Placement of Vascular Access for Hemodialysis

This handout explains access the type of access used for dialysis and what to expect.

Dialysis Access
Hemodialysis is a process that removes waste from the blood via a vein and artery. Surgery is used to allow this to occur in one of two ways.

- **Fistula.** A fistula is a connection between an artery and vein that helps the vein get high blood flow from the artery. During dialysis, lines are placed in the vein to clean the blood.
- **Graft.** A graft is made of a thin, hollow, tube that is placed under the skin to connect an artery and vein. In this case, lines are placed in the graft for dialysis.

Why access is needed
1. You are not currently on dialysis, but your kidney doctor feels you may need it in the near future, and wants to be ready.
2. You currently get dialysis with a catheter, but your kidney doctor thinks it is time for a more permanent option. This access will allow you to get better dialysis then the catheter can provide.
3. You have a fistula or graft but it does not work well. Your kidney doctor may either the current access to be changed or new access placed.

*Usually, new access cannot be used right away. You must wait 3-14 days after a graft is placed and 2 weeks – 2 months (can be longer) for a fistula to be used for dialysis.

Other options
If your kidneys do not work, you need dialysis, which requires some type of access to clean and filter your blood. A tunneled catheter can be put in the big vein in your neck and used for dialysis, but there is a higher risk of infection compared to a fistula or graft. Patients with a catheter have a higher risk of death than patients with fistulas or grafts. In most cases, your kidney doctor will advise you to have a fistula or graft so they can take the catheter out.

Surgery
Often, these surgeries do not require you to stay in the hospital overnight. You show up 1-2 hours before your surgery and go home about two hours after. You may have a regional nerve block before your surgery that makes your whole arm numb, or get a local numbing medicine during surgery. The anesthesia doctor will also give you medicine to help you relax. Surgery takes 1-2 hours, but can last longer.

How to prepare for your surgery
1. You may follow your normal diet the day before surgery.
2. Do not eat or drink anything after midnight the night before surgery.
3. Do not eat or drink the day of surgery. You may take your
medicines with a sip of water, unless told otherwise.

4. Your surgeon will advise you on blood thinners such as Coumadin, Plavix or Rivaroxaban. Do not stop taking aspirin - you may keep taking aspirin up to and after the surgery. If you have diabetes, you will get specific orders about your diabetes medicine. Your surgeon or the health care team may give you orders about other medicines as well.

Risks

1. **Failure of the fistula or graft to work correctly.** The most common problem is that the fistula or graft fails and is not able to be used for dialysis. This happens about 20-50% of the time and depends on the type of surgery you have.

2. **Long term failure of the access.** Many fistulas and grafts will start to narrow or clot off completely over time. This can happen months to years after placement and treatment is needed to keep them working.

3. **Poor blood flow to your hand after surgery.** (Rare). Call your surgeon right away if you have: a lot of pain or your hand is very cold, numb, or you cannot move it. This may mean you do not have enough blood flow to your hand. If you have any concerns about this go to the Emergency Department. If you had a nerve block for your surgery, this may mask signs of poor blood flow. The nerve block often lasts 6-12 hours.

4. **Chronic poor blood flow to hand.** In about 1 in 20 cases, the access works too well. This takes too much blood away from the hand and is called “steal syndrome” because blood is “stolen” from the hand to go into the access. If your hand or arm feel cold, numb, are in a lot of pain or you have wounds that won’t heal on your fingers, call your kidney doctor or surgeon. This should be checked.

5. **Major heart complications.** People with kidney failure often have other medical problems. These include heart disease, peripheral vascular disease, high blood pressure and diabetes. These other medical problems put you at more of a risk for heart attacks and death after any surgery. While we believe the risk of major problems such as heart attack and death is low, it does exist.

6. **Infection.** There is a risk for wound infection after any surgery. If you have more redness, swelling, or pain after the surgery, call your surgeon.

7. **Nerve injury.** The area that we have to cut to do the surgery contains nerves that provide feeling to the hand and forearm. We try to avoid these nerves, but they may get hurt during the surgery. This could leave you with numbness in the thumb or forearm. This numbness usually improves, but sometimes it never goes away.

8. **Swelling.** It is not uncommon to have forearm swelling after
surgery. This should improve over time and by elevating your arm. Call your surgeon if you have concerns about the swelling.

9. **Unexpected findings.** Sometimes we have to stop the surgery because we find something unexpected. This could include poor arteries or veins that would not be good enough for surgery or a concern about poor blood flow to the hand.

**Healing Time.**
The day of the surgery is a "lost day." You may feel a little “out-of-it” the day after surgery as well. A few days after surgery you should feel back to normal. You may have some pain after surgery. You will get a prescription for pain pills to use.

**Returning to activities.**
If you work, plan to be off for about a week. If you need more time off, let your health care team know and we will fill out the needed paperwork to be off longer. If you feel well, you may return to exercise in 2-3 weeks.

**Call your surgeon if you have:**
- Fever over 101 degrees F (39 C)
- Bleeding
- More swelling
- Pain that is not helped by medicines
- Numbness, loss of movement, or blue color in your hand
- Chills
- Pus drainage from your wound
- Increased redness around your wound
- You are unable to eat or drink liquids

If we need to see you after business hours, or you need to come into the hospital, we will send you to the Emergency Department.

**Roles within your health care team.**
UW Health is a teaching hospital. Surgeons work with residents and medical students who will likely be involved in your surgery. The attending doctor will be in the operating room, scrubbed in, and doing the surgery with them. He/she will make all of the decisions. The residents often close the skin incisions by themselves. Students are there to watch and learn about the reasons for the surgery.

**Follow up.**
You will have a follow up visit with your surgeon 2-4 weeks after surgery.