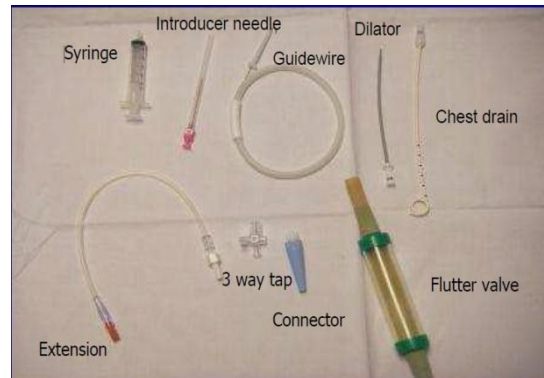


# CHEST DRAIN INSERTION – SELDINGER TECHNIQUE

## INDICATIONS

- Treatment of pneumothorax or pleural effusion

## EQUIPMENT



- Introducer needle
- Chest drain
- Guidewire
- Dilator
- 3-way tap
- Extension
- Connector
- Flutter valve or underwater seal
- Steri-Strip™
- Transparent dressing

## PROCEDURE

- It is advisable that 2 people are scrubbed for this procedure

### Step 1: Analgesia

- Ensure baby has adequate analgesia
- if ventilated: use morphine bolus
- if non-ventilated: use low-dose fentanyl (watch for chest wall rigidity)
- lidocaine locally

### Step 2: Aseptic technique



- Use sterile gloves and gown
- Identify site
- Clean skin according to local policy

### Step 3: Insert needle



- Select location for chest drain – usually 5<sup>th</sup> intercostal space, anterior axillary line

## Chest drain insertion – Seldinger technique 2025–28

- Place Steri-Strip™ 1 cm from bevelled end of needle
- ensures needle not advanced too far
- acts as marker in case of needle slipping out
- Insert needle whilst aspirating syringe
- Stop advancing once air aspirated (<1 cm)

### Step 4: Insert wire



- Pass wire through needle ensuring wire is not inserted any further than silver mark. Holding wire still, remove needle

***Take care to keep equipment sterile at all times. This may require an assistant to 'control' wire***

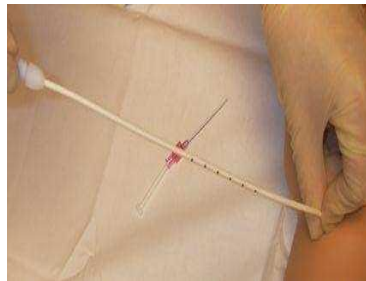
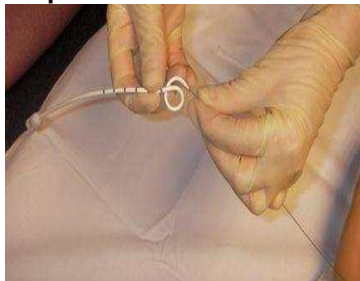
### Step 5: Dilate the skin



- Pass dilator along wire
- Push dilator through skin approximately 1 cm, angling anteriorly
- Skin may require small incision
- Following dilation, dilator can be removed

***At all times wire must be held still, not advanced or withdrawn***

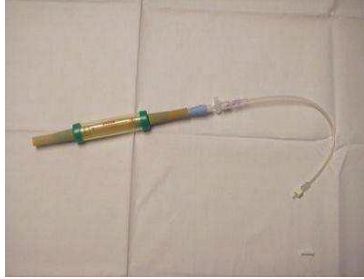
### Step 6: Insert drain



- Advance drain over wire (this often needs an assistant)
- Advance drain through skin so holes are inside baby's pleural space – i.e. at least 1 cm from the skin and insert to:
  - preterm babies: 1<sup>st</sup>–2<sup>nd</sup> black mark
  - term babies: 3<sup>rd</sup>–4<sup>th</sup> black mark
- Wire can now be removed

**Step 7: Add flutter valve or connect to underwater seal**

- Assemble drainage equipment
  - extension
  - 3-way tap
  - connector and flutter valve or underwater seal and suction
  - if connected to underwater seal use 5–8 cm H<sub>2</sub>O pressure suction



- Attach valve/underwater drain with suction to end of drain
- Chest X-ray to confirm position and monitor progress/resolution of pneumothorax or pleural effusion

**Step 8: Secure drain**

- Carefully secure drain
  - **do not** use a purse string suture
  - secure chest drain with Steri-Strip™ and Tegaderm™
  - if required, suture may be placed through skin and knotted to drain

**HOW TO REMOVE**

- Wear personal protective equipment, i.e. gloves, eye protection
- Remove sutures and Tegaderm™
- Gently pull drain – pigtail will uncurl
- Beware of splashing body fluids – as drain comes out of skin, pigtail catheter will spring back