

The Buttonhole Technique

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Site Rotation vs. Buttonhole

Major differences between

Site Rotation and the

Buttonhole Technique

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Site Rotation (Rope Ladder Technique)

- Site rotation with every cannulation
- Cannulators independently determine the angle of entry
- Avoid scabs
- Three-point technique
- For fistulae or grafts



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Buttonhole Technique

- Reuse same sites each treatment
- Uses blunt needles
- Scab removal required
- Must follow the track of the original cannulator
- Side-to-side technique
- For AV fistulae only



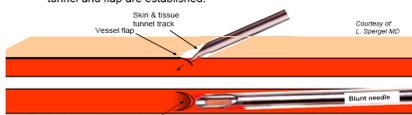
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Troubleshooting

Skin/Tissue Tunnel Track + Vessel Flap = Buttonhole Site

Skin / tissue buttonhole tunnel track forms like the scar tissue track from a pierced earring.

Vessel flap is created by repeated punctures with the sharp needle at the same site. Vessel flap will then be displaced by the blunt buttonhole needle at each cannulation after the tunnel and flap are established.



Top view of vessel flap created by sharp needle in preparation for blunt needle cannulation

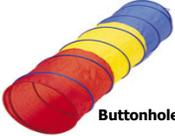
Getting Down The Tunnel



Buttonhole Tunnel

- Fluid overload may cause tissues to swell, narrowing the tunnel
 - a) gently rotate the needle slightly, side to side
 - b) flush the needle tubing with saline, allowing it to drip off the end of the needle

Finding the Flap



Buttonhole Tunnel

- 1) After the weekend
 - Blood vessels swell if fluid intake is excessive, and shifts the flap so it is no longer at the base of the tunnel.
 - Insert the blunt needle to the end of the tunnel, then gently lift the tip upward to find the flap.



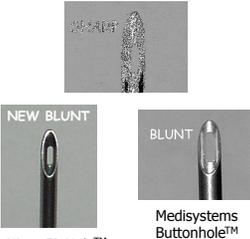
Buttonhole Flap

Well-developed AVF walls

"Trampoline Effect"

Difficulty getting the blunt needles into the fistula – Why?

1. Thick-walled fistulas
2. Original blunt needles were not pointed enough



Nipro BioHole™ **Medisystems Buttonhole™**

New needles, new technique

(Dr. Twardowski, personal correspondence 2006; Milburn et al, n.d.)

Best Demonstrated Practice

- Allows the needle to direct the needle down the buttonhole, and not the cannulator
- Hold the tubing with thumb and forefinger just behind the wings

Touch Cannulation Technique



Mott & Prowant (2008). Nephrology Nursing Journal 35(1)
Photo used with permission

When to Change to Blunt Needles

- This will be individual to each patient, but look for these things:
 - Does the exit site look well-healed?
 - Can you visualize a round hole?
 - Is there a decrease in resistance from day-to-day?
- Do not use excessive force when changing to blunt needles.



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Focus On Infections

- Improper skin cleansing
- Improper scab removal
- Contaminated needle
- Improper cannulation of the track



localized



systemic

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Policy & Procedure

Important inclusions:

- ~single cannulator – track creation
- ~same site, angle, depth of needle insertion
- ~site cleaning – 2-step protocol
- ~scab removal
- ~switching from sharp to blunt needles

Excessive Bleeding

- Track being cut
- Track being stretched
- Sharp needles used long-term
- Flipping needles
- Damage to vessel wall flap
- Possible stenosis

Stenosis Formation

- Causes back pressure into the AVF
- Increases venous pressures
- Increases post treatment bleeding



Courtesy of the Cleveland Clinic

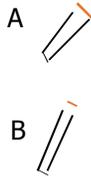
Response to Stenosis

-  for new aneurysms, and increased venous pressures
-  for changes in the bruit
-  for changes in the thrill, and enlargement of aneurysms

Troubleshooting

Why a Single Cannulator?

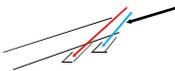
- ~prevents cone-shaped tracks that lead to oozing
- ~prevents the formation of a larger opening
- ~bigger scabs that are harder to remove



Troubleshooting

Unsuccessful cannulation

- ~not following the originator's angle of entry
- ~unstable buttonhole due to:
 - excess upper arm tissue



or excess skin

Best Demonstrated Practice

Cushion Cannulation Technique

- Wheelchair cushion placed under the access arm as far up in the axilla area as possible
- Allows for better visualization – raises the arm up for the cannulator
- Stabilizes the arm and tissue
- Easier to maintain same entry of angle when using the buttonhole technique

Mott & Prowant (2006). Nephrology Nursing Journal 33(6)

Summary - Need to Know Before Cannulating a Buttonhole...

- Developed buttonholes use blunt needles
- Direction of the buttonholes
- Angle of insertion
- How to remove scabs
- Never flip needles in buttonhole sites

Questions?

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web site for buttonhole resources
<http://www.nwrenalnetwork.org/fist1st/ffcannu.htm>
