

The “Touch Cannulation” Technique for Hemodialysis

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Q: When I’m cannulating a “deep” access and cannot see the fistula or graft, sometimes I can’t tell if the needle is above or alongside the fistula or graft; therefore, I don’t know which way to re-direct the needle to cannulate the vessel. Also, when I’m cannulating an established buttonhole, I can’t always tell if the blunt needle is sliding smoothly through the tunnel, or if it is damaging the “wall” of the tunnel track.

A: Typically, nurses are taught to hold the “wings” of fistula needles for control of the needle as they cannulate a fistula or graft to initiate hemodialysis (see Figure 1), and this has become standard practice over the years. This Clinical Consult column describes a relatively new technique we have dubbed “touch cannulation.” When using this technique, the cannulator holds the tubing behind the wings, rather than holding the wings themselves, and gently pushes the needle forward through the skin and tissue into the access (see Figure 2). This provides more sensitive pressure feedback during cannulation, and most of the time it is possible to feel whether the needle is above or to the right or left side of a synthetic graft. Although the pressure feedback is not as sensitive for arteriovenous fistulas, it is still greater than when cannulating by holding the wings. This more precise feedback allows the cannulator to move the needle slightly to the right or to the left or to center the needle above the graft or fistula for insertion into the vessel. Another advantage of this technique is that the fingers do not conceal the blood flashback.

If resistance is felt, the cannulator can slide the thumb and index finger forward, just behind the wings (see Figure 3). This allows the cannulator to increase the force slightly, yet still retain greater sensitivity at the needle tip.

This “touch cannulation” technique has been used incenter, by patients on home hemodialysis, and in both adult and pediatric dialysis units (A. Allsteadt, Texas Children’s Hospital, personal communication, July, 2007).

Buttonhole Cannulation

The “touch cannulation” technique may be used for constant site cannulation. Some centers use it to create “buttonholes,” and others use it to cannulate established

Figure 1
A nurse holds the fistula needle by the wings to cannulate.



buttonhole tracks (Bregel, 2007). To cannulate a buttonhole using this technique, the tubing is held with the thumb and forefinger; the other fingers rest against the patient’s arm providing stabilization. This provides consistency of the angle of needle insertion, which is imperative in establishing the buttonhole tunnel. A consistent angle also helps preserve established tunnels, as it reduces the likelihood of cutting and damaging or enlarging the tunnel track (Ball, 2006). The “touch cannulation” technique is also used successfully by patients on home hemodialysis who self-cannulate. Figure 4 shows a patient on home hemodialysis holding the tubing behind the wings to cannulate an established buttonhole.

When the cannulator holds the wings of the fistula needle to cannulate an established buttonhole track, this directs the needle’s path and is more likely to cut a new or

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Figure 2
A nurse holds the tubing behind the wings to cannulate.



Figure 3
When resistance is felt, the nurse moves the hand forward and grasps the tubing just behind the wings.



Figure 4
A patient on home hemodialysis holds the tubing behind the wings to self-cannulate.



Figure 5
When resistance is met while cannulating a “buttonhole” or constant site, the nurse rotates the tubing slightly while gently pushing the needle forward.



larger tunnel track, and damage tissue along the established track (even when using a “blunt” or “dull” needle). In contrast, when cannulating an established buttonhole with the “touch cannulation” technique, if resistance is met in the tunnel track, the tubing can be rotated slightly while applying very gentle forward pressure (see Figure 5). This allows the dull needle to advance down the established track, but is not forceful enough to damage or enlarge the tunnel track. This gentle twisting or rotation of the tubing has been used in several centers and is being taught by vascular access experts (Bregel, 2007; Brouwer, 2006).

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