Academic Department of Critical Care
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NHS Trust

Prone Position Ventilation in Critical Care

Aim To provide practical guidance on the indications and process for prone position ventilation.

Scope Ventilated adult patients in the Intensive Care Unit. This guidance should be used in conjunction with the Department of Critical Care Standard Operating Procedure for Refractory Hypoxaemia.

Indications

Consider proning early when adequate oxygenation can not be achieved within ARDSnet lung protective ventilation parameters (See Refractory Hypoxaemia SOP). Typical criteria include:

- Ventilator settings optimised, paralysed and recruitment manoeuvres attempted
- Requiring FiO2 over 0.65 to keep PaO2 over 8kPa
- Unable to keep peak airway pressure below 30cmH2O

Potential Contraindications

Absolute contraindications include:
- Open abdomen
- Unstable cervical spine

Relative contraindications include:
- Cardiovascular instability
- Head injury with raised ICP
- Eye or facial injury
- Thoraco-lumbar spinal injury
- Pelvic fracture
- Recent abdominal surgery
- Gross ascites or obesity
- Pregnancy in 2nd or 3rd trimester
- Intra-aortic balloon pump

Pre-Turn Considerations

- Ensure sufficient staff available:
  - 1 doctor with intubation skills
  - 4 additional nurses or doctors
- Assess pressure areas, ensure suitable mattress & consider extra padding (eg Aderma cups)
- Eye care: clean & lubricate with simple ointment (eg Lubitears), then close with tape.
- Perform standard DCCQ mouth care.
- Check grade of intubation, current length of ETT at teeth, and suitable ETT securing (not Anker Fast or Elastoplast)
- Ensure deep sedation and adequate muscle relaxation.
- Aspirate NGT and pause feed while turning
- Disconnect non-essential IV lines and luer lock, for re-connection immediately following the turn (take great care with sterility)
- Ensure there is adequate length of IV tubing for essential infusions while turning.
- Remove ECG electrodes from anterior chest wall and reposition on back/sides.
- Try to re-position chest drain sets without lifting above the patient. Any temporary clamping of chest drains for turning should only be done by a senior doctor.

Beware proning too soon after admission to ICU. First try to give other measures a chance to work, carry out essential transfers, and ensure all necessary lines are in and working.

Version 2 | Date: 11 Nov 16 | Revision Due: 11 Nov 19 | Authors: G Brann, C Alexander, R Gonzalez & N Tarmey

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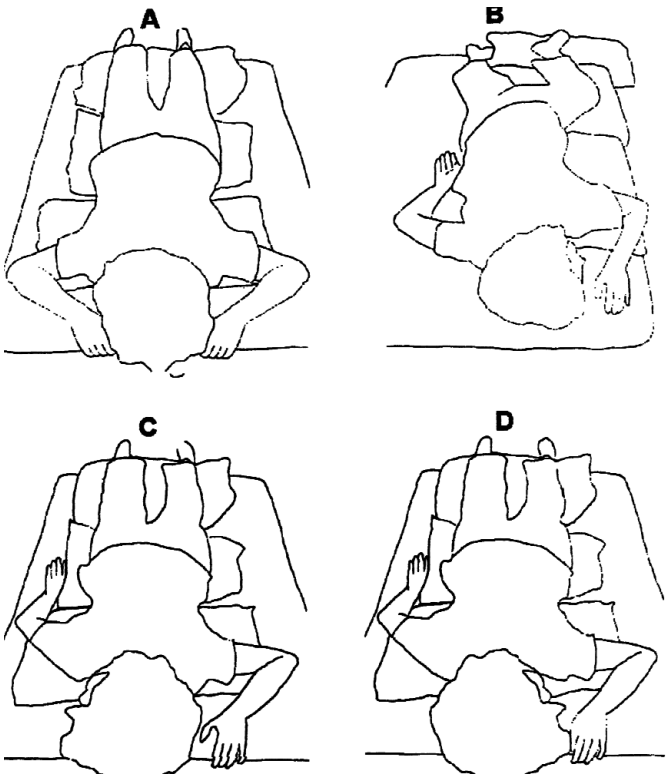
Turning to the Prone Position

"Cornish Pasty" technique"

1. Complete Team Brief (plan procedure, safety checks and establish team leader/airway)
2. Place 1 slide sheet and 1 sheet underneath patient
3. Place 1 pillow on chest and 1 on pelvis (fig. A)
4. Place patient's hands under their buttocks
5. Place 1 sheet and 1 slide sheet of top of the patient
6. Ensure pressure areas are protected (genitals, breasts, knees etc)
7. Arrange all lines above the waist upwards
8. Arrange all lines below the waist downwards
9. Roll all sheets together on each side of the patient (fig. B)
10. Slide patient across to the edge of the bed
11. Roll patient into side lying position and recheck airway, lines and vital signs (fig. C)
12. Continue rolling patient into prone position
13. Remove slide sheets and position head and arms in "swimming" position (fig. D)
14. Re-connect all lines, ensuring sterility has been strictly preserved
15. Re-start feed, ensuring NGT has not been dislodged

Maintaining in the Prone Position

- Aim to keep in prone position for 16-18 hours at a time.[1]
- As long as proning is still required, aim to keep prone for at least 75% of the time (eg 18/24 hours).[1]
- Vary the prone position regularly, eg rotating through positions A, B, C & D every 1-2 hours.
- After rotating through A-,D, repeat with the opposite side of the body (ie right hand up, instead of left)
- Watch carefully for new pressure areas on the front of the body and take special care to avoid pressure on the eyes.
- At the end of each prone session, re-assess the need for further proning.



"Cornish Pasty" Technique - Images

Fig A: placing one pillow on chest and one pillow on pelvis

Fig B: rolling all sheets together on each side of the patient

Fig C: rolling patient into side lying position and rechecking airway, lines and vital signs

Fig D: removing slide sheets and positioning head and arms in "swimming" position