The occasional nonscalpel vasectomy

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The nonscalpel method of doing vasectomies has been around since 1974 (in China) and 1985 in North America.[1] It has become the method of choice because it is minimally invasive and can be done in the office. A Cochrane review concluded that the nonscalpel method is also associated with less bleeding, infection and pain.[2] There are many small variations in the finer details of the procedure, and the following description is only one version of this procedure. The common areas for variations will be pointed out as they apply.

CONSULTATION AND COUNSELLING

There are numerous reasons for a preprocedure consultation, preferably not on the same day as the procedure. This is the time to find out the reasons for the procedure, counsel the patient on the risks and possible complications, and perform a physical examination. It is useful to explain the details of the procedure so that there are no surprises. An appointment is then booked for another day, which allows time for the patient to discuss the procedure with his partner and eliminates the risk of someone making a "spur of the moment" decision. I find it useful to give the patient a handout (with diagrams) that contains everything discussed during the consultation. I make sure to point out that the patient will not be sterile immediately after the procedure. This is because sperm is stored in the seminal vesicles (around the prostate), and these vesicles are on the "other" end of the procedure. The literature varies on how long it takes to clear out the sperm, but it could take as many as 30 ejaculations to accomplish a sperm count of zero.[3] The average laboratory prefers to wait 3 months before testing a patient.

It is also useful to discuss reversal of vasectomies. I tell patients to think of it as a permanent procedure, as the chance of successfully reversing it is very low.

The following aspects are important points to cover during the history:

- Reason for request
- Number of children (from this relationship and previous relationships)
- Status of current relationship
- Previous infections, surgery or trauma in the scrotum
- Allergies
- Medication, for example, blood-thinning agents

The physical examination is mostly limited to the scrotal area. The presence of bilateral vas deferens should be determined as well as possible congenital abnormalities, signs of infection or other reasons for not being able to perform the procedure.

CONSENT

Written and informed consent can be obtained at the consultation visit or preferably on the day of the procedure. This allows for another chance to go over possible complications (see "Complications"). The main question I ask is, "Are you sure you want to do this?"

INSTRUMENTS

The instruments you will need are shown in Figure 1. You will also need lidocaine 1%–2% without epinephrine, a 6 mL syringe and a 30 G needle for

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freezing. The reason for not using epinephrine is to recognize any bleeders instantly. You will need sterile towels for draping, a suitable cleaning solution and sample containers with formalin in it for pathology samples. I use an extra sterile glove to drop the cautery into. This way it can be reused in a sterile fashion by burning a hole through one of the fingertips (Fig. 2).

PREPARATION

1. It is sometimes useful to lay a warm, wet towel on the scrotum while getting everything ready. This helps to relax the scrotum, which makes it easier to palpate the vas deferens.
2. I also let the cleaning solution stand in a container with warm water ahead of time for the same reason. When cleaning the area, thoroughly clean the penis as well as the area behind the scrotum. The penis often falls into the surgical field and will have to be moved away.
3. Drape the area in the usual fashion, leaving an area where instruments can be laid down for easy reach.



Fig. 1. Instruments needed for nonscalpel vasectomy (from bottom left): curved sheering forceps (1), ringed clamp (at least 1), clip applicator, cautery (battery or other); (from top left): at least 8 titanium clips, containers for cleaning solution, small scissors, small forceps (2).



Fig. 3. The grip for identifying and pinning down the vas deferens.

PROCEDURE

1. Identify the vas. The grip that is used to identify the vas deferens and to pin it down is shown in Figure 3. This might need some practice, but it is important, as the vas deferens is a muscular structure and can "move" around if not pinned down. The index finger is anterior and superior to the proposed incision site and the thumb inferior and anterior. The middle finger is behind the scrotum and helps to "lift" the vas up so that the vas is almost "tented" over the middle finger. The vas is identified by starting in the middle of the scrotum and moving (rolling) the thumb and middle finger laterally. The vas almost feels like half-cooked spaghetti.
2. Once the vas is pinned down, move the scrotal skin so that the raphe of the scrotum is overlaying the vas.



Fig. 2. Method of reusing the cautery in a sterile fashion.



Fig. 4. Infiltrating with local anesthetic agent.

3. Using a 30 G needle, freeze the skin halfway between the top of the testicle and the base of the penis and then insert the needle a bit deeper to freeze the vas (Fig. 4.) Most patients will feel a bit of a "kick in the groin" sensation when you freeze the vas. Make sure to inject enough freezing around the vas, almost as you would do for a digital ring block.
4. Using the shearing forceps, make a small hole in the scrotal skin and stretch it open to about 0.5–1 cm. Make the hold deep enough to ensure that the fascia underneath is also opened (Fig. 5).
5. At this point you will introduce the ringed clamp into the opening and grab the vas. It might be useful to slide the closed ringed clamp back and forth over your middle finger to find the "bump" that signifies the vas.
6. Open the clamp and "push" the vas into the clamp with your middle finger.
7. Close the clamp and pull the vas out of the wound. You can let go of your grip now.
8. Confirm that you have the vas in the clamp by feeling how the vas lifts up as you lift the clamp up (Fig. 6). Some physicians prefer to grab the vas through the skin before making an incision in the skin. Once the vas is secured in the ringed clamp, the sheering forceps are used to penetrate the skin and immediately go into the fascia surrounding the vas. From here the steps are the same as mentioned already.
9. There are several layers of fascia around the vas. These need to be stripped away using the sheering forceps (Fig. 7). I find it useful at this point to have another ringed clamp to grab the vas each time another layer is stripped away. Other instruments such as the sheering forceps, towel clamps and toothed forceps can also be used. Make sure all blood vessels are stripped away. Smaller blood vessels can be swiped away with a 2×2 gauze pad.
10. When all the layers are removed, use the sheering forceps to penetrate the tissue that is underneath the loop of the vas deferens, making sure not to injure any blood vessels.
11. Clamp the 2 ends with the titanium clips. I use 2 clips on each end, applied from 2 directions (Fig. 8). Some physicians use nonabsorbable suture material to tie off the ends.
12. Resect the piece in between the clips and send to pathology for confirmation (Fig. 9).
13. Cauterize the ends, making sure to obliterate the lumen (Fig. 10). At this point, some physicians will turn one end back on itself and tie it down with suture material, or let it slide back in its sheath and suture the sheath close (fascial interposition). This might be unnecessary if the clips were applied properly and the lumens destroyed.
14. It is very important at this point to check for bleeding, as even the slightest oozing can lead to a grapefruit size scrotum afterwards (Fig. 11).



Fig. 6. Confirming that the vas deferens was clamped successfully.



Fig. 5. Piercing the skin and stretching the wound open.



Fig. 7. Stripping the layers from the vas deferens.

15. Relax the tension on the 2 ends of the vas to ensure there is no bleeding before letting the 2 ends slip back into the scrotum.

THE OTHER SIDE

1. Before I start working on the other side, I give the patient a final chance to opt out of the procedure by stating that he could still father children with 1 vas deferens patent. (I have yet to have someone back out at this stage!)
2. To repeat the procedure on the other side, find the vas on the other side by changing hands, or by using the same hand and approaching the scrotum from the cephalic end of the patient.
3. Once you have the vas pinned down, slide the scrotal skin until the hole that you have already made lies over the vas. This way you can do both sides through the same hole. Just remember to freeze the other vas before you start!
4. Also remember to pierce the fascia on the other side with the sheering forceps before trying to grab the vas.
5. Once you are sure there is no bleeding and both transected vasa are back in the scrotum, clean the wound and apply a bandage over the wound. It is usually not necessary to suture the wound, as it is small and contraction of the dartos muscles usually pulls the wound closed. A scab usually forms within 1 or 2 days.

AFTER THE PROCEDURE

Again, the use of a handout is recommended, as we know how little patients remember of what we tell them, let alone after a stressful procedure. It is advisable to use ice packs on-and-off the scrotum for a few hours to minimize the risk of bleeding and swelling. I give the patients acetaminophen and ibuprofen to take in the clinic before they leave and recommend they take it afterwards as needed. No strenuous activity is advised for about a week. Although there is no definite recommendation, I also advise patients to abstain from sexual activity for about a week.

Again, stress the point that patients are not ster-



Fig. 8. Titanium clips applied to both ends of the vas deferens.

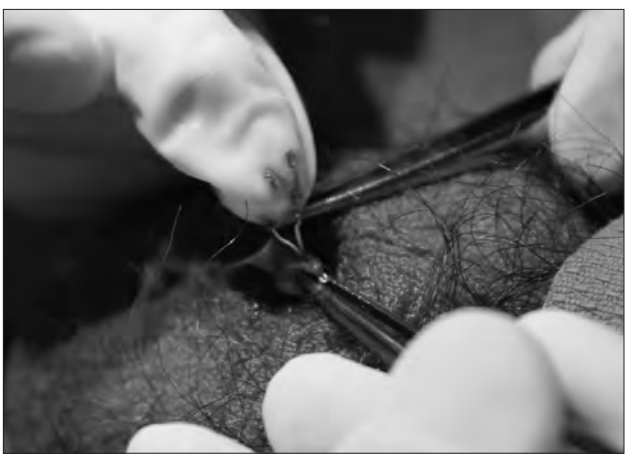


Fig. 10. Cauterizing the ends of the transected vas deferens.



Fig. 9. Transection of the piece of vas deferens between the clips.



Fig. 11. Ensuring no bleeding before slipping the vas ends back in the scrotum.

ile right away. At this point, I talk about the postvasectomy semen analysis and arrange that it be done at least 3 months later. The most up-to-date recommendation is that only 1 sample is necessary, as long as it is more than 3 months after the procedure.[4] Sometimes you will get a result back that states, "few immotile sperm found." If the sample was a fresh one (within 4 hours of production), at least 7 months after the procedure and the sperm count is less than 10 000/mL, you can assume that the procedure was successful.[4]

COMPLICATIONS

Possible complications include infection in the wound, bruising and swelling of the scrotum. Postvasectomy pain can occur and can be chronic. It is not known why some men have chronic pain after vasectomy. In a small percentage of men, small nodules develop in the vas at the vasectomy site. These are often sperm granulomas and can be excised if it is a cause of chronic pain. I warn patients about the potential for recanalization, although the risk is very low (0.05%).[5]

A FINAL WORD

Many physicians might not feel comfortable performing a vasectomy on their own after reading this article. It might be helpful to find a colleague who performs vasectomies and request to assist them a few times to get a feel for the anatomy and gain confidence in the technique.

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