

## **Information on Arteriovenous Fistula**

### **Introduction**

Creation of Arteriovenous (AV) Fistula is necessary for patients on long-term hemodialysis treatment. It usually takes 4-6 weeks for the fistula to 'mature'. On maturity, the vein becomes stronger and can better withstand repeated needle punctures. A functioning AV fistula is very important for the success of hemodialysis.

### **The Procedure**

Most of the time, A.V fistula creation is a minor surgery. To create a fistula, the surgeon will join an artery and a vein on a patient's forearm under local anaesthesia. The patient will remain conscious throughout the surgery. Under certain circumstances (e.g. the patient is a child or a complicated surgery), the surgery will be done under general anaesthesia.

### **Risk and Complication**

1. Wound bleeding, haematoma formation, infection and abscess
2. Stenosis of fistula, leading to decreased blood flow or thrombus formation
3. Thrombosis of the fistula
4. Ischemia of the hand
5. Swelling of the hand
6. Aneurysm and pseudo-aneurysm formation
7. Infection of the fistula
8. Heart failure

### **Before the Procedure**

1. The surgeon will evaluate the distribution of blood vessels in the patient's arm and determine which arm is more suitable for the operation. Do not draw blood, take blood pressure, or administer intravenous injection and infusion on the arm chosen for the operation.
2. The patient should exercise the arms 4 times daily to increase blood flow and develop stronger veins. Each exercise should last for 10-15 minutes. Do the exercise by lowering one arm and clenching the fist (with or without a ball) and use the other hand to grasp the upper arm tightly. Hold for 10 seconds and relax. Repeat the procedure for 10-15 minutes.
3. Patient has to sign the Surgical Consent Form after the physician has explained to him/her about the reasons, procedures and possible complications of the surgery;

4. Body cleaning, especially the fistula limb before the procedure. Day hospital patients can do the bathing at home;
5. Aspirin, anti-platelet agents and warfarin/anticoagulants may need to be withheld before the surgery according to doctor's instruction.

### After the Procedure

1. Keep the wound dressing dry. If it became wet or dislodged, the dressing should be changed by nursing staff
2. If the operation is successful, blood from the artery will be shunted to the vein and vibrations can be felt at the site of operation.
3. The operation site and the vibrations will be monitored and checked by a renal nurse, who will change the dressing when necessary.
4. The patient's arm will have some swelling after operation. When lying in bed, elevating the arm by placing it over a pillow helps relieve the swelling. Be careful not to put the pillow over the site of operation, or else blood flow may be affected.
5. Aspirin, anti-platelet agents and warfarin/anticoagulants may be resumed according to doctor's instruction.
6. If patient feels pain at the site of operation, he/she can ask the health care professionals for painkillers. If things go well, the patient can be discharged on the same day.

### Follow Up

1. The patient should take good care of the fistula, which is his/her 'lifeline'. Check the blood flow at three different times of a day (morning, afternoon and night) by feeling for vibration. If vibration has weakened or stopped, inform the health care professionals immediately.
2. Don't do anything that may affect blood flow:
  - (a) Do not wear clothes with elasticized sleeves at the cuff
  - (b) Do not draw blood, take blood pressure, or administer intravenous injection or infusion on the fistula arm
  - (c) Do not wear jewelry, watches or bracelets on the fistula arm
  - (d) Do not sleep with the pillow on the fistula arm
  - (e) Do not carry anything heavy with the fistula arm or do any vigorous physical exercises
3. Check for inflammation at fistula site, such as redness, a feeling of excess warmth or pain.
4. In case of dehydration, clotting consequential to slow blood flow can block the fistula. If experiences diarrhea, vomiting or profuse sweating, the patient has to drink more water and inform the renal nurse immediately.
5. Check the blood pressure. When blood pressure is low, lie down and inform the

- renal nurse immediately.
6. The patient should take good care of the fistula to prevent excessive bleeding. If there is injury to the fistula with bleeding, use the other hand to press on it. Raise your arm and inform the health care professionals.
  7. After healing up of the wound (around 10 days after the operation) and without any abnormalities, the patient may exercise the arm 4-5 times every day to increase blood flow in the fistula. Do the exercise by clenching the fist (with or without a ball). Hold for 10 seconds and relax. Repeat the procedure for 10-15 minutes.
  8. If wound heals in 14 days, sutures will be removed and the patient can wash hands as usual.

### Care after 4-6 Weeks

1. Fistula should normally be ready for use. To prevent infection, always wash both hands and the whole fistula limb with warm water and soap before hemodialysis.
2. On completion of hemodialysis, apply pressure to the puncture site with a sterile gauze pad until bleeding stops. If it starts to bleed again after returning home, calmly apply pressure to the needle site with a gauze pad until bleeding stops. The pad can be removed the next day (do not apply non-allergic tapes tightly to the needle site).
3. If frequent re-bleeding takes place, inform the renal nurse or the dialysis centre as soon as possible.
4. Inform health care professionals prior to any minor surgeries (such as dental surgery) so antibiotics may be given to prevent infection.
5. Should there be any discomfort of the fistula limb, such as redness, a feeling of excess warmth, swelling or numbness, inform the renal staff immediately for early treatment.
6. Check the fistula at different times of the day (morning, afternoon and night). If vibration has weakened, inform the renal staff immediately. If blood flow is too low, the fistula will not be used for hemodialysis. Instead, a temporary venous dialysis catheter will be inserted to the internal jugular vein or femoral vein for hemodialysis until blood flow of the fistula becomes normal or a new fistula has matured.
7. Maintain good personal hygiene. Use warm water to clean your body and the fistula limb. If the fistula limb becomes dirty, clean it with non-irritable soap immediately.

### Remarks

A good fistula is crucial to the success and safety of hemodialysis. The patient should therefore always take good care of the fistula.

This is general information only and the list of complications is not exhaustive. Other unforeseen complications may occasionally occur. In special patient groups, the actual risk may be different. For further information please contact your doctor or the respective renal centre.