South Eastman Health/Santé Sud-Est Inc.

	No: MC-N005
Approved By: Medical Advisory Committee	**Source: Regional Client Care Manual** **Category: Maternal Child**
New/Replaces: **Date Approved: 07 January 2004** **Reviewed:** **Revised:**	**Subject: Emergency Catheterization of Umbilical Vein**

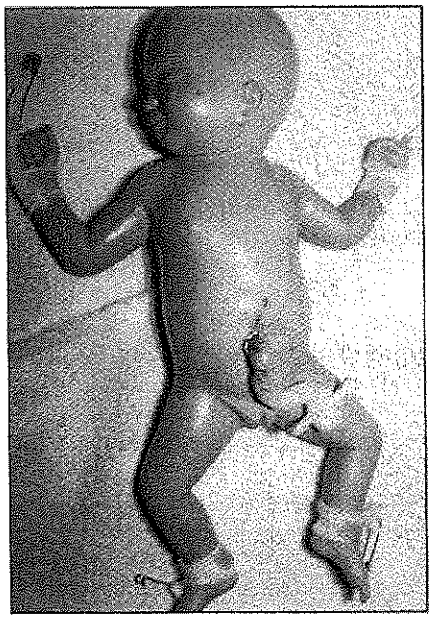
POLICY

A physician/neonate responsible for neonatal care must be trained in umbilical vein catheterization for emergency administration of fluids and medications.

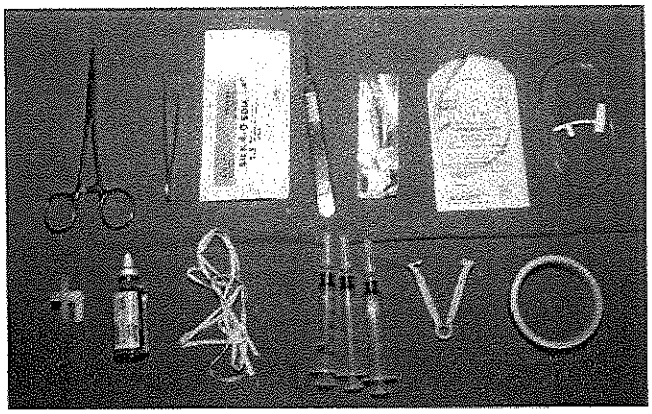
EQUIPMENT:

1. Umbilical Vein Catheterization tray;
2. Providone Swabs;
3. Umbilical vein catheter;
4. Three-way stop cock;
5. 20 ml syringe;
6. Normal saline for injection;
7. Umbilical ties.

PROCEDURE



Step 1



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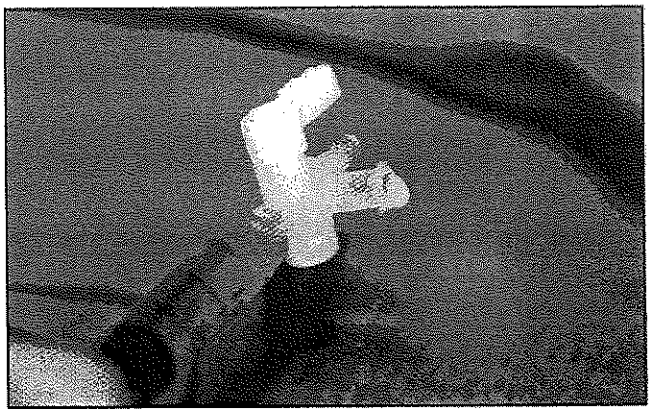


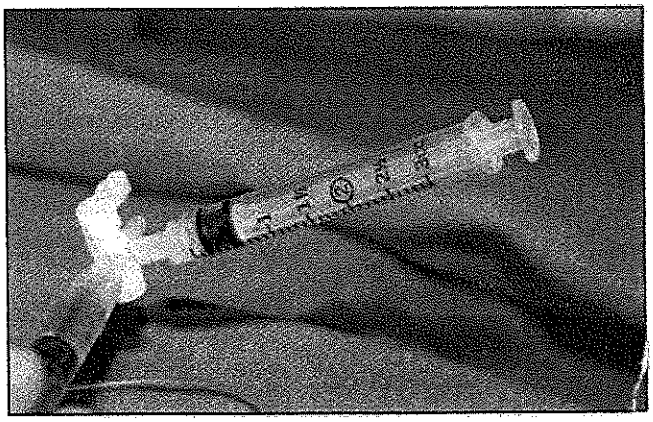
Step 3

Step 1
Restrain the infant, and keep him or her warm during the procedure.

Step 2
Gather the equipment needed for catheterization. Necessary equipment includes: a straight forceps (needle driver), iris forceps, 4-0 silk, straight scalpel handle and blade, 3.5 and 5.0 Fr radiopaque standardized umbilical catheters, (size 8 feeding tube if no catheters are available in an emergency), a three-way stopcock, 10 mL of normal saline, sterile cotton tape for the base of the umbilical stump, 3-mL syringes, a cord clamp, and 1.29 cm (1/2") waterproof tape.

Step 3
Prime a three-way stopcock. Turn the lever off to one port hole and inject saline so that fluid emerges from the free side opening.

Step 4
Attach an empty syringe to the side hole, which is now free of air.



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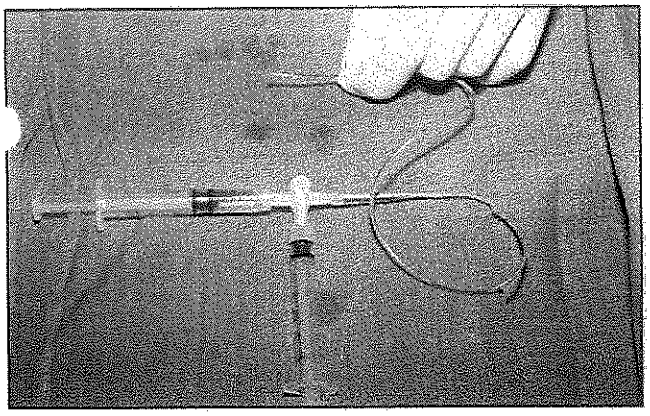

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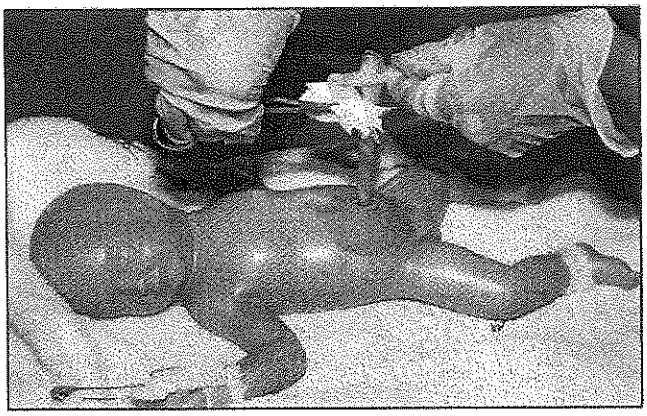

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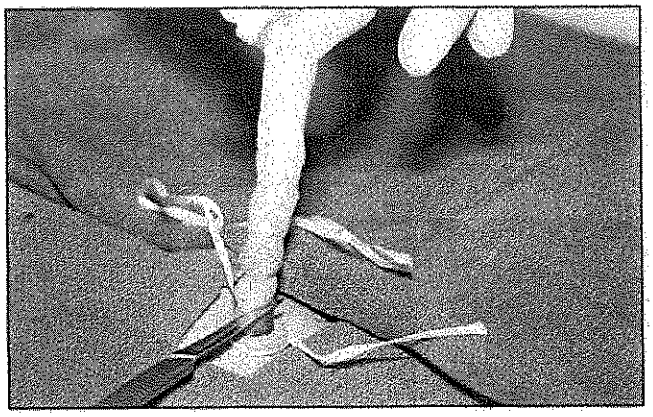

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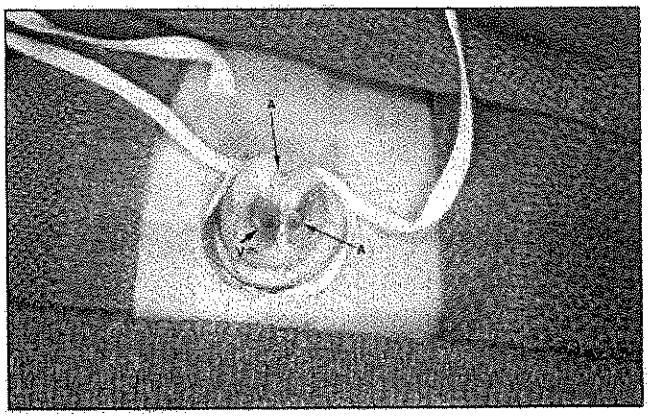

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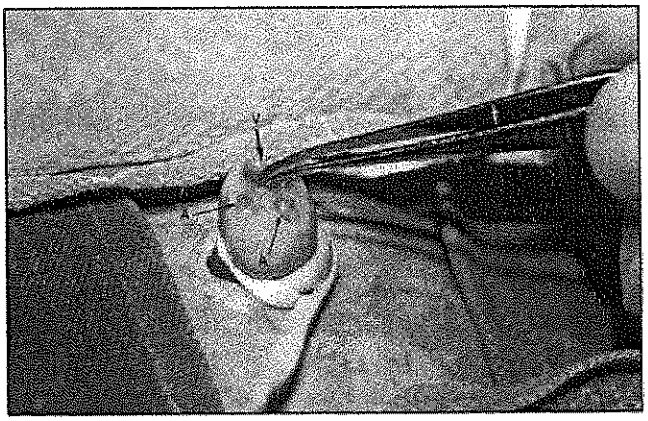


Step 9

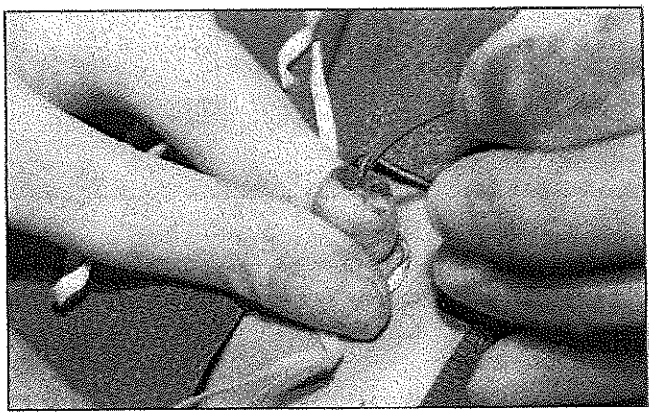
Step 5
Attach a size 3.5 Fr (in a premature infant) or 5.0 Fr (in a term infant) umbilical catheter to the open end of the stopcock. With the flow still turned off to the side just primed (step 4), flush the catheter with saline to clear trapped air.

Step 6
Have an assistant hold the cord upright by the cord clamp until the cord is cut. Sterilize the skin and umbilical cord with povidone and alcohol.

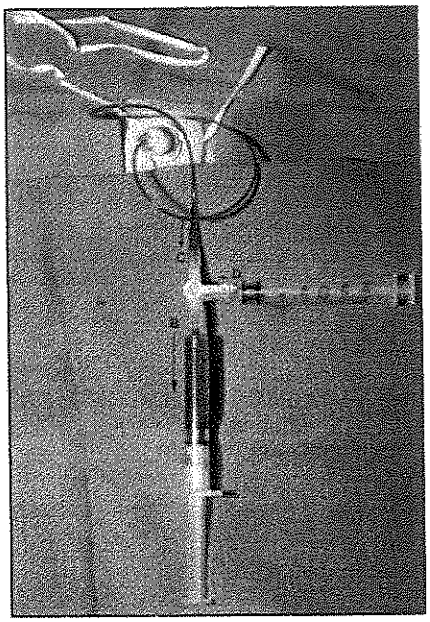
Step 7
Drape the infant. Using cotton tape, firmly tie off the base of the umbilical stump at skin level, avoiding the cord. Cut the cord approximately 1 or 2 cm above the base of the stump.

Step 8
Identify the umbilical vein (V-vein has a very wide lumen) and two umbilical arteries (A-small lumen of arteries cannot be accessed easily).

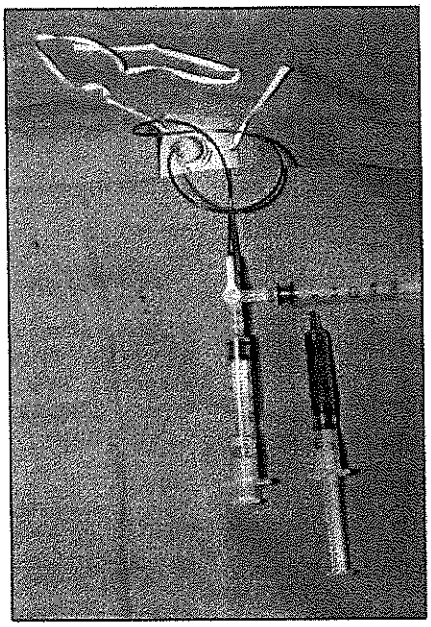
Step 9
Dilate the lumen of the vein with an iris forceps, or a stylet. Re- move any clots.



Step 10



Step 11



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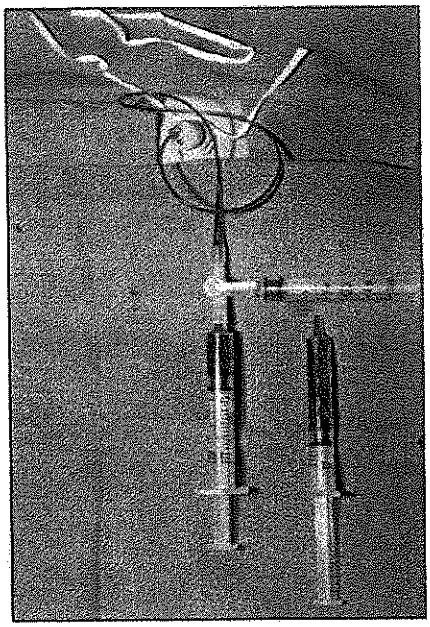


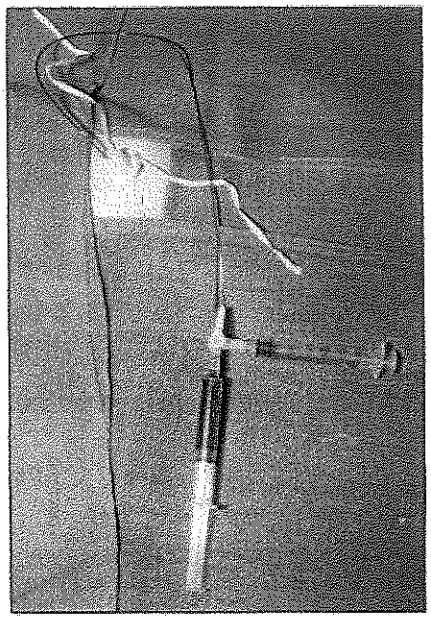
Step 13

Step 10
Hold the base of the cord with one hand and gently insert the catheter into the vein approximately 3 or 4
cm so that the catheter is just below skin level. If you meet resistance, the catheter has advanced too far and entered the portal system. Withdraw 1 cm, and the catheter should return into the umbilical vein, allowing a free flow of blood in and out of the catheter.

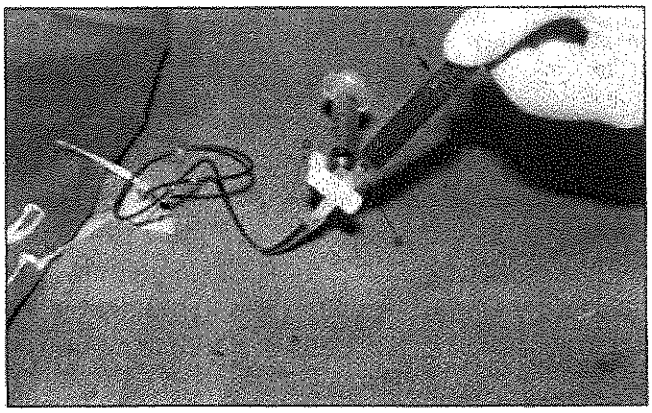
Step 11
Turn the stopcock off to the empty syringe (position D). Withdraw 2 mL of blood and saline (already present in the catheter) through position C into the syringe at po- sition B; do not discard.

Step 12
With the stopcock turned off to the catheter (position C), attach a new syringe to the circuit (outlet B). Note: Place on the sterile drape the syringe containing the blood just withdrawn.

Step 13
Repeat manoeuvre in step 11 and withdraw blood sam- ples as required for assay of complete blood count and differential, sugar, BUN and electrolytes, calcium, cross-match, and blood gases (heparinized sample). Several aliquots of blood can be withdrawn as needed using different syringes by turning the stopcock off and on to the main catheter (positions C and D).



Step 14



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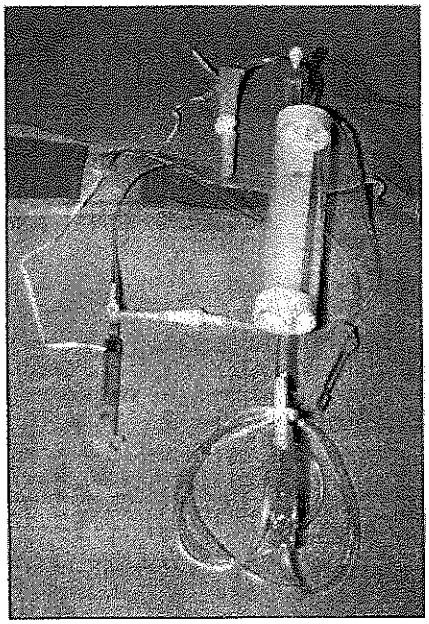

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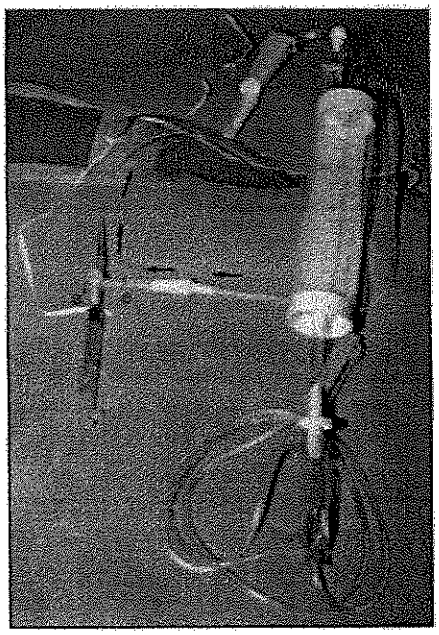

Step 17

Step 14
Finally turn the stopcock off to the catheter (position C) and reattach the syringe removed in step 11, which contains part blood and part saline (2 mL), to position B.

Step 15
After turning the stopcock off to the empty syringe (position D), draw a further 1 mL of blood into the pre- loaded syringe through outlet B to clear trapped air
from the circuit. Hold the syringe upright, tap it to allow air to rise to the top of the syringe, and then inject the fluid contents back through the catheter, avoiding delivery of air.

Step 16
Turn the stopcock off to the catheter (position C) and attach a primed drip set to only one of the side inlets of the stopcock (position D).

Step 17
Turn the stopcock off to the syringe (position B). Turn on the intravenous infusion pump (J). The preferred infusion is 5% or 10% dextrose at 4 to 5 mL/hour (maintenance). Bolus infusions of volume expanders and drugs can be delivered through the free port of the stopcock, where the syringe) is attached (position B), after turning the stopcock off (position D).

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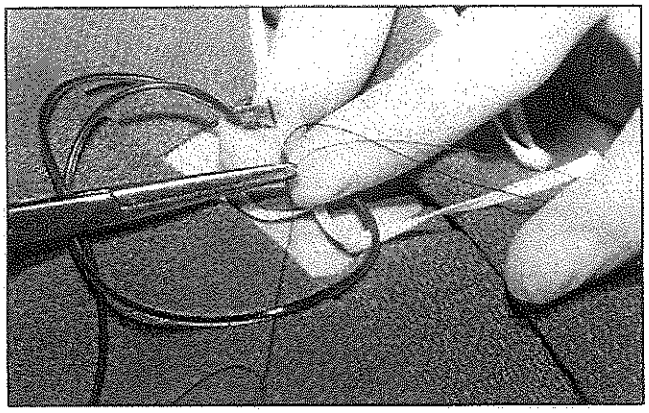

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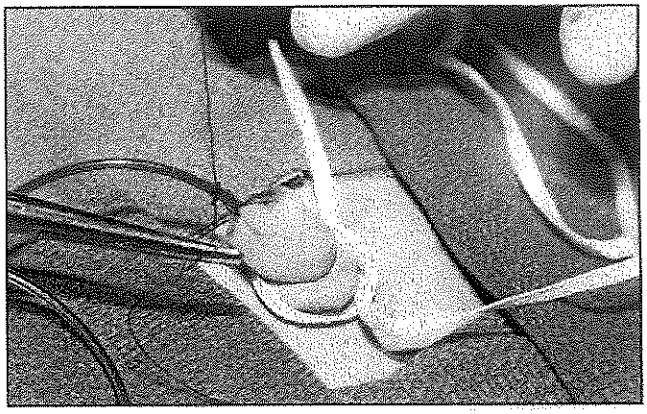

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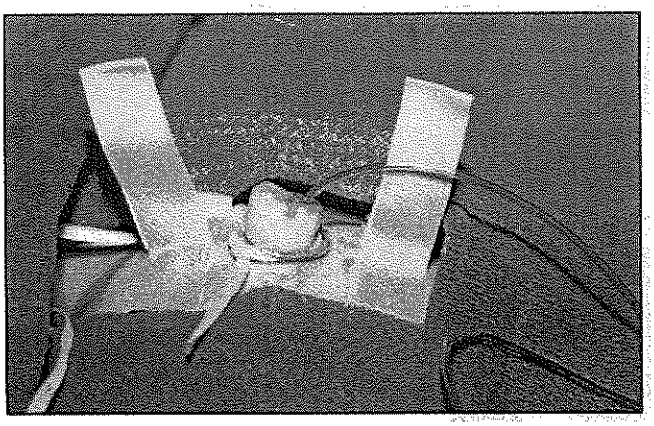

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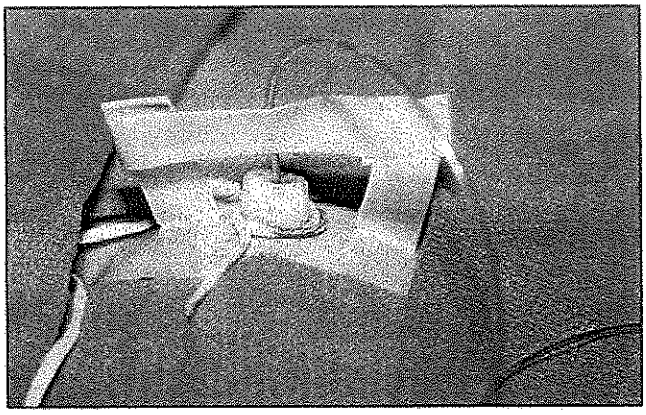

Step 21

Step 18
Stitch the catheter in place with 4-0 silk, using the edge of the stump and avoiding the vessels. (mattress stitch

Step 19
Make several circular ties around the catheter to fix the position of the catheter.

Step 20
Build a .'bridge" with waterproof tape. Place two pieces of upright waterproof tape on either side of the cord or use IV 3000 to secure UVC to abdomen.

Step 21
Complete the bridge with two straight pieces of waterproof tape across the top of the cord, taking in the catheter and the two upright pieces of tape assembled in step 20. Slowly loosen the cotton tape at the base of the cord, ensuring that there is no hemorrhage from the umbilical vessels.

Note Well:

I. The catheter can be dislodged, resulting in severe blood loss, if it is not secured in position.

2. Never leave the catheter open to the atmosphere because exposure can result in an air embolus.

3. Try to establish a peripheral intra- venous line as soon as the infant is stable.

4. Contact the nearest tertiary care perinatal unit for support and advice about ongoing management. .

Reference:

Blatz, Susan, Pals, Bosco A., Neonatal Cardio-pulmonary Arrest Emergency Catheterization of Umbilical Vein, Val 36, Family Physician, June, 1990.