
Intra – Aortic Balloon Pump Insertion, Maintenance/ Care and Removal

Insertion

Purpose:

To place an IABP catheter into the common femoral artery using sterile technique by percutaneous puncture to allow for counterpulsation, i.e. IABP therapy.

Policy:

1. A signed consent will be obtained prior to initiation of placement unless patient condition is such that emergency intervention is necessary (according to physician judgment).
2. Placement of IABP will take place only in the following areas:
 - a. Operating room
 - b. Intensive care unit
 - c. Special procedure: Angioplasty, cardiac cath lab.
3. Sterile technique will be maintained throughout placement.
4. X-ray or fluoroscopy will be used to determine proper placement of catheter after insertion (to lie in the descending thoracic aorta just distal to the left subclavian artery). MD will determine if placement is correct by viewing such films.
5. Once placement is complete, catheter will be connected to balloon pump console.
6. Physician will write order for frequency (1:1, 1:2, 1:3, 1:4, and 1:8).
7. RN, Perfusionist or MD will time (set inflation and deflation points) the IABP to achieve maximum diastolic augmentation and document.

Procedure:

Responsible Party	Action	Rationale
MD	1. Obtain informed consent form the patient or family	1. Procedure may cause serious life threatening complications, i.e., aortic perforation, stroke, occlusion of renal artery, emboli formation, limb ischemia thrombocytopenia.
MD/RN/Perfusionist	2. Assemble equipment a) IABP introducer kit, IABP catheter	

Responsible Party	Action	Rationale
MD/RN/Perfusionist	<ul style="list-style-type: none"> b) Sterile gown for each caregiver doing/assisting in procedure. c) Sterile gloves for caregiver placing catheter and caregiver assisting. d) Surgical masks e) Surgical caps f) Two sterile sheets g) Sterile towels, 2-4 h) Antimicrobial scrub brush i) 2-0 silk j) Needle driver k) 1% Xylocaine with epinephrine l) Scalpel blade and handle (#11 or #15) 	
MD	3. Explain procedure to patient.	
MD/RN/Perfusionist	4. Wash hands with antimicrobial soap prior to assisting (for RN handling equipment). 5 min. scrub with antimicrobial soap prior to placement of IABP catheter and donning sterile gown, glove, etc.	4. Reduce chance of nosocomial infection.
	5. Prep patient groin are with antimicrobial scrub brush and allow to dry.	5. Reduce chance of nosocomial infection.
MD	<ul style="list-style-type: none"> 6. Begin draping and placement of IABP catheter. 7. Document on patient's chart: <ul style="list-style-type: none"> a) Time / date of placement b) Obtained consent c) Person placing IABP catheter d) Person assisting in placement e) Site f) Patient's response (i.e., effective counter pulsation) 	

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| RN, MD or WC | evidenced by CO, SVR, BP, etc.)
8. Order portable X-ray to check IABP placement | 8. Tip of IABP catheter should be observed between the 2 nd and 3 rd intercostal spaces. |
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Maintenance/Care

Purpose:

To maintain continuity of care of patient with IABP and to prevent post-insertion complications by implementing appropriate nursing interventions.

Policy:

1. The following shall be assessed and documented:
 - a) Oscilloscope waveforms for accurate/appropriate augmentation.
 - b) Pulses distal to insertion site including strength and rhythm in comparison to remaining extremity pulses at least every 2 hours.
 - c) Color and temperature of extremities at least every 4 hours.
 - d) Level of consciousness at least every 4 hours.
 - e) Urine output every hour.
 - f) Position of insertion leg; maintaining anatomical alignment, preventing flexion of hip and knee at least every 4 hours.
 - g) Condition of insertion site - any evidence of hematoma, bleeding, ecchymosis, edema or severe pain at least every 4 hours.
 - h) Frequency of augmentation at least every 4 and with changes.
3. Patients with IABP catheters will only be tilted from side to side in log roll fashion.
4. Appropriate hemodynamics will be monitored and documented every 1 hour until removal.
5. Patient's PT/PTT and/or ACT will be monitored throughout IABP therapy
6. IABP will be plugged in at all times unless in transit.
7. In the event of cardio-respiratory arrest, IABP trigger will be placed on internal and balloon volume will be decreased to minimal.

Procedure

Responsible Party	Action	Rationale
RN/Perfusionist	1. Assess and document : a) Augmentation waveforms	1. Inaccurate / poorly timed augmentation can lead to premature closure of aortic valve, and aortic valve regurgitation.
	2. Check peripheral pulses times 4 extremities including strength, rhythm	2. Diminished pulses in distal or lateral extremity of insertion site may indicate
IABP		Critical Care

	and color and temperature of all extremities.	incorrect placement of IABP catheter, thrombus formation, or ischemia.
	3. Assess level of consciousness including orientation to time, place, person, and appropriate response to verbal and nonverbal stimuli.	3. Decreased level of consciousness may indicate occlusion of carotid artery.
	4. Check urine output every hour.	4. Decreased urine output may indicate occluded renal artery.
	5. Maintain anatomical alignment of insertion extremity and only move patient using log roll technique.	5. Flexion of hip or knee of insertion leg can cause kink in IABP catheter, loss of augmentation, hematoma, aortic perforation and limb ischemia.
	6. Hemodynamic parameters will be measured every 1 hour until removed.	6. A change in hemodynamic status may require a change in timing, or augmentation frequency to meet patient's needs.
MD/RN/Perfusionist	7. Balloon volume will be set on minimal and trigger will be turned to internal in event of cardiorespiratory arrest.	7. Large balloon volume will interfere with chest compressions. Internal trigger will allow inflation and deflation of IA balloon at intrinsic rate to prevent thrombus formation on balloon.

Removing Intra-aortic Balloon Pump

Purpose:

To remove an intra-aortic balloon pump catheter from the common femoral artery once counterpulsation is no longer necessary.

Policy:

1. Only a MD will determine when patient's condition warrants removal of IABP catheter.
2. Only a MD will remove IABP catheter.
3. IABP catheter site will be monitored every 1 hour after removal. Documentation of presence / absence / quality of the following will be done after removal:
 - a) Hematoma / swelling
 - b) Ecchymosis
 - c) Increased tenderness/pain

- d) Bleeding
 - e) Extremity temperature/color
 - f) Distal pulses bilaterally
 - g) Vital signs
4. When IABP catheter is removed, direct pressure will be applied over site for 30 full minutes per MD or medical student under MD supervision.
 5. After direct pressure, 5# sandbag, fem stop or C - clamp pressure will be placed over site for 8 hours as ordered by MD.
 6. Patient will remain supine, HOB no more than 30° elevated for 8 hours with legs straight making sure there is no flexion of hip or knee.
 7. Patient's PT/PTT will be monitored prior to removal of therapy (IABP).

Procedure

Responsible Party	Action	Rationale
MD	1. Remove IABP catheter	1. Because of possible complications, (hemorrhage, aortic tear, thrombosis formation and dislodgement), MD must remove catheter and monitor the patient's condition afterwards.
	2. Direct pressure is to be held for a full 30 minutes.	2. 30 minutes pressure is needed because of the size of the catheter and remainder of large lesion in the femoral artery.
MD/RN	3. Place a 5# pound sandbag, fem stop or C - clamp on the site	3. To maintain pressure and prevent oozing.
	4. Maintain straight body alignment; <u>prevent</u> hip flexion, knee flexion for 8 hours.	4. Hip / knee flexion can lead to oozing at the site, hematoma, or hemorrhage.

Responsible Party	Action	Rationale
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| | 5. Document patient's condition, site, presence of or absence of hematoma, ecchymosis, swelling and extremity pulses. | |
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References:

1. Chulay, M. & Burns, S. (2006). AACN: Essentials of Critical Care Nursing.
2. Wiegand, D & Carlson, K. (2005). AACN: Procedure Manual for Critical Care.
3. Infection Control Guidelines IC 16