

Peritoneal Dialysis (PD) Catheter Placement: What to Expect

PD is quick to learn, easy to do, and puts you in charge. Getting a catheter placed can be the most alarming thing about it. Knowing what to expect—and what to ask for—can help make it easier on you.

Know Your Catheter

PD catheters are soft and flexible; they are made of polyurethane or of silicone rubber, with one or two Dacron cuffs. One cuff is placed into your abdominal muscle wall. A second cuff may be placed in the skin at your *exit site* (where the catheter comes out of your body). Your own fibrous tissue will grow into the cuff(s) and help anchor the catheter in place. The cuffs also help keep germs from traveling up the catheter.

The tip of the catheter that is inside your body may be straight. Or, it may be coiled in a spiral, grooved, or even have flat silicone discs to help hold your tissue layers apart to improve drainage. Many designs have been tried, and they all have about the same results.¹ Your surgeon may be able to show you a picture of the type you will have. A PD catheter can be placed in the abdomen or in the chest (presternal).

Abdominal PD Catheters

Placement in the abdomen is most common. The exit site is usually about an inch under the belly button. The catheter can be below your belly button or to the right or left of it. *Tell your doctor where your belt falls so the catheter can be placed where it will not rub.* The catheter must be kept clean and dry to avoid infection. You can take a shower with an abdominal PD catheter, but not a bath. Most programs do not suggest swimming, though private pools may be okay.

Abdominal Placement

Catheter placement is a quick (15-30 minute), minor procedure. It should be done in an operating room to help prevent infection. If you are nervous, ask about drugs to help you relax or sleep. You won't be able to eat after midnight, so you may want to set up your visit for the morning. The nurse or doctor will draw on your skin with a marker to show where the catheter will go. Some centers will require you to have an enema and/or take a shower before the placement. Just before the procedure, you will need to empty your bladder.

There are four ways to place an abdominal PD catheter:¹

- **Surgical** – This is the most often used technique. You will be given local (just the area) or light general anesthesia. A scalpel is used to open the skin and muscle. Then, a tiny (1-2 cm) cut is made through the wall of the *peritoneum* (the lining of the abdomen). Some *omentum* (a curtain of tissue inside the abdomen) may be pulled out and removed so it does not get in the way of the catheter. The catheter is pushed through the cut, which is then stitched around it. The exit site is chosen, and a tunneling tool is used to form a place for the catheter under the skin. The catheter is pulled through the tunnel until the cuff is in place. Then stitches are placed around it. Surgery is more costly and makes a larger incision than other techniques.

- **Trocar** - Using local anesthesia, a small (2-3 cm) cut is made through the skin and muscle. PD fluid will be placed in your abdomen using a needle or tube. Then, the surgeon will ask you to tense your stomach muscles while a *trocar* (pointed tool) is inserted. The trocar is removed, leaving

guides to help the surgeon place the catheter and stitch it in place. Then a tunnel is made under the skin to an exit site, and stitches are placed around it. Since the trocar makes a large hole, this technique may cause more leaking.¹

- **Guide Wire** – Using local anesthesia, a small (1-2 cm) cut is made through the skin and muscle. You will be asked to tense your stomach muscles so the surgeon can push a small tube through the peritoneum. PD fluid will be placed in your abdomen. The surgeon will insert a guide wire through the tube, and use the wire to place the catheter in the right spot. Then a tunnel is made under the skin to an exit site, and stitches are placed around it. This technique may cause less leaking, but there is a risk that the bowel could be perforated by the small tube.¹

- **Scope** – Using local anesthesia, a small cut is made through the skin and muscle. A mini-trocar with a thin tube inside is inserted through the wall of the abdomen. The trocar is removed, and a scope is inserted so the surgeon can see the inside of your abdomen. The catheter is placed and stitched, and then the guide is removed. A tunnel is made under the skin to an exit site, and stitches are placed around it. A surgeon needs special training to use the scope.

Some surgeons keep the catheter under the skin for two weeks or more, instead of making an exit site. When it is time to start PD, a small cut is made to pull the catheter out. This is called the *Moncrief-Popovich procedure*. Research suggests that this technique helps catheters last longer and helps prevent infection.²

Presternal Catheter

A *presternal catheter* is placed in the chest wall, and the tip reaches down into the abdomen. The chest is thinner and less gummy

than the abdomen, so infection is less likely. Chest skin also moves less than belly skin, so a presternal catheter is a good choice for a child or for someone who is heavy. You can take tub baths with a presternal catheter, if you keep it out of the bath water. Swimming is not suggested.

Before you get a presternal catheter, you'll be asked if you prefer it to exit on the right or left side. If you are a woman, *be sure to avoid your bra area so the catheter will not rub*. You will be given antibiotics through an intravenous within 24 hours before the catheter is placed. Using anesthesia, small (3-4 cm) cuts are made at the second and third rib and on the abdomen. Two parts of the catheter are inserted and held in place with a titanium connector. Pockets are made under the skin for the cuffs.

Ask for a Transfer Set

A "transfer set" is a 4-6 inch length of tubing with a titanium valve to allow the catheter to open and close. Ask the surgeon to put on a transfer set in the operating room—it takes only seconds. If this isn't done, it may take as long as 30-45 minutes to put one on in the dialysis clinic, and the risk of infection is higher.

When you do PD, your transfer sets will need to be changed every six months. This is a sterile procedure. It can be done in the dialysis center, or you can learn to do it at home yourself.

How You May Feel Afterward

Most people say that they don't feel much pain after having a PD catheter placed. Some are hungry because they had to fast for a few hours. Some get right up and walk and do not need any painkillers. Others do have some degree of pain for 3-5 days, take pain pills, and find it hard to wear pants.

If you had general anesthesia, you may feel groggy afterward, and you may have some nausea. Since you don't know how *you* will feel, it's wise to plan to take it easy for a few days so you can heal properly.

Caring for Your New Catheter

When your catheter placement includes putting PD fluid in your abdomen, some of this fluid may drain out and soak the bandages. You should be given clean, dry gauze and tape to take home in case this happens. Your belly may also feel tight if fluid was left in. This will ease up over time.

In most cases, your PD training nurse will want to change your dressings. This is a chance to check on how well your catheter is healing. Once your sit looks good, you may be asked to leave off the dressings so it can finish healing in the open air.

At a clinic visit, your PD nurse will flush your catheter with PD fluid to see how well it drains. To do this, the nurse will add a tubing extension onto your transfer set. (Ask if you have a choice about length—it is easier to care for a shorter catheter). A bag of fluid will hang from an IV pole and drain into your belly through the catheter. Unless the fluid is cold, you may not feel this at all. If the flush goes well, you'll be ready for training. Often, training can start within a week or two after getting your catheter.

What Can Go Wrong?

No treatment is perfect. Any type of access—for PD or for hemodialysis—has its challenges. So, when you read this section, keep in mind that most of these issues can be prevented with good, careful technique.

In this article, you have already seen the word “infection” several times. This is because one key to successful, long-term PD is keeping germs out of your catheter and your

peritoneum. It isn't easy, because germs are all over. But in your training, you'll learn steps for *aseptic* (germ-free) technique that you'll need to follow closely. It will seem like a lot to learn at first, but the steps will quickly become a habit—like brushing your teeth—that you can do without thinking too much about it.

Some types of infection that can occur with a PD catheter include:

- **Exit site infection** – This occurs when bacteria grow in the skin where your catheter comes out of your body. Some programs will have you use an antibiotic cream to prevent this. Mupirocin has been proven to reduce infection by about 2/3.³ Other programs will have you air-dry your exit site so it is not moist (germs love moisture). If you get an exit site infection, your doctor will prescribe antibiotics. An exit site infection can lead to a tunnel infection.
- **Tunnel infection** – If bacteria get into the tunnel under your skin where the catheter goes, the infection can be hard to get rid of—and can reach the peritoneum. Your doctor will prescribe antibiotics, and you may need to get a new catheter if the infection does not clear.
- **Peritonitis** – Infection of the peritoneum can be painful and can cause scarring. In some cases, scarring can make it impossible to keep doing PD. You'll learn to watch for cloudy fluid and report pain right away so you can start antibiotics.

Other problems that are *not* infections can also occur with a PD catheter:

- **Catheter migration** – Sometimes a PD catheter won't stay down in the abdomen

where it belongs. It may drift up under your ribs, where it can cause pain. An X-ray will show this. The catheter may move back down by itself. This is often the case if you were constipated and take a laxative. Rarely, surgery is needed to move the catheter back where it belongs.

- **Problems draining** – In rare cases, blood clots, fibrin, and/or omentum tissue can block the catheter so it won't drain. Enzyme drugs may be able to break up clots or fibrin. If omentum is in the way, surgery may be needed to remove it.
- **Hernia** – The extra pressure of fluid in the belly can cause or reveal a *hernia*— a weak spot in the muscle of the abdomen or groin. In men, this can show up as PD fluid that leaks into the scrotum (*inguinal hernia*). A minor repair surgery using special mesh to make the muscle stronger can fix this problem.
- **Body image concerns** – There is no question that looking down and seeing a

tube coming out of your body takes some getting used to. How you feel about yourself and about your body can affect your sexuality and your relationships. If you have a partner, talk about your feelings. You may find that your loved one is so happy to have you around and able to do PD that the tube bothers *you* more than it does him or her. Some people cover the tube with gauze so they don't have to look at it much. That's okay, too. Most people on PD do find that they get used to the catheter in time. Visit the *Sexuality and Fertility* module of **Kidney School™** at www.kidneyschool.org to learn more about how to cope with a PD catheter.

Conclusion

Getting a PD catheter placed is your first step toward a treatment that is flexible, convenient, and easy to learn and do. If you take good care of your PD catheter, it will help you feel your best.

References

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