PERCUTANEOUS ARTERIAL CATHETERIZATION

SCOPE

Frequent arterial blood samples and/or continuous arterial blood pressure monitoring is indicated and an umbilical artery catheter cannot be placed.

SPECIAL CONSIDERATIONS

Personnel who have experience and have demonstrated competence in PAL placement should perform this procedure.

INSTRUCTIONS

A. Prepare equipment:
   1. 22 or 24 gauge Jelco (non-safety preferred for more stable cannulation).
   2. T-connector
   3. Saline flush (preferably 1-3 ml syringe)
   4. Armboard
   5. Betadine/CHG Solution
   6. Alcohol swabs
   7. Adhesive tape, (Tegaderm or Opsite)
   8. Gloves
   9. Syringes 1ml or 3ml
   10. IV solution (NS or ½ NS with heparin 0.5units/ml), connecting tubing, infusion pump, Transducer.
   11. Transilluminator

B. Check for collateral circulation and patency of the ulnar artery by means of the Allen’s test. (See Percutaneous Radial Artery Puncture Policy). The radial artery is the most commonly used site, although alternative sites are the posterior tibial and ulnar artery. Transillumination may be helpful in locating the artery.

C. The hand may be secured on an armboard with the wrist extended leaving all fingertips exposed to observe color changes.

D. The wrist is prepared under sterile technique with Betadine/CHG solution.

E. The IV cannula is inserted through the skin at an angle less than 45 degrees and is slowly advanced into the artery.

F. If the artery is entered and blood return is seen the catheter is advanced into the artery while simultaneously withdrawing the needle. The blood should be flowing freely from the catheter if the catheter is properly positioned.
G. An alternate method is to pass catheter through the artery (by feel or drop of blood return), withdraw the catheter slowly until a free flow of blood return is seen and then advance the catheter.

H. Attach syringe and T connector to catheter and gently flush the catheter with saline.

I. Secure the catheter in place with tape and/or Tegaderm making sure the tips of all digits are visible. Secure T connector tubing to arm also to prevent catheter from being pulled out.

J. Infuse only Heparinized saline (0.5-1 unit/ml) at a rate not exceeding 2 ml/hr.

K. Connect to pressure transducer with alarms on.

L. Observe for complications:

1. Arteriospasm - The risk of arteriospasm can be minimized by using the smallest gauge catheter possible and performing as few punctures as possible. If arteriospasm occurs, the catheter must be removed until the spasm resolves.

2. Embolism or thrombus - To prevent embolism or thrombus make certain that air is not introduced into the catheter and that the catheter is flushed with saline.

3. Skin ischemia or gangrene - adequate collateral circulation decreases the risk of this complication. Always perform the Allen test to verify collateral flow.

4. Hematoma - to minimize the risk of hematoma use the smallest gauge needle possible. If a hematoma develops withdraw needle and hold pressure on site.

5. Blood loss - secure catheter in place and always keep transducer alarm on (for possible disconnect)