Shortening peel-away sheaths prior to dialysis line insertion—potential decrease of patient risk

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Placement of tunnelled dialysis lines is effective using ultrasound and fluoroscopic guidance [1] and has a higher success rate than ‘blind’ insertion [2].

After the ultrasound guided access into a neck vein, wires and catheters are guided in to a suitable position in the venous system. After dilatation, a 16F peel-away sheath is introduced. A dual-lumen dialysis catheter is tunnelled from an appropriate skin entry site and inserted through the peel-away sheath. The sheath is then split and removed by peeling it away.

The 16F or similar sized sheath, available from a variety of manufacturers, is ~17 cm long and placed together with a rigid dilator of similar size (Figure 1). This means the peel-away sheath assembly is usually inserted well into the heart. When left-sided access is used, there is the potential for wall trauma at the confluence of the left brachiocephalic vein and superior vena cava. In this and other units, we have seen morbidity and mortality due to venous and cardiac perforation during instrumentation.

The venous insertion site is usually only 1–3 cm from the skin access site. In principle, the peel-away sheath system need not be any longer than this, as venous access is maintained after removal of the wire and dilator. This point was made by Nixon in a letter to the Br Med J [3]. We have started to cut the peel-away sheath to half its length (8 cm) (Figure 2) Once the dilator part of the assembly is a few centimetres in (Figure 3), the shortened peel-away sheath can be advanced over the dilator into the vein while holding the dilator steady (Figure 4). The dilator is removed and the dialysis line inserted as normal. There is therefore no intra-cardiac insertion of the stiff peel-away sheath/dilator assembly, minimizing the risk of cardiac trauma.

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Insertion of right internal jugular lines is straightforward using this technique. For left internal jugular insertion, this method avoids the kinking of the peel-away sheath that can occur at the left brachiocephalic–superior vena cava junction after the removal of the wire and dilator prior to line insertion. Occasionally, a left-sided line is malpositioned with this technique e.g. entering the right brachiocephalic vein, or being doubled up within the left brachiocephalic vein. However, repositioning is rapid and straightforward, using standard interventional radiology techniques during the same procedure.

In common with the experience reported by Nixon [3], we have had little response from the manufacturers of these devices about making shorter peel-away sheaths available. In the meantime, however, this adjustment to the available equipment is straightforward and contributes to the limitation of patient risk.

Conflict of interest statement. None declared.

References


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