Cardiac Cath Lab: Safety Process for Left Ventricular Angiography using the Medrad® Angiographic Injection System

Site Applicability

PHC Cardiac Catheterization Labs

Practice Level

Specialized: Registered Nurses who work in the PHC Cardiac Cath Lab

Need to Know

- Left Ventricular Angiography (LVA) is performed to evaluate left ventricular wall motion, ejection fraction of the LV and valvular structure or function. LVA is performed as part of *most* coronary angiography studies.
- Common contraindications to performing a LVA include: Left main stenosis, Aortic Valve stenosis, GFR less than 60, and severe LV dysfunction. Patients with severe LV dysfunction and/or elevated LVEDP (more than 25 mmHg) may be at risk for hemodynamic compromise post LVA.
- Adequate radiographic visualization of the LV is accomplished by delivering a large volume of x-ray contrast (usually 20 to 40 mL) over a short amount of time (3 seconds) into the LV through the Medrad® angiographic injection system.
- Ventricular ectopy is common upon injection of contrast into the LV.
- **It is *imperative* that all air and air bubbles be expelled from the injection syringe and tubing prior to injection to prevent air embolization.**
- **The process of priming the Medrad® injection system requires *un-interrupted attention* from start to completion.**
- The Medrad injection system is also used to visualize and assess various anatomical structures (i.e. pulmonary vasculature, aortic root, iliac arteries). The method of priming, attaching to the angiographic catheter, and the safety checks *remain the same* regardless of anatomy being studied.

Equipment and Supplies

1. Medrad® 150 mL Mark V ProVis Sterile Disposable Syringe & QFT
2. Contrast dye
3. Angiographic catheter (usually a pigtail catheter)

4. 76 cm injection line high pressure extension tubing

Procedure

PRACTICE GUIDLINE

STEPS		RATIONALE
1.	Prime the 150 mL Mark V ProVis sterile syringe with prescribed contrast dye.	
2.	Once contrast has been primed into syringe, withdraw air until 15 to 20 mL air pocket remains in the syringe. This is a visual safety check that there is fluid in the syringe.	

3. The air is expelled from the syringe by the nurse *immediately prior* to ventricular angiography, and the contrast is primed to the tip of the syringe.	
4. a) The scrub RN attaches the 76 cm extension tubing to the inverted (45 degrees) Medrad® injection system using sterile technique. b) The circulating RN primes the 76 cm extension tubing using a clockwise turning motion to ensure air is removed from the tubing. c) The attending physician or delegate attaches the angiographic catheter to the 76 cm extension tubing *while* the circulating turns the knob in a clockwise motion. d) Once attached, the circulating nurse *withdraws blood* into the 76 cm extension tubing using a counter-clockwise turning motion ensuring no air is in tubing.	tubing attached to angiographic catheter while turning the handle in a clockwise fashion creates forward pressure to ensure air is not trapped at connection site.
5. The RN waits for the verbal physician order of contrast volume, rate of injection and timing of injection.	
6. Once the procedure is completed discard the used syringe. The Medrad® injection system is *left unloaded* (i.e. no empty syringe in the casing) until the re-priming process can be initiated again as per above guidelines.	

References:

Woods, S.L., Sivarajan Froelicher, E.S., Underhill Motzer, S., Bridges, E.J. (2010). *Cardiac nursing.* (6th Ed). Baltimore, MD: Lippincott Williams & Wilkins.

Persons/Groups Consulted:

Radiology Technologist, Interventional Cardiology, SPH

Developed By:

Nurse Educator, Cardiac Cath Lab, SPH

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