STANDARDIZED PROCEDURE
INTRA-AORTIC BALLOON PUMP(IABP) PLACEMENT

These procedures are intended to describe procedures performed by Nurse Practitioners and/or Certified Nurse Midwives (depending on the clinical privileges granted to the individual practitioner) at UC San Diego Health.

I. Policy

a. Function: To insert an intra-aortic balloon pump to augment cardiac function

b. Circumstances:

i. Setting: See Cardiothoracic Surgery Nurse Practitioner General Policy Standardized Procedure

ii. Supervision: See Cardiothoracic Surgery Nurse Practitioner General Policy Standardized Procedure

iii. Patient Conditions/Indications for Intra-Aortic Balloon Pump Placement include but are not limited to:

- Cardiogenic Shock
- Refractory Left Ventricle Failure
- Mechanical complications of acute myocardial infarction (MI) (ventricular septal defect [VSD], papillary muscle dysfunction or rupture
- Unstable angina refractory to medical management
- Ischemia-induced ventricular arrhythmias
- Support during percutaneous transluminal coronary angioplasty (PTCA)
- Weaning from cardiopulmonary bypass
- Bridge to transplantation

iv. Contraindications to the placement of an Intra-Aortic Balloon Pump include but are not limited to:

- Irreversible brain damage
- Chronic end-stage heart disease
- Dissecting thoracic or aortic aneurysm
- Aortic insufficiency
- Severe peripheral vascular disease (calcified aortoiliac or femoral artery)

II. Protocol

a. Definition: Intra-Aortic Balloon Pump placement for the above conditions

b. Objective: See section I-b-iii for indications for Intra-Aortic Balloon Pump Placement

c. Assessment: Patient which meets Intra-Aortic Balloon Pump Placement as described above in section I-b-iii and does not have any contraindications outlined in section I-b-iv

d. Plan:

i. Equipment Necessary includes but is not limited to:

- 1% Lidocaine without Epinephrine
- Sterile Prep Solution (Povodine-Iodine or hexachlorophene if patient is iodine allergic)
- Angiographic needle (contained in IABP kit)
- 25 gauge needle
- 5 cc syringe
- Guide wire (contained in IABP kit)
- Scalpel handle and #11 blade
- Arterial Dilator (contained in IABP kit)
- Tissue clamp
- Sterile Saline
- Lubricant
- IABP Catheter (contained in IABP kit)
- Arterial pressure monitoring system
- IABP system (contained in IABP kit)
- 2-0 silk suture
- Transparent sterile tape or dressing
- Safety razor
- 0.035 J wire
- If possible fluoroscopy to ensure proper balloon placement

ii. Pre-procedure

1. Education

    a. Explain the need of the IABP and assess patient and family understanding of placement (if patient awake, alert and or family available in person or by phone)
    b. Explain the procedure and time involved
    c. Explain the benefits and potential risks

i. Benefits of IABP include but are not limited to:

1. Improvement of hemodynamic status

ii. Risks of IABP include but are not limited to:

1. Limb ischemia of lower extremities
2. Aortic Dissection
3. Renal Injury
4. Thromboembolism
5. Bleeding
6. Infection

d. Obtain consent from the patient if legally able or from power of attorney/next of kin unless emergent situation. If emergent, dual provider consent if permissible.

2. Patient Position

a. Place the patient in a supine position in a monitored setting

3. IABP Insertion Procedure:

- Shave, sterile prep, and drape the left or right groin area
- Don sterile personal protective equipment
- Palpate the femoral pulse at the midpoint along an imaginary line between the anterior superior iliac spine and the symphysis pubis. Palpate its course 1-2 cm distally
- Administer 1% Lidocaine with a 25 gauge needle into the skin and subcutaneous area along the course of the artery palpated
- Using the 18 gauge insertion needle with a 5 ml syringe, puncture the skin at the site of the femoral artery (palpated in step c). Advance the needle cranially while aspirating at a 45° angle to the skin toward the pulse
- If there is no arterial blood return after 5 cm, slowly withdraw needle while aspirating. If still no return, redirect again toward palpated pulse.
- If there is still no arterial blood return, reassess landmarks and attempt access 1 cm more proximal along the course of the artery as in step e. If still unsuccessful, stop.
- If venous blood encountered, withdraw needle, hold manual pressure for 5-10 minutes if not an emergent situation. If emergent situation, continue to attempt arterial cannulation
- If arterial access obtained, remove the syringe while keeping a finger over the needle to prevent excessive bleeding.
- Introduce the J wire, with the tip aimed toward the heart through the needle while maintaining the needle in the same location (Seldinger technique). The wire must pass with minimal resistance).
- If resistance is met, remove the wire and check the needle placement by withdrawing blood with a syringe
- Once the wire is passed, remove the needle while keeping control of the wire at all times
- Enlarge the puncture site carefully with a sterile scalpel
- Place the dilator over the J wire. Advance it through the skin into the arterial lumen. Remove the dilator.

- Using the tissue clamp spread the subcutaneous tissue at the insertion site.
- Remove the IABP catheter from the kit and lubricate it with sterile saline
- Remove the inner stylet of the IABP catheter
- Advance the IABP over the guide wire. The proper position of the catheter is with the balloon tip approximately 2 cm. distal to the take off of the left subclavian artery in the descending thoracic aorta
- Remove the guide wire and confirm intra-arterial placement by aspirating blood
- Attach catheter (female Luer) to a standard arterial pressure monitoring system
- Attach catheter (male Luer) to IABP system
- Suture the catheter in place. Secure and cover with clear sterile tape/Opsite
- Order a stat portable chest x-ray to confirm placement
- Initially, proper augmentation is accomplished with the IABP synchronized 1:2 with the patient's arterial pressure and then switched to a 1:1 augmentation

iii. Patient Conditions requiring Physician Consultation (Limitations):

- Inability to place IABP due to resistance met with guide wire or inability to cannulate artery
- Incorrect placement verified radiographically
- Limb ischemia of lower extremities
- Aortic dissection
- Renal Injury
- Thromboembolism
- Uncontrollable bleeding at insertion site
- Infection

iv. Follow Up:

- Further evaluation and treatment as indicated
- Check placement on chest x-ray
- Instruct nursing staff to observe for signs of infection, hemorrhage, or ischemia
- Instruct nursing staff to monitor distal pulses every hour and prn

e. Record Keeping: See Cardiothoracic Surgery Nurse Practitioner General Policy Standardized Procedure

III. Requirements for the Nurse Practitioner

a. Education and Training: See Cardiothoracic Surgery Nurse Practitioner General Policy Standardized Procedure
b. Evaluation: See Cardiothoracic Surgery Nurse Practitioner General Policy Standardized Procedure

IV. RESPONSIBILITY

Please contact the Advanced Practice Council if you need help. The administrative assistant for the Chief Nursing Officer can direct you. Call; 619-543-3438.

V. HISTORY OF PROCEDURE

Revised by the Committee of Interdisciplinary Practices: 2/26/2014, 9/28/2016 Reviewed by the Medical Staff Credentials Committee: 3/5/2014, 10/6/2016 Approved by the Medical Staff Executive Committee: 3/20/2014, 10/7/2016