

## Practical procedures: Aspiration of a pneumothorax

### Indications for pneumothorax aspiration:

- Primary spontaneous pneumothorax greater than 2cm (at level of hilum) +/- breathlessness
- Primary spontaneous pneumothorax under 2cm but symptomatic
- BTS guidelines advise 2 attempts at aspiration can occur
- If the primary pneumothorax is less than 2cm and the patient is asymptomatic re-image in 2-3 weeks

### Equipment required for pneumothorax aspiration:

- Sterile gloves
- Sterile field and dressing
- 16-18 gauge cannula
- Lignocaine
- Orange, blue and green needles plus a 10ml syringe
- Chlorhexidine cleaning wand
- 3-way tap
- 50 ml syringe

### Contraindications to pneumothorax aspiration:

- Severe coagulopathy
- Pneumothorax less than 2cm and asymptomatic
- Secondary pneumothorax
- Local infection

### Pre-Procedure:

- Gain consent from the patient – ideally should be written
  - Consent for pain, failure of procedure, bleeding, infection, damage to surrounding structures
- Familiarise yourself with the landmarks
  - 2<sup>nd</sup> intercostal space in the midclavicular line
  - Mark area if necessary
- Set up a sterile trolley with equipment

**Procedure for pneumothorax aspiration:**

- Don sterile gloves and clean area with chlorhexidine
- Apply sterile field
- Insert lignocaine 5-10ml initially under the skin and then into subcutaneous tissues and pleural space.
  - Air should be aspirated with green needle and local anaesthetic
- Take cannula and insert at 90 degrees, begin to remove needle once at the depth air was aspirated with the green needle but advance plastic sheath to the hilt. Be cautious not to kink the cannula
- Attach three way tap to cannula and then syringe to three way tap
- Aspirate air via three way tap, ensuring tap is closed whenever the syringe is removed so no air is allowed into the chest.
- Aim to aspirate until resistance
  - Usually this is less than 2.5L
- Remove cannula
- Apply dressing

**Post-procedure care:**

- Analgesia
- Chest X-ray
- If pneumothorax remains greater than 2cm, proceed to a further attempt at aspiration
- If second attempt fails to resolve pneumothorax, seek senior respiratory review with a view to chest drain insertion
- If pneumothorax remains but is less than 2 cm and the patient's symptoms have improved they can be discharged with future follow up arranged
  - The respiratory team are usually happy to see these patients but it is your responsibility to arrange this
- Patients who have suffered a pneumothorax must be advised that they can never do diving (due to pressure changes) and that they cannot fly for at least two weeks after full resolution of the pneumothorax
  - The diving rule can only be overturned if the patient undergoes chemical pleurodesis
- Advise patients who smoke to stop
  - Smokers have an increased risk of recurrence.

**In the event of failure:**

- Stop procedure
- Seek senior help
- Repeat chest x-ray and review clinically

**Top Tips for pneumothorax aspiration:**

- If discharging a patient with a residual pneumothorax ensure they are aware of this and that they know they should re-attend hospital at any time if their symptoms return or they feel unwell.
- Patients being discharged with a residual pneumothorax **MUST** have a follow up x-ray arranged to confirm resolution of the pneumothorax at a later date.
  - Follow up x-ray can be performed 1-2 weeks later