
The Buttonhole Technique of Fistula Access: A Personal Experience

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I am a 16-year home hemodialysis patient using the buttonhole method of needle insertion into my arteriovenous fistula. From the beginning of my home training I was taught to stick myself. Like most patients, I was taught to rotate needle sites up and down my arm. I used this method for 10 years. In 1990, I learned about the buttonhole technique; I started using it and am still using it today with great success. In this method needles are inserted in the exact same holes. There is no pain with this technique, and there is a great sense of confidence in having fixed, well-known sites; I am certain to have a successful stick almost every time. The buttonhole technique practically eliminated infiltrations. Since I see no reason why the buttonhole sites cannot be used on a daily basis, I am looking forward to using the technique when daily hemodialysis becomes available.

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Key words

Arteriovenous fistula, blood access, buttonhole technique

Experience with the buttonhole technique

I am a 16-year home hemodialysis patient. I had an arteriovenous fistula created and from the beginning was taught by the home training nurse to stick myself. This was quite difficult to learn at first, because it is such an unnatural act to seemingly harm one's self. But once past this initial difficult stage, I soon learned that it hurt less when I stuck myself. Nonetheless, sticking myself and achieving blood access has always been the most difficult part of dialysis. It truly is the Achilles' heel of dialysis.

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Like most patients, I was taught to rotate the sites up and down my arm. This was always difficult, because I always wondered what the new site was going to be like and whether I would get it or miss it. For awhile I used a thermal imaging strip to help locate the vein. Occasional infiltrations were part of the landscape and were always quite upsetting. To find more sites I even started sticking a vein on the back of my arm with the help of a mirror. Everything was in reverse, but somehow I managed to learn to place these sticks.

In 1990, Dr. Peter Lundin (1) told me about the buttonhole technique, which he had learned from Dr. Belding Scribner (2,3), and described his satisfaction with it. I later read Dr. Twardowski's papers (4,5) on the subject. I began using the buttonhole technique right away and am still using it today. Dr. Lundin, then on dialysis close to 20 years, told me he had three venous and three arterial sites. I had trouble maintaining an established tunnel at one of the arterial sites and abandoned it. This left me with two arterial sites and three venous sites. Presumably, the only reason to have two or three sites is so that they will have time to heal between treatments and form a scab.

When using the buttonhole technique, I first clean the venous site with alcohol and then pick off the scab that formed from the last cannulation. According to Krönung (6), one of the disadvantages of this method is the risk of infection from puncturing the scab. Therefore, to avoid the risk of infection, I remove the scabs with a pair of 4-in. (10-cm) splinter forceps. After removing the scab, I clean the site with povidone-iodine and alcohol and attempt to place the fistula needle at the same angle as before. Usually there is some resistance, but I hit the vein and blood comes up the fistula line. My partner lets me know this has occurred, then I rotate the needle in a drilling motion, which makes the needle glide in, overcoming any resistance. Because my two arterial sites are near the surface, they have the characteristic

“mole hill” mound. The venous sites, which are deeper, show “dimples” where the underlying fat and tissue have eroded at the opening of the tunnel.

At the beginning of my experience using the buttonhole technique I abandoned a couple of sites. This was because I did not hit the tunnel just right and apparently ruined the site, because the next time I tried to stick it, it felt like trying to stick shoe leather. I concluded the site was ruined and abandoned it. After this happened a few times, I vowed that I could not continue to start new sites because I felt that I would ruin my fistula. So I would force the needle through the tough spot. To my surprise, the site worked OK the next time and thereafter. It is still my practice to never abandon a site, but rather to reestablish it. However, with some of these reestablished sites I have had some problems with bleeding around the sites, but this has always gone away in a week or two. So I learned that it is possible to successfully reestablish a site in which the scar tunnel has apparently been lost.

In 1995, after I had a parathyroidectomy, I had a lot of trouble with bleeding after removing the needles following dialysis. Perhaps this was due to fluctuations in parathyroid hormone and calcium levels. I reduced my hourly heparin dose, and this problem resolved.

I have been using the buttonhole technique for about 7 years now with great success. There is no pain with this technique, and there is a great sense of confidence in having fixed, well-known sites; I am also very familiar with the angle that is necessary to stick them. The buttonhole technique has practically

eliminated infiltrations. In particular, it has eliminated one of the most fearsome, troublesome, and stressful parts of dialysis: concern over fistula sticks. Periodic color Doppler flow sonograms have established that there are no aneurysms and that I have an excellent flow in the fistula. The scar tunnels are clearly visible in the image.

For these reasons, I am certain that the buttonhole technique has contributed significantly to my being able to remain on home hemodialysis over the long term. For me, the buttonhole technique has certainly been far superior to the conventional technique of rotating sites. Since I see no reason why the buttonhole sites could not be accessed on a daily basis without harm to the fistula, I'm looking forward to using the technique when daily home hemodialysis becomes available.

References

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