

PNEUMOTHORAX – INSERTION OF A PIGTAIL CHEST DRAIN

This Local Operating Procedure is developed to guide safe clinical practice in Newborn Care Centre (NCC) at The Royal Hospital for Women. Individual patient circumstances may mean that practice diverges from this Local Operating Procedure.

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INTRODUCTION

A pneumothorax is the accumulation of air in the pleural space. A chest catheter connected to an underwater sealed drainage system may be required to release this air if it is causing respiratory or cardiovascular compromise.

1. AIM

- To guide the insertion of a pigtail chest drain correctly and safely

2. PATIENT

- Newborns

3. STAFF

- Medical and nursing staff

4. EQUIPMENT

- Angiotech – “Pigtail”, 8.4 French (17G/1.4mm) OR 5.7 French (18G/1.0mm)
- Plastic Multipurpose Tubing Adapter x 1
- Minor Op Set
- Xylocaine 1% Ampoule
- Sterile gown and gloves
- Sterile green drapes x 2
- Sterile plastic drape UWSD sign
- Large Tegaderm dressings x 2
- Steristrips
- Syringe 2 mL and 25G needle
- Blue Inco-pad
- Clamps x 2 with plastic tubing over clamping teeth
- Antiseptic solution

NOTE: Site Selection

Usually placed in the anterior or mid axillary line in line with the nipple (approximately in the 4th intercostal space)

5. CLINICAL PRACTICE

Procedure:

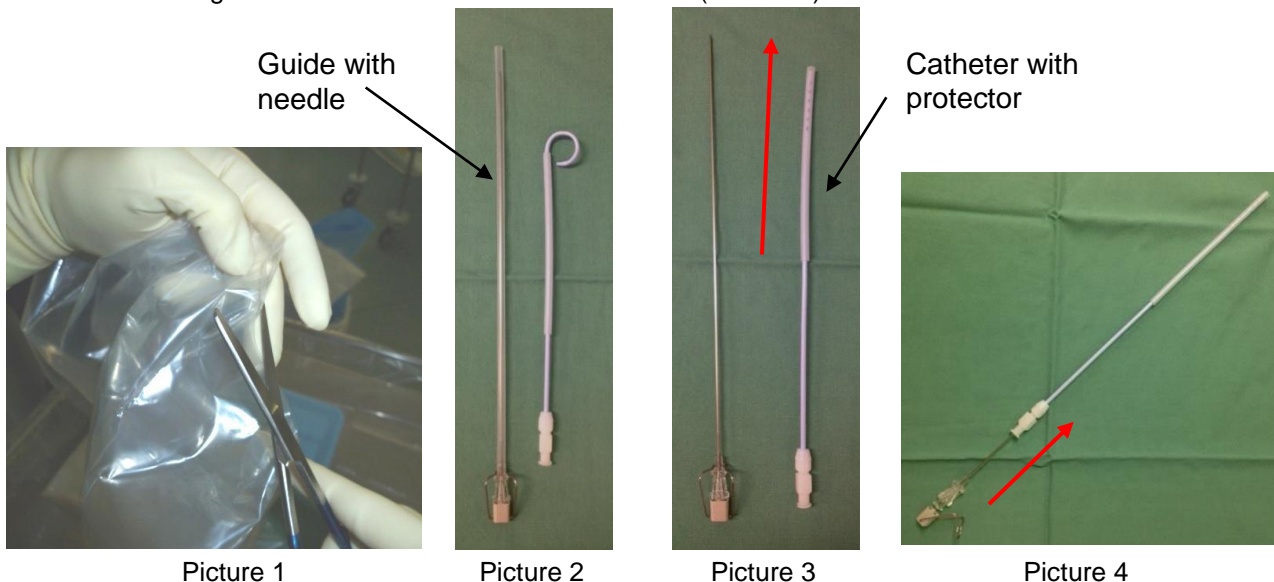
1. Provide explanation to parent/s and obtain consent.
2. Perform a “Time Out” prior to starting the procedure.
3. Check that suction and resuscitation equipment is available for emergency.
4. Perform hand hygiene.
5. Collect equipment.
6. Clean work surface with neutral detergent.

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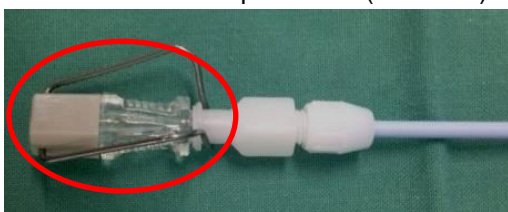
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7. Insert a blue inco-sheet under the infant on the nominated side for the procedure.
8. Assistant RN is to position infant in the supine position with a slight tilt of the insertion side of the infant's body.
9. Oral sucrose is to be given prior to starting the procedure or prior to local anaesthetic application. If nil orally and on morphine infusion, a bolus dose should be prescribed and given.
10. MO defines the insertion site for needle and identifies the landmark.
11. MO to put hat, goggles and mask on.
12. MO to attend to a surgical scrub. Put sterile gown and sterile gloves (double-gloved) on.
13. Open sterile plastic drape packet for MO to drape the cleaned procedure trolley.
14. Open remainder of required equipment for MO to assemble.
15. Provide antiseptic solution for cleaning.
16. MO to cut a hole in the sterile plastic drape (Picture 1).
17. Assistant RN to assemble the water seal chest drain and connect tubing to suction (see LOP: Chest Drain - set up).
18. Clean insertion site with antiseptic solution. Repeat.
19. Apply sterile plastic drape and then sterile green drapes.
20. Administer local anaesthetic.
21. Gently slide the protector to the top of the catheter (Picture 2 & 3).
22. Insert the guide and the needle inside the catheter. (Picture 4).



23. Lock the guide and the needle to the catheter (Picture 5).
24. Remove the protection (Picture 6).



Picture 5



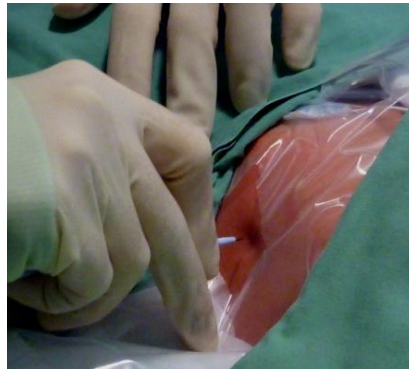
Picture 6

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- 25. Hold the catheter firmly and insert it into the selected intercostal space with a 90 degree angle (Picture 7 to 10).
- 26. Unlock and remove the needle from the guide IMMEDIATELY after having passed the chest wall (Picture 11).



Picture 7



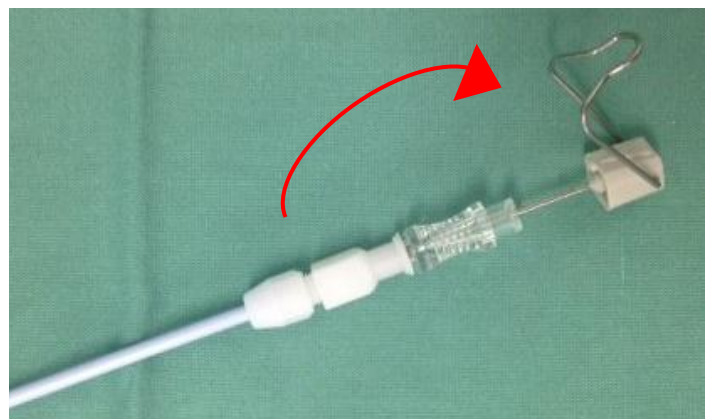
Picture 8



Picture 9

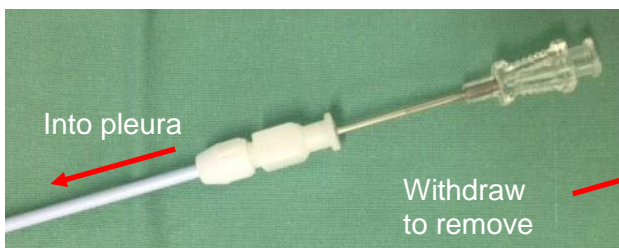


Picture 10

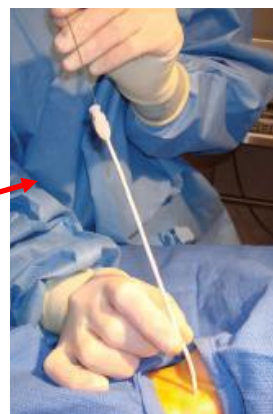


Picture 11

- 27. Gently push the catheter and the guide into the pleura.
- 28. Then withdraw the guide while pushing the catheter further in – simultaneous actions (Picture 12 & 13).



Picture 12

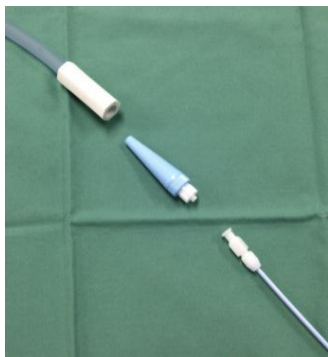


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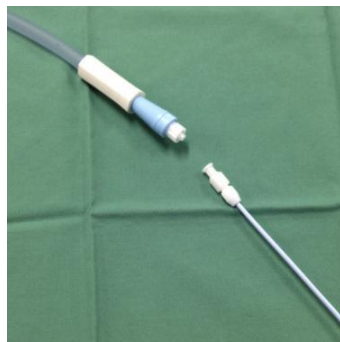
29. Connect the “patient drainage tube” to the chest drain with a plastic multipurpose tubing adapter (Picture 14 & 15).



Picture 15



Picture 16



Picture 17



Picture 18

30. Connect the chest drain to the drainage system (Pictures 16 to 18).
31. Observe for intermittent bubbling and oscillation in the under water sealed system.
32. Record observation on flow chart, nursing notes and eMR.
33. Clean the insertion site and allow to air dry.
34. Secure the chest tube to the skin with steristrips (Pictures 19 & 20).



Picture 19



Picture 20

35. Apply 2 tegaderms (on opposite sides of the catheter to sandwich the catheter) to seal the insertion site. The dressing must seal the perimeter of the insertion site.
36. Perform a chest x-ray

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37. Re-enforce chest drain to infant with leucoplast.
38. Secure the drainage tube to the infant's nappy.
39. Record the procedure, behaviour of the infant and clinical observations during the procedure in eMR notes.
40. Ensure parents are informed of the outcome of the procedure.

6. DOCUMENTATION

- eMR nursing notes
- Neonatal Observation Chart
- NICUS database

7. RELATED POLICIES/PROCEDURES/CLINICAL PRACTICE LOP

- Chest Drain - set up

8. RISK RATING

- Medium

9. NATIONAL STANDARD

- Standard 1 Governance for Safety and quality in Health Service Organisation
- Standard 3: Preventing and Controlling Healthcare Associated Infections
- Standard 5: Patient Identification and Procedure Matching

10. ABBREVIATIONS AND DEFINITIONS OF TERMS

NCC	Newborn Care Centre	RN	Registered Nurse
MO	Medical Officer		

11. REFERENCES

1. Cates, LA. (2009). Pigtail catheters used in the treatment of Pneumothoraces in the neonate. *Advances in Neonatal Care*, 9(1): 7-16.
2. NSW Health Policy Directive PD2005_406. "Consent to Medical Treatment – Patient Information". Date of Publication 27 January 2005.
3. NSW Health Policy Directive PD2017_032. "Clinical Procedure Safety". Date of Publication 22 September 2017.

12. AUTHOR

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REVISION & APPROVAL HISTORY

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