



**NEPHROLOGY PROGRAM
DEPARTMENT POLICIES AND PROCEDURES**

**Hemodialysis - Section 05 - AV Fistula/Graft - Neph 5-04
Protocol for Post-Operative Care of Arterio-Venous Fistulas/Grafts
No. : 00744 (TOH Standardized Policy Number)**

ISSUED BY:

Hemodialysis Clinical Practice Committee

DATE OF APPROVAL:

N/A

APPROVED BY:

Program Clinical Director and Division
Head

LAST REVIEW/REVISION DATE:

2015/12

CATEGORY:

AV Fistula/Graft

IMPLEMENTATION DATE:

2002/06

PURPOSE:

- To evaluate and care for arteriovenous (AV) fistulas and (AV) grafts during the postoperative period prior to first cannulation

BACKGROUND STATEMENTS:

- An arteriovenous graft used for hemodialysis access is created by tunneling a segment of polytetrafluorethylene (PTFE) graft in the subcutaneous tissue and then creating an anastomosis with a vein and an artery.
- PTFE is a prosthetic material that is used as a bridge interposed between an artery and a vein when an adequately sized, patent autologous vein is not available.
- A newly inserted AV graft must be assessed and evaluated for patency and any signs of infection at the time of each hemodialysis session
- A newly created arteriovenous fistula must be assessed and evaluated for patency, development, and any signs of infection at the time of each hemodialysis session
- This protocol applies primarily to the immediate postoperative period but the principles should continue throughout the life of the access

SUPPLIES:

- Mepore dressing (size of dressing to be determined depending on size and location of incision line)
- Sterile dressing tray
- Chlorhexidine 2%
- Stethoscope

DEFINITION(S): N/A

ALERTS: N/A

PROCEDURE:

Section A: Post-Operative Dressing Change AV Fistula/Graft

1. Remove dressing from incision line at time of 2nd dialysis treatment post AV access creation. Dressing should only be removed at first dialysis treatment if dressing appears wet or is not intact. Dressings should be changed every dialysis session until incision line is healed and well approximated
2. Evaluate all incision lines for signs of redness, drainage, swelling, bruising or poor approximation
 - a. Most of the incision lines will have steri strips applied with absorbable sutures present below the skin surface. On occasion the surgeon may choose to close the incision lines with staples. Infection is a rare complication in AV fistulas
 - b. PTFE grafts have a higher incidence of infection because of the insertion of synthetic material. Grafts should be observed closely for any signs of infection and reported immediately to the Responsible Nephrologist/delegate and the Dialysis Access RN/APN
 - c. There may be a moderate amount of swelling and bruising post insertion of an AV graft because of the invasiveness of the procedure. This swelling and bruising should resolve over time. Encourage patients to elevate the affected arm above their heart whenever possible to help promote venous drainage
3. Cleanse incision lines with Chlorhexidine using aseptic technique. If sutures or staples are present, these should be removed 14 days post operatively unless otherwise specified by the Vascular Surgeon. Refer to [Medical Directive Neph 2-06](#)
4. Cover incision line with a Mepore dressing. A dressing is required for 1-week post operatively or until sutures/staples are removed. Most incision lines will not have sutures to remove. If the incision line is healed, the dressing may be removed and the patient may wash his/her arm with soap and water as usual. Steri strips will fall off over time with washing. If the incision is not healed, continue with dressing changes every dialysis session.

Section B: Assessment of AV Access

1. Using a stethoscope listen to the fistula or graft starting from the incision line and continue throughout the course of the fistula or graft. (Always clean your stethoscope using an alcohol swab/Virox wipe prior to and after assessing a graft or fistula)
2. You should hear an audible bruit. This should be loudest over the anastomosis and become more distant as you move away. If you do not here a bruit, notify the Nephrologist and the Dialysis AccessRN/APN
3. Using your fingertips, palpate the entire length of the fistula or graft. You should be able to feel a thrill. This will be most predominate over the anastomosis. The incision line may be tender, palpate gently.
 - a. When assessing the fistula or graft, note should be made of any swelling in the affected arm and/or hand. You can expect to see swelling initially and for 2-3 weeks after a graft or basilic vein transposition AVF has been created. If swelling does not resolve in 3 weeks, notify the Nephrologist/delegate and the Dialysis Access RN/APN. This maybe a sign of stenosis of the central veins
 - b. Assessment of the hand and fingers should be performed at the time of this assessment. Examine the same hand as the fistula or graft and compare temperature, colour and strength to the other hand.
 - c. Assess for numbness, tingling, pain, weakness, or temperature change noted in the hand of the same limb with the AV access. Assess for presence/absence of a radial pulse. These symptoms may be indicative of steal syndrome. Notify the Nephrologist/delegate and Dialysis Access RN/APN if any of these symptoms are present
3. Once the incision line has healed, the access should be palpated with enough pressure to evaluate the vein of the fistula and the outline of the graft. When palpating the vein of a fistula, follow the vein from the incision line up the arm for the entire length of the forearm or upper arm depending on the location of the fistula.
4. Assessment for an audible and palpable bruit should be performed during every hemodialysis treatment. **NOTE:** Redness, warmth and tenderness may be a sign of a clotted or clotting fistula or graft Notify Nephrologist and Dialysis Access RN/APN if this occurs

Section C: Access Exercises

1. If a patient is going to have an AV fistula created, encourage the patient to begin exercising the arm which has been designated for fistula creation prior to the planned OR. Once the fistula has been created, the patient should refrain from exercising the affected arm for 2 weeks then resume exercise unless otherwise specified
2. Patient should purchase or be provided with a stress ball (usually provided in the Vascular Access Clinic). This is a firm foam or rubber ball. The patient should squeeze this ball multiple times (20 times) 3-4 times per day. Encourage patients to

do this while watching television/during their hemodialysis treatment etc. Exercise should not be encouraged if the incision is not yet healed or if there is concern about the fistula being too large or in the presence of symptoms related to steal syndrome (i.e. numbness, tingling or pain)

3. In some cases there may be concern that a large fistula may put extra strain on a patient's heart and therefore the physician may not want to intentionally increase the size of the fistula.

Section D: Patient Teaching

1. Patients should be taught the following:

- How to assess their fistula and graft daily for patency (by touch and acknowledging the presence of a palpable thrill; not using a stethoscope) and to notify their hemodialysis unit if they do not detect a palpable thrill
- To avoid carrying anything that rests directly on their access, restricting flow through the access for any prolonged period of time
- Not to allow anyone to take blood, start an intravenous, or take blood pressure in the same arm as their fistula or graft
- To wear a Medic Alert bracelet that has hemodialysis fistula or graft inscribed on it
- To avoid restrictive clothing, watches or jewellery on their access arm. (watches and jewellery to be avoided on the arm of a forearm access or if any significant swelling is noted in that arm or hand)
- How to apply pressure to their access in the event of any spontaneous bleeding from a needle site and to come to the closest Emergency Department if bleeding does not stop with prolonged pressure
- The importance of rotation of sites of cannulation to help avoid the development of aneurysmal dilation of their AV fistula or the development of pseudoaneurysms in a graft and the loss of skin integrity over their access
- To hold only one cannulation site at a time post needle removal
- To avoid using the fingers of the hand on the same side as their fistula or graft for glucose monitoring
- The signs and symptoms of steal syndrome and the importance of reporting the presence of these symptoms to members of the Nephrology or DialysisAccess Team
- To avoid skin breakdown or injury to fingers or hand on the same side as their fistula or graft
- Give the Patient Education Handout specific to their access and review with the patient

DOCUMENTATION:

1. Initiate the 'Care of New AVF ' Care Map if applicable

2. Enter new access completing all required fields (e.g. type of access, date of creation, name of surgeon etc.) in Access Summary Screen in Nephro Care. Information related to all new hemodialysis accesses may be obtained from vOASIS Operative report
3. Document the following in NephroCare Progress Notes Every Hemodialysis treatment post access creation using the pre-scripted phrase in Nephrocare titled 'Hemo Access-New AVF assessment' or 'Hemo Access-New AVG assessment'
 - a. Presence of audible bruit and palpable thrill
 - b. Ability to palpate the fistula or graft along its entire length. In the case of a fistula, progression of maturation
 - c. Findings during dressing change including the presence of any redness, drainage etc
 - d. Presence of any symptoms of steal syndrome
 - e. Presence of any arm or hand swelling
 - f. Communication of any identified concerns, including the failure of fistula to mature to adequate size to consider cannulation at 4-6 weeks post-operative, with the access to Responsible Nephrologist, Dialysis Access RN/APN and Care Facilitator

RELATED POLICIES / LEGISLATION:

1. Nephrology Policies and Procedures - [Hemodialysis - Section 02 - Medical Directives - Neph 2-06 Suture removal from Hemodialysis access](#)

REFERENCES:

1. Expert Opinion Division of Vascular Surgery, The Ottawa Hospital
2. J Am Soc Nephrol 17:S1-S27, 2006

COMMENTS / SIGNIFICANT REVISIONS: N/A