is most likely at the time of insertion. If perforation occurs, the device should be removed and the patient treated with an antibiotic appropriate for pelvic inflammatory disease, such as levofloxacin and metronidazole.

Procedure

Consent and precautions. Obtain either verbal or written consent from the patient. In an office setting, verbal consent is deemed adequate, but in a hospital outpatient setting, written consent might be required. In high-risk patients, you might consider doing swabs for sexually transmitted infections during a visit before the appointment for inserting the device.

Materials required

- Drape
- Sterile gloves
- Sterile vaginal speculum
- 2 x 2 gauze or cotton balls to be soaked in iodine solution or prepackaged povidone swabs
- Ring or Kelly forceps
- Tenaculum
- Uterine sound or endometrial biopsy catheter
- Long-handled scissors

Optional equipment

- Cervical dilators
- Lidocaine gel and a sterile cotton swab
- 1% lidocaine with epinephrine, needle, and syringe

Before insertion. The LNG-IUS is most easily inserted around the last day of menses, but could be inserted at any time during the cycle. If not inserting during menses, consider doing a pregnancy test before insertion. If patients are not on their menses, they can be premedicated with 200 µg (2 tablets) of misoprostol moistened and inserted vaginally 4 to 12 hours before the procedure. If the procedure is scheduled for the morning, the tablets can be inserted the night before. If the procedure is scheduled for the afternoon, the tablets can be inserted that morning. The misoprostol causes dilation of the cervical os, thus easing insertion and increasing patients' comfort.

This off-label use of the medication can cause severe cramping in some patients. It is advisable to ask patients to take a nonsteroidal anti-inflammatory drug, such as 800 mg of oral ibuprofen, 30 minutes before the procedure to reduce uterine cramping during the procedure.

Before the device is inserted, perform a bimanual examination to determine the position of the uterus. Then don sterile gloves, insert a sterile speculum, and visualize the cervix. I find that, in most cases, a metal

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Pederson speculum is ideal for this procedure. You then cleanse the cervix with an antiseptic solution, such as Betadine. I find prepackaged Betadine swabs to be the most convenient, although their stalks are so short they need to be held with ring forceps in order to reach the cervix.

Sounding the uterus

The next step is to sound the uterus. I prefer to use a soft, flexible endometrial biopsy catheter rather than a rigid metal sound. The biopsy catheter has the advantage that the numbers indicating the depth of the cavity are easily read. A typical uterine cavity is between 6 and 8 cm deep; it must be at least 5 cm deep in order to insert the LNG-IUS.

You will often require a tenaculum to stabilize the cervix and successfully sound the cavity. Asking patients to cough as you apply the tenaculum to the cervix will reduce their discomfort. The tenaculum is typically applied horizontally on the anterior lip of the cervix. If you are having trouble getting the sound through the internal os, you can apply 5 mL of 2% lidocaine gel to the os with a cotton swab. This has the effect of facilitating cervical dilation. Alternatively, you can use cervical dilators. If you do use dilators, you might want to consider doing a paracervical block, which can be achieved by injecting 1% lidocaine submucosally at the 3- and 9-o'clock postition on the cervix.

Insertion. After successfully sounding the uterus, open the sterile LNG-IUS package to reveal the shaft of the inserter. Make sure that the slider is in the farthest position away from you and ensure that the arms of the system are horizontal. If they are not, align them on the sterile surface of the packaging. Pull on the threads to place the system in the insertion tube, and fix the threads in the cleft at the end of the shaft.

Set the *upper* edge of the flange to the uterine sound measurement taken previously. Move the inserter gently into the uterus until the flange is about 2 cm from the cervix. A tenaculum, if not already applied, might be necessary at this point to stabilize the cervix and facilitate insertion. When the system is in position, release the arms by pulling the slider back until it reaches the raised mark on the shaft. Push the inserter gently inward until the flange touches the cervix, and release the system by pulling the slider back all the way. The threads will release automatically.

Remove the inserter from the uterus and cut the threads. The manufacturer recommends cutting the strings to 2 cm, but I find this is too short. If the short ends of the strings are sticking out, they can feel "spiky" and cause partners to complain. If the strings are left 4 to 6 cm long, they can coil up in the posterior fornix. If they then do cause problems, they can easily be shortened later.

After the procedure

The risk of expulsion of the LNG-IUS is highest during the 2 weeks after insertion. I advise patients to check the discharge from their first period to make sure that the device has not come out. Some practitioners have patients come back 1 month after insertion to check for strings, although I do not routinely do so. If patients are comfortable doing so, they can check the strings themselves.

The LNG-IUS is indicated for 5 years. Should patients wish to become pregnant, return to fertility is rapid. The LNG-IUS is easily removed by grasping the strings with ring forceps and pulling.

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References

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2. Lethaby AE, Cooke I, Rees M. Progesterone/progesterone-releasing intrauterine systems for heavy menstrual bleeding. *Cochrane Database Syst Rev* 2005;4:CD002126.

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