
Buttonhole method of needle insertion into arteriovenous fistulas

Dr. Zbylut J. Twardowski and Mr. George Harper

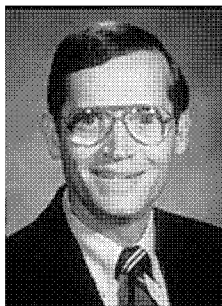
February 17, 1997



Dr. Twardowski

Zbylut J. Twardowski, M.D.

Dr. Twardowski is Professor of Medicine at the University of Missouri at Columbia, MO. He is also the primary organizer of the first three international home hemodialysis symposia. Well known for his work in peritoneal dialysis, what is less well known is Dr. Twardowski's highly original work in the hemodialysis area; particularly the use of more frequent hemodialysis sessions, and the use of the buttonhole needle puncture technique described in the present talk.



Mr. Harper

Mr. George Harper

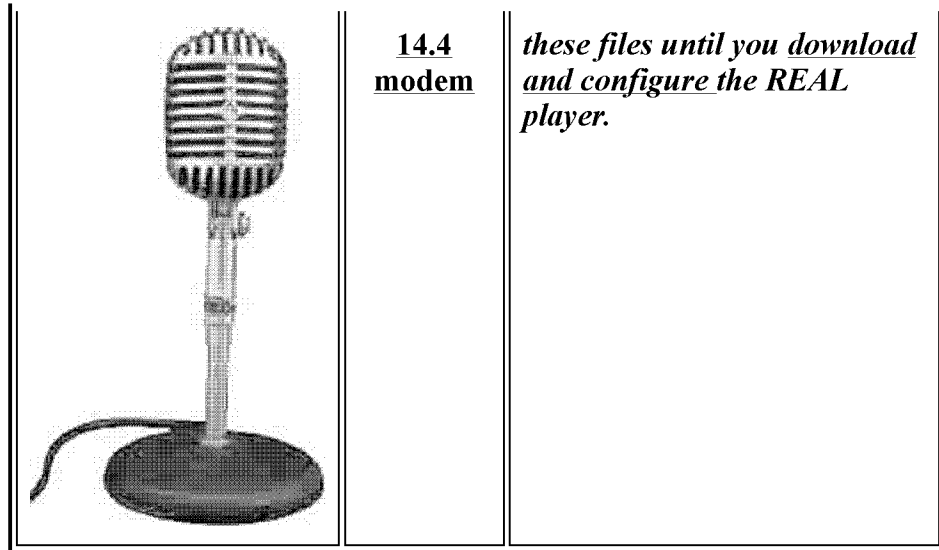
Mr. Harper is a retired high school counselor from Rome, Georgia, and a sixteen year home hemodialysis patient. He has been practicing the buttonhole method of AV fistula access since 1989. He has been active in the NKF, AAKP, and ESRD Network 6, and is past Vice-President of AAKP. He is an active writer on patient issues in the renal community.

Synchronized Real Media from Dr. Twardowski and Mr. Harper's Presentation



You can scroll through the talk while listening to the audio. There are about 10 slides on this page! Download the whole page first before starting up the audio player! The page will automatically scroll to the slide being discussed.
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Dr. Blagg:

I may have an accent, but I think most of you realize that I'm not Charles Mion. I'm Chris Blagg from Seattle. My French is very limited. I'm sorry that Charles isn't here because I'm sure he had a lot of good things to tell you. Charles and I worked together in rat laboratory 33 years ago now and so I've known him a long time. He has really upheld home dialysis in France for many years.

This afternoon's session is on blood access. As you know, a number of years ago Carl Kjellstrand talked about blood access being the Achilles heel of dialysis. Well I think that is still the case. Some of the USRDS data shows that. But probably the most frequent question that gets asked as we talk about doing more frequent home hemodialysis is, "What about the blood access?" And so this afternoon, we may hopefully get some answers with regard to that. So the first paper is not actually a paper--it's a video presentation. It is entitled, "**The Buttonhole Method of Needle Insertion into Arterial Venous Fistulas**". It was prepared by Dr. Twardowski and Mr. Harper, Mr. Harper being a 16-year home hemodialysis patient. So, projectionist, if we could run the video, please.

Mr. Harper:

Hello. I'm George Harper. This is my wife, Irene, and my home dialysis partner. I've been on dialysis since 1980. After about two years, after I became adjusted to the dialysis routine, I started thinking



about how nice it would be to be able to travel .



So we started out with one motor home, a smaller motor home, which we had for ten years. And then three years ago, we got this larger motor home. This allows us to put the machines in there and travel. We've traveled to Florida many times; we've traveled to New England; we've traveled out West and really enjoyed the lifestyle that anyone might enjoy.

Dr . Twardowski:
Mr. Harper has been using the buttonhole technique of needle insertion into arterial venous fistula for many years. He will demonstrate this method later, but first the theoretical background of the technique will be given.



There is no generally accepted method for access puncture. An early recommendation was to change the site of puncture for each dialysis to allow good healing of the puncture wound and avoid complications. On the contrary,

some data indicated that insertion of the hemodialysis needle in exactly the same spot for consecutive dialysis may be associated with fewer complications when compared to different sites of needle insertion for each dialysis. Here is what we have found:

Video script:

Some historical facts

The first paper on this method was published by Twardowski and his co-workers in Polish literature in 1977 [1]. The method was called, "The Constant Site Method of Needle Insertion" and was described in more detail in 1979 [2]. The discovery of the advantages of this method was serendipitous. In a patient with very limited area for puncture, the constant site of insertion became a matter of necessity. It was observed that repeated insertions in exactly the same site were accomplished quickly, were not painful, and no complications were noted. The method was later used in Seattle, and two papers describing its advantages were published by Belding Scribner [3,4].

Early experiences		
[1]	Twardowski Z, Lebek R, Kubara H	<i>Pol Arch Med Wewn</i> 57:205-214, 1977.
[2]	Twardowski Z, Kubara H	<i>Dial Transpl</i> 8:978-980, 1979.
[3]	Scribner BH	<i>Proc Eur Dial Transpl Assoc</i> 19:95-98, 1982.
[4]	Scribner BH	<i>Dial Transpl</i> 13:625, 1984 .

Summary of initial experience with buttonhole method

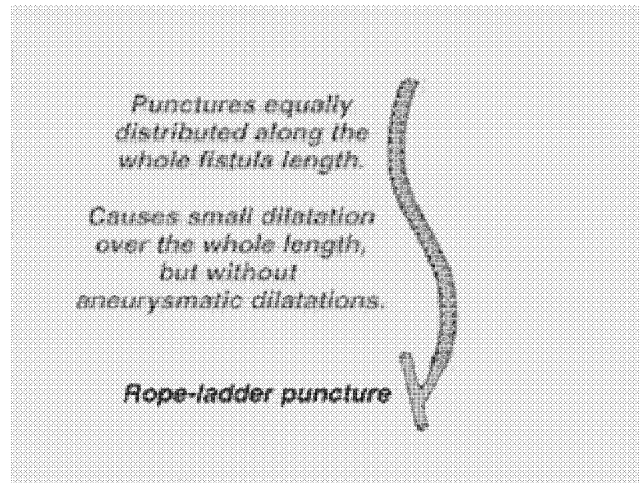
Initial experience with the method, based on over 6,000 dialyses, was very positive:

- **Starting dialysis was markedly shortened.**
- **Insertions into a previously used site were easier and could be done very easily.**
- **Re-insertions of needles because of bad sticks were reduced ten fold. Hematomas were reduced more than 100 times.**
- **Infections were not significantly increased.**
- **Nurses preferred the method because it was easier, faster, and associated with fewer complications.**
- **Patients preferred the method because of fewer complications and less pain.**

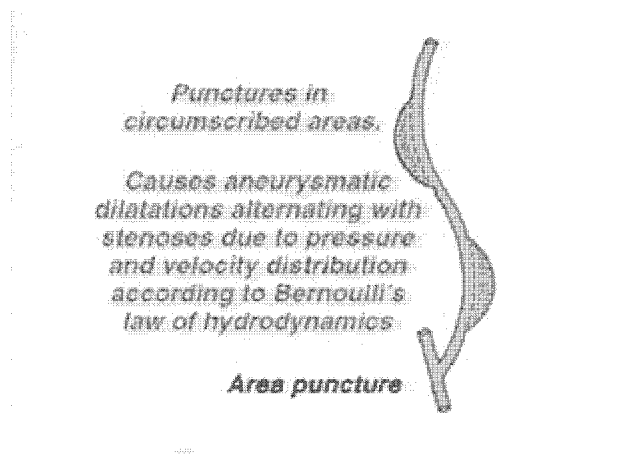
Methods of needle puncture compared: rope ladder, area, buttonhole

In 1984, Krönung from Bonn, Germany, reviewed consequences of repeated fistula punctures. Three methods were described.

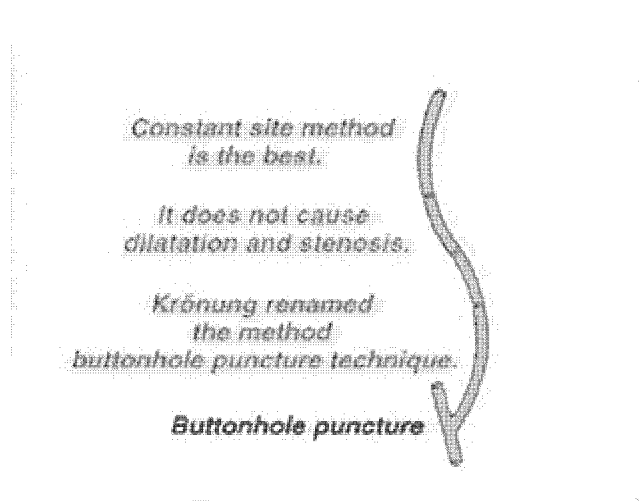
Punctures, equally distributed along the whole fistula length, **rope ladder puncture technique**) -- this method causes small dilatation over the whole length, but without aneurysmatic dilatations.



Punctures in circumscribed areas, **area puncture technique** -- this method causes aneurysmatic dilatations alternating with stenoses due to pressure and velocity distribution according to Bernoulli's law of hydrodynamics



The same site, **constant site method**, is the best as it does not cause dilatation and stenosis.



Krönung renamed the method, "Buttonhole Puncture Technique."

This is a four- month old fistula with two needles

