HACKETTSTOWN REGIONAL MEDICAL CENTER
NURSING POLICY MANUAL

MANAGEMENT OF PATIENTS UNDERGOING PERIPHERAL DIAGNOSTIC/ INTERVENTIONAL PROCEDURES POLICY

==========

Effective Date: July 2008 | **Policy No: 8620.230b**
Cross Referenced: | **Origin: Nursing**
Review Date: | **Authority: Chief Nurse Executive**
Revision Date: November 2014 | **Page:** 1of 4

==========

SCOPE

All RNS that care for patients undergoing peripheral diagnostic/interventional procedures.

PURPOSE

To outline nursing management of patients post peripheral diagnostic or post interventional procedures in the Cardiac Catheterization/Vascular Laboratory and on the nursing units (ICU, PCU, SDS).

DEFINITIONS

I. Vasovagal response from sheath removal- caused by the parasympathetic nervous system due to pain, fear or tissue injury. The syndrome is characterized by pallor, diaphoresis, nausea and hypotension
II. Bleeding/Hematoma is an accumulation of blood underneath the tissue that feels "spongy" and rapidly becomes firm to palpation.
III. Retroperitoneal Bleed is a large amount of blood accumulates in the retroperitoneal cavity due to a high femoral arterial puncture usually above the inguinal ligament. This is a rare but fatal complication with a 12% to 15% occurrence rate.
IV. Pseudoaneurysm is one of the most common complications with a 60% occurrence rate. This a pulsatile encapsulated hematoma associated with low femoral arterial puncture, usually below the head of the femur.
V. Arteriovenous Fistula is rare, with an 8% to 15% occurrence rate. An arteriovenous fistula occurs in the superficial and deep femoral arteries when there is a puncture between the artery and vein.
VI. Arterial Occlusion occurs from atherosclerotic or inflammatory processes causing lumen narrowing or from thrombus formation due to intimal vessel dissection.

POLICY

I. Patients undergoing peripheral interventional procedures are at greater risk for developing complications due to use of large bore catheters and sheaths, prolonged placement of sheaths, and lengthy procedures.
II. Patients with hypertension are also at greater risk for developing complications such as bleeding and hematoma.
III. The use of anticoagulation, thrombolytics, and antiplatelet therapies, multiple punctures from multiple attempts to access the common femoral artery are associated with greater potential for post procedure complications such as bleeding, hematoma formation, retroperitoneal bleed, arteriovenous fistula, arterial occlusion and pseudoaneurysm formation.

PROCEDURE

I. Post Procedure Assessments
Following sheath removal/hemostasis assess the patient Q15 minutes X4; Q30 minutes X4; Q60 minutes until bed rest completed for the following:
A. Assess and palpate femoral arterial access site for
1. Bleeding
2. Hematoma formation

3. Swelling

B. Assess presence and quality of distal pulses in lower extremities bilaterally for
   1. Color
   2. Temperature
   3. Sensation

C. Check vital signs Q15 minutes X4; Q30 minutes X4; Q60 minutes until bed rest complete
D. Keep puncture site clean and dry
E. Instruct patient of the following activities and restrictions:
   1. Head of bed must be elevated less than 35 degrees while sheath is stabilized and or for 4 to 6 hours post sheath removal.
   2. Instruct patient to hold puncture site when coughing, straining, laughing and or sneezing.
   3. Educate patient to immediately report:
      a. Any pain, numbness or tingling in the affected extremity and puncture site
      b. Any warmth/wetness in the groin area
      c. Any flank, back or lower abdominal quadrant pain

II. Monitor

A. The patient must be monitored Q15 minutes X4; Q30 minutes X4; Q60 minutes until bed rest complete. Monitor for:
   1. Bleeding/Hematoma formation
   2. Retroperitoneal Bleed
   3. Pseudoaneurysm
   4. Arteriovenous Fistula
   5. Arterial Occlusion

III. Complication Management

A. Bleeding/Hematoma: DO NOT LEAVE PATIENT UNATTENDED
   1. Immediately remove sterile dressing, inspect and palpate for hematoma. Mark borders of hematoma if necessary and document size and appearance of hematoma. If thigh involvement is present, assess thigh girth, measure.
   1. Position patient supine, abduct and pronate affected extremity.
   2. Apply direct pressure 2-3cm above and slightly medial to the puncture site for a minimum of 15-20 minutes.
   3. Apply enough pressure to stop the bleeding and obtain hemostasis. Audible pedal pulse with doppler should be heard when continuous pressure is applied to the puncture site. Avoid total obliteration of the distal pulse; excessive and prolonged pressure of the distal pulse for more than 2-3 minutes may lead to thrombus formation at the procedural site.
   4. An automatic blood pressure monitor must be attached to the patient and set to monitor HR, rhythm and BP every 5 minutes while manual pressure is being held.
   5. A second RN should be present at bedside while pressure is being held by the first RN. The second RN will monitor the patient and check the pedal pulses to see if they are palpable and or audible with a Doppler. If pulses are absent, decrease the intensity of compression, but not the time, and reassess.

6. Hold anticoagulation therapy.
7. Manage hypertension, if present, per physician order.
8. If patient develops a vagal response while maintaining manual pressure:
    a. Call Rapid Response
    b. Administer IV fluids and if necessary administer Atropine as per MD orders
    c. Place patient in a Trendelenburg position
9. Once hemostasis is obtained:
    a. Prep insertion site with chloraprep using a circular outward motion.
    b. Apply a sterile double folded gauze 4x4 and clear occlusive dressing over site.
    c. Restart post procedure monitoring

B. Retroperitoneal Bleed

1. Observe for signs and symptoms which may include:
    a. Moderate to severe pain in the back, lower abdominal quadrant or groin.
    b. Hypotension along with or without tachycardia
    c. Nausea, vomiting, diaphoresis
    d. Change in mental status
    e. Rapidly or significant drop of Hgb and Hct

2. NOTIFY MD IMMEDIATELY if retroperitoneal bleed is suspected**.**
3. Management may include the following:
    a. Discontinue anticoagulants and platelet inhibitors
    b. Replace volume loss/transfuse
    c. Monitor vitals signs and Hgb, Hct
    d. Prepare for STAT ultrasound or CT scan and possible emergency surgery

C. Pseudoaneurysm

1. Observe for signs and symptoms which may include:
    a. Groin pain or burning sensation in the affected extremity
    b. Hematoma may or may not be visible; systolic bruit may be heard with stethoscope; a palpable pulsatile mass may be felt
2. Notify physician if pseudoaneurysm is suspected
3. Management may include the following:
    a. Apply manual compression 2-3cm above puncture site and slightly medial if hematoma actively expanding.
    b. Treatment may include thrombin injection with ultrasound guidance in the Vascular Lab or surgical repair.

D. Arteriovenous Fistula

1. Observe for signs and symptoms which may include:
    a. Pain and swelling at the insertion site
    b. Tachycardia
    c. Pulsatile mass and palpable thrill

d. Loud diastolic and systolic bruit (force of blood from the higher pressure artery causes a bruit)

2. Management includes notifying the physician and anticipating a surgical repair.

E. Arterial Occlusion

1. Observe for signs and symptoms which may include:
   a. Sudden pain either distal to the insertion site or throughout the entire leg.
   b. Assessment of limb reveals loss of distal pulses cold to touch, blue or mottled color and numbness/pain.
2. Management includes notifying the physician and anticipating patient may have to have radiological testing or return to the Vascular Lab

IV. Physician Notifications

1. Other findings that need to be reported to the physician in addition to the above:
   a. Inability to achieve hemostasis after adequate pressure application.
   b. Changes in pedal pulses from 2 (+) bounding to Doppler
   c. Total absence of pedal pulses.
   d. Vasovagal symptoms that do not respond to atropine and IV fluids
   e. Signs and symptoms of hematoma, retroperitoneal bleed and presence of a bruit.

V. Documentation

A. Document all of the following in the EHR

1. Assessments
2. Any complications
3. Notifications to physician
4. Management of complications

REFERENCES:

Amin, et.al. “Femoral Hemostasis After Transcatheter Therapeutic Intervention”. *Int. J. Cardiol,* Nov-Dec 2000.

Juran, et.al. “Nursing Interventions To Decreased Bleeding At The Femoral Access Site After Percutaneous Coronary Intervention”, *AmJ Critical Care,* Jan 2000

O’Brien, C. and Recker, D. “How To Remove a Femoral Sheath”, *AJN,* October 1992.

Morton, J Kern “The Cardiac Catheterization Handbook,” *Mosby, Inc*. 2011 March 3

Schickel, S. et.al. “Removal of Femoral sheaths by Registered Nurses: Issues and Outcomes”, *Critical Care Nurse,* 1996, 16 (2) 32-36.