Contraceptive Procedures: Subdermal Contraceptive Implants

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Progesterone-releasing subdermal contraceptive devices, such as the Implanon, Jadelle, and Sinoplant-2, provide effective contraception for up to 3 to 5 years.

Devices

- **Implanon**: Duration: 3 years. Number of rods: One, ethylene vinyl acetate. Size: 4 cm long, 0.2 cm diameter. Progestin released: 68 mg of etonogestrel at a rate of 60 to 70 mcg/day initially, 35 to 45 mcg/day at the end of the first year, 30 to 40 mcg/day at the end of the second year, and finally 25 to 30 mcg/day at the end of the third year. Quoted rate of pregnancies: Pearl Index of 0.38 pregnancies per 100 women-years of use. Onset of effective contraception: Within 24 hours of insertion. Return of fertility after removal of rod: Quickly. Common side effect: Irregular bleeding. Availability: US and elsewhere. Training required by manufacturer: Yes (Fig. 20.1A).

- **Jadelle**: Duration: 5 years. Number of rods: Two. Size: 4.3 cm long, 0.25 cm diameter. Progestin released: 75 mg of levonorgestrel per rod at a rate of 80 mcg/day in the first month, 50 mcg/day by 9 months, and then 25 to 30 mcg/day. Availability: Not marketed in the United States, but is available in many other countries. Cumulative pregnancy rate in clinical trials: 0.3% at 3 years, 1.1% at 5 years. Common side effect: Unscheduled bleeding (Fig. 20.1B).

![FIGURE 20.1](image)

A: The Implanon system. Modified from and reproduced with permission of MSD Oss B.V., a subsidiary of Merck & Co., Inc., Whitehouse Station, New Jersey, USA. All rights reserved. NEXPLANON is a registered trademark of MSD Oss B.V. B: The Jadelle system. (continued)
• Insertion is performed using local anesthesia. Using a no. 10 trocar (provided by the company), the rods are placed in a V configuration subdermally at the inner part of the nondominant upper arm. Removal is performed under local anesthesia by grasping the ends of the rods through a 3- to 4-mm incision at the apex of the V (Fig. 20.1C and D).

• **Sinoplant-2:** Similar to Jadelle, but only available in China, Indonesia, and other developing countries. Registered as “Zarin” in some countries.

**Contraindications**

- Pregnancy
- History of thrombotic or thromboembolic disorders
- History of breast cancer
- Liver disease
- Undiagnosed abnormal genital bleeding
- Allergies or sensitivities to implant components

**Insertion of Implanon**

**EQUIPMENT** (Fig. 20.2)

- A 25-gauge needle (1.5 inches long) attached to a 2- to 5-mL syringe
- 1% lidocaine without epinephrine
- Antiseptic solution: Betadine, chlorhexidine, and isopropyl alcohol
- Adhesive closure and bandage for puncture site
- Sterile surgical gloves
- Sterile drapes
- Sterile gauze
- Sterile disposable applicator preloaded with Implanon
PATIENT POSITION

• Supine: Nondominant arm rotated outward and bent at a 90-degree angle at the elbow, palm near patient’s head. Arm should be well supported by the bed or table (Fig. 20.3).


**FIGURE 20.3** Positioning arm in right-angle position. Modified from and reproduced with permission of MSD Oss B.V., a subsidiary of Merck & Co., Inc., Whitehouse Station, New Jersey, USA. All rights reserved. NEXPLANON is a registered trademark of MSD Oss B.V.
LANDMARKS

• Identify the crease between the biceps and triceps muscles. This will be a groove in which the implant will be inserted.
• Mark the insertion site at 6 to 8 cm (or three fingerbreadths) superior and lateral to the medial epicondyle of the humerus.

ANESTHESIA

• Inject 1 to 2 cc of 1% lidocaine subcutaneously along the line of planned insertion track (Fig. 20.4 Implant local anesthesia).

TECHNIQUE

1. Confirm that the Implanon rod is in the needle. If it is not readily visible, point the applicator needle downward over a sterile field and tap the needle until the rod can be seen. Turning the applicator needle back upward and tapping the base on the table should then replace the rod into a position ready for insertion.
2. Remove the needle cover. Place the needle tip, bevel up, at the marked site of insertion (Fig. 20.5A). Pull the skin taut and push the needle and obturator directly through the skin at a 20-degree angle toward the patient’s shoulder (Fig. 20.5B Trocar piercing skin image).
3. Once the needle is inserted, lower the angle of the needle until it is parallel to the skin (Fig. 20.5C and D).
4. Advance the needle within the subdermal tissue at this parallel angle while lifting or tenting the skin upward to avoid deep insertion of the needle (Fig. 20.5E Implant insertion tenting).
**Figure 20.5**

A: Implanon insertion: (A) Beveled end up, inserter is poised to break through the anesthetized skin and start subcutaneous track. (B) Thumb stabilizing skin with countertraction as trocar enters skin. (C) Index finger putting countertraction on skin in opposite direction.

B: Trocar being introduced under the skin at a 20-degree angle. It is rapidly lowered and turned to enter the subdermal space parallel to the skin surface. Modified from and reproduced with permission of MSD Oss B.V., a subsidiary of Merck & Co., Inc., Whitehouse Station, New Jersey, USA. All rights reserved. NEXPLANON is a registered trademark of MSD Oss B.V. (continued)
5. Once the needle is advanced fully, press on the obturator support to break the applicator seal (Fig. 20.6A).
6. Turn the obturator 90 degrees with respect to the needle (Fig. 20.6B).
7. Stabilize the obturator with one hand, keeping the rod in place, and slowly withdraw the needle from the patient’s arm (Fig. 20.6C Tenting crop image).
8. Confirm the rod is in place by palpating for both ends underneath the skin. If the rod is not palpable, examine the needle, which should reveal the grooved tip of the obturator. Confirmation can also be done by ultrasound (Fig. 20.6D).
9. Cover puncture site with adhesive closure and bandage.
10. Place the patient chart label in her medical record and give the patient her user card.
**FIGURE 20.6**  A and B: Inserter being prepared for release (A) and deposit of implant (B). Modified from and reproduced with permission of MSD Oss B.V., a subsidiary of Merck & Co., Inc., Whitehouse Station, New Jersey, USA. All rights reserved. NEXPLANON is a registered trademark of MSD Oss B.V. C: Implanon trocar completely inserted, in position to release the rod and withdraw the sleeve. D: Implant insertion rod visible at needle bevel, indicating implant deposited in skin. Modified from and reproduced with permission of MSD Oss B.V., a subsidiary of Merck & Co., Inc., Whitehouse Station, New Jersey, USA. All rights reserved. NEXPLANON is a registered trademark of MSD Oss B.V.
Side Effects and Complications

- Most women do not experience significant pain during or after insertion. NSAIDs are usually sufficient for pain control.
- Rare complications are infection, allergic reaction, expulsion, hematoma formation, local migration of the rod over time, and medial antebrachial cutaneous nerve damage.

AFTERCARE

- Counsel the patient that she may experience mild swelling and bruising. She should notify her MD if she develops severe pain, swelling of the arm, discharge at the insertion site or fever.

Implanon Removal ("Pop out" Technique)

1. Identify location of rod in the arm.
2. Elevate and identify one end of the rod (usually the distal end) by pressing down on the opposite (usually the proximal) end. Use local anesthesia, 1% lidocaine, injecting 1 to 3 cc under the distal tip of the implant.
3. Using a no. 11 blade, make a small incision over the identified end. A 2-mm incision should be sufficient for Implanon removal. The skin can be stretched slightly with the mosquito forceps if necessary.
4. Begin by gently pushing the implant toward the incision with your fingertip until the tip is visible in the incision (Fig. 20.7).
5. When the implant is visible in the incision, wipe away any fibrous tissue covering the device, grasp the end with a sterile mosquito forceps, and remove the rod (Fig. 20.7).
6. Cover the incision site with adhesive closure and bandage.

![Figure 20.7](image)

Implant being expressed toward incision and grasped with forceps. Modified from and reproduced with permission of MSD Oss B.V., a subsidiary of Merck & Co., Inc., Whitehouse Station, New Jersey, USA. All rights reserved. NEXPLANON is a registered trademark of MSD Oss B.V.
Implanon Removal (Instrument Technique)

Follow steps 1 to 5 above.

7. If the tip of the implant is not clearly visible, fibrous tissue may have formed around the implant. The fibrous tissue can be dissected away by continuing to cut toward the distal tip with the scalpel (Fig. 20.8A), until the tip is clearly visible. Remove the implant with forceps (Fig. 20.8B).

8. If the tip of the implant is still not visible, gently insert a forceps into the incision and grasp the implant (Fig. 20.8C), stabilizing it with the fingers of the other hand. With a second forceps carefully dissect the tissue around the implant. The implant can then be removed (Fig. 20.8D).

**FIGURE 20.8** Instrument technique for implant removal. A: Scalpel used to dissect fibrous tissue sheath away from implant. B: Forceps used to remove implant after release from fibrous sheath. C: Forceps inserted into the incision to grasp implant subcutaneously and bring to incision. D: Second forceps used to grasp implant and remove, while first forceps stabilizes implant in incision. Modified from and reproduced with permission of MSD Oss B.V., a subsidiary of Merck & Co., Inc., Whitehouse Station, New Jersey, USA. All rights reserved. NEXPLANON is a registered trademark of MSD Oss B.V.
CPT Codes
11981. Insertion, non-biodegradable drug delivery implant
11982. Removal, non-biodegradable drug delivery implant

PEARLS
• Conditions requiring follow-up care: Diabetes, hypertension, depression, and headaches.
• Rifampin, some anticonvulsants, and some antiretroviral agents may make implants less effective, but even with slight reduction in effectiveness, implants will protect against pregnancy at a level comparable to other hormonal methods. Any medication the patient is taking should be checked for current information about drug–drug interactions with the implant.
• Implants may be placed at any time in the menstrual cycle (and placed immediately if switching from other form of contraception) and immediately postabortion or postpartum.
• If removal of rod(s) is difficult (i.e., rod[s] are not removed in 30 minutes), it may be better to stop the procedure for the client’s comfort. In the event that the Implanon rod or both Jadelle/Sino-Implant (II) rods are not removed, ask the client to return when the incision site is fully healed (in about 4 to 6 weeks) and try again or refer to a more experienced clinician.

Note: Starting in 2012, the manufacturer of Implanon (Merck, Inc. Whitehouse Station, NJ) will be gradually replacing Implanon, with Nexplanon, an improved version of Implanon with the same drug content and a revised inserter. All the principles of Nexplanon insertion and removal are the same as with Implanon and in Figures 20.9A–C the essentials of insertion with the new inserter are displayed.

**FIGURE 20.9**  Nexplanon insertion. A: The skin is prepared as for Implanon and the Nexplanon inserter positioned above the insertion site at a 30-degree angle. B: The inserter is advanced subdermally as for Implanon until the hilt of the needle/trocar is reached. C: Keeping the applicator in the same position unlock the purple slider by pushing it slightly down. Move the slider fully back until it stops. The implant is now in its final subdermal position, and the needle is locked inside the body of the applicator. The applicator can now be removed. Modified from and reproduced with permission of MSD Oss B.V., a subsidiary of Merck & Co., Inc., Whitehouse Station, New Jersey, USA. All rights reserved. NEXPLANON is a registered trademark of MSD Oss B.V.