

# Guide to using our needle-free Seldinger chest drain kit



# infusion concepts

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- Kit contents**
- Drainage catheter; 8 Fr; 20 or 35 cm long
  - Seldinger introducer needle
  - Tissue Dilator
  - Disposable scalpel with # 11 blade
  - Spare suture wing with fixing cover
  - Swabable needle-free valve

## Description

Our needle-free thoracic drainage catheter kits are for placement via the Seldinger (over-the-wire) technique, and are suitable for both short and longer-term (upto four weeks) placement. The kits can be placed by either standard/open Seldinger technique or as a completely closed drain using our needle-free valve. Kits are only for placement under strict aseptic conditions. These instructions relate to the standard placement technique.

## NB

Our needle-free thoracic drainage catheter kits are supplied with an integral pre-fitted stiffening stylet. It is important to remove this stylet prior to securing and first using the drain to ensure correct drain operation and patient safety.

**\*\* Please contact us or download a copy of this instruction sheet prior to first using if you are unfamiliar with the Seldinger technique \*\***

## Seldinger drain placement instructions

### a) Insert Introducer needle

1. Attach the introducer needle (I.N.) to a syringe prior to making a very small stab incision or nick with the scalpel.
2. Perform thoracic puncture as normal with needle angled cranio-ventrally and slightly medial to chest wall. Ensure skin entry site is 2-3 rib spaces caudal to intercostal puncture site to allow flap valve action during drain removal.
3. Aspirate chest to ensure correct positioning of needle and that I.N. tip is not obstructed by lung tissue. Remove syringe from I.N.

### b) Place guide wire

4. Remove the protective cover from the tip of the guide wire holder (GWH). Using your thumb, retract the exposed tip of the guide wire (GW) so it is just inside the GWH. This end of the wire is referred to as the DISTAL end, with the other referred to as the proximal end.
5. Push tip of GWH into I.N. Using your thumb again, use short forward pushes to advance the GW into the I.N. to the required, pre-measured depth. Distance markings on the GW will assist you in ensuring an accurate placement depth. If uncertain, confirm GW placement by radiography. Holding the GW firmly, pull the GWH off the remainder of the GW so that the proximal end of the GW is free; ensure you maintain aseptic conditions when releasing the end of the GW.
6. Holding the GW securely proximal to the I.N, slowly back the needle out of the thorax to leave just the GW exposed at the skin surface. Once the I.N. is clear of the chest, change your hold on the GW to the skin entry site and slowly pull the I.N. off the wire.

### c) Tissue dilation

7. Tissue dilation is not always required but aids smooth passage of the catheter through the skin, subcutaneous and intercostal tissues.
8. Holding the proximal end of the GW, advance the tissue dilator (TD) on to the GW.
9. Grip the proximal end of the GW and advance the TD down to the skin surface. ALWAYS advance TD toward the patient, NEVER try to feed the GW into the TD as doing so may cause the GW positioning to alter or even to unintentionally be removed from the thorax.
10. Using a twisting/rotating action, advance the TD through the skin, subcutaneous and intercostal muscle layers to help create a slight tunnel that will reduce resistance to catheter placement, taking care not to damage the tip on the skin surface. If there is excessive resistance with the skin, use the scalpel provided to small 'nick' or stab incision by guiding the inverted blade along the GW (1-2 mm length should be sufficient) and then try passing the dilator again. Once into the thorax the TD should follow the approximate course of the I.D. and GW previously.
11. Remove the TD from GW using the same technique and care as when removing I.D. from the GW.

### d) Place catheter

12. Advance the catheter on to the GW and down to the skin insertion site using the same technique as with the TD.
13. Carefully advance the catheter through the dilated skin, subcutaneous and intercostal tissue tunnel into the thorax. Manipulation of the skin cranially and caudally may help overcome any slight resistance encountered. If there is excessive resistance during advancement, remove the catheter and repeat the dilation technique in steps 7 - 11 above.
14. Advance catheter to the required depth in thorax, using the distance guide markers on the catheter surface as an indication. If uncertain of positioning, confirm with radiography. Always leave GW in situ until placement is complete. Please note that you do not have to place the entire catheter length in your patient if this is not required; we supply a spare suture wing and cover with this kit.
15. Once catheter placement is confirmed, hold the suture wing or luer lock of the catheter firmly. With your other hand gently and steadily pull the GW out of the catheter.

### e) Remove stylet

16. Move the white C-clamp towards the catheter material, leaving enough room to view the stylet in the clear extension tubing. Holding the catheter's distal luer lock (clear, winged) firmly, unscrew the bulky luer lock of the stylet (frosted, below blue female luer lock) and begin to remove the stylet from the drainage catheter. As the stylet tip exits the catheter and is pulled into the extension tubing, close the C-clamp firmly to close the catheter, before removing the stylet completely.
17. In an emergency, where speed of patient stabilisation is critical, you can access the drainage catheter as normal now. Please ensure you take care not to displace the unsecured drain from its' correct position.

### f) Secure and dress catheter

18. If the drainage catheter has been fully inserted, simply secure the suture wing to the skin using the holes provided with a secure suture on both sides.
19. If it is only partly inserted, place the tubular spare suture wing onto the catheter at the skin inserion site before fitting the cover onto the wing. Ensure the elevated end of the cover faces away from the skin site. Suture this wing first, then secure the main wing with sutures. If there is significant catheter length left exposed between the suture wings, place tacking sutures over the catheter to avoid risk of the catheter being caught or damaged. When a premeasured length of drain placement is required, it is often helpful to pre-fix the spare suture wing before placing the drain in the thorax.
20. Secure the needle-free valve (NFV) to the female luer lock and then dress the skin insertion site appropriately. The NFV ensures secure closure of the drainage catheter and requires no further capping or security (see **21 & 22** below)

## Using our needle-free valves

21. Check the surface of the NFV if used in closed placement. If there is no sign of damage, roughening of surface or stepping either side of the septum the valve can be left in place and used as below. If there are signs of damage, replace the valve, remembering to close the c-clamp prior to removing the damaged valve.
22. Our NFV is swabable, so there is no need to cap or cover the valve surface. To access the thorax and use the valve, simply swab the surface thoroughly and leave to dry for 30 seconds. Insert the syringe with a twisting action as you push it into the valve to engage the valve wall. We do supply a non-sterile, non-activating cap (FNVCAP20) to prevent gross contamination to the valve surface; otherwise, any cap, connector or luer that activates/enters the valve MUST be sterile. Further details are available on our website, in our current product guide or simply by calling us.

## Drain catheter removal

23. Release all securing sutures. Gently withdraw catheter from the thorax, monitoring the distance markerings. The last main marker is 10 cm from catheter tip, and then you will note minor marker lines at 1 cm intervals before the proximal most hole is exposed. The 20 cm drain has 5 minor marker lines with the proximal hole 1 cm distal to this, whilst the 35 cm drain has 4 minor marker lines with the proximal hole approximately 0.5 cm distal to this.
24. When the last main marker is exposed, gently retract skin caudally whilst simultaneously placing finger pressure over the catheter in the subcutaneous tissue. This will create an adequate flap valve to prevent entry of air down the catheter lumen once the drain holes are exposed.
25. Withdraw the remainder of the catheter with a steady pull during, or at the end of, expiration. Close and cover the entry site appropriately.