



## **Use of Microporous Polysaccharide Particles in Prolonged Vascular Access Bleeding After Hemodialysis**

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Presented: American Society of Nephrology, Friday, November 01, 2002   
Poster Board Number: F-P0835

### **Introduction:**

Post dialysis prolonged bleeding from needle puncture of dialysis access can be a major problem in certain patients. Prolonged access bleeding can be due to excessive anticoagulation, uremic coagulopathy, high venous resistance in the access, inadequate homeostasis due to frail skin and tissue overlying the graft, etc. Common measures to stop bleeding are to manually hold the graft site or to use a specially designed clamp. All of these measures, due to prolonged application of pressure, can run the risk of graft clotting. Prolonged access bleeding also results in worsening anemia, increased requirement of iron preparation and epogen and a significant loss of time in the dialysis unit; all of which in turn increase the risk and cost of the dialysis treatment.

### **Methods:**

We have used sterile Microporous Polysaccharide Particles (TraumaDex™ manufactured by Medafor, Inc. Minneapolis, MN, 55421) in 20 dialysis patients (one time each) who are considered by dialysis nurses to have prolonged access bleeding. The Microporous Polysaccharide is a bio-inert polymer material consisting of flowable microporous particles synthesized to a controlled porosity and spherical diameter, from raw materials derived from plants.

When applied to actively bleeding areas, the particles act as molecular sieve that rapidly absorbs the fluid component of blood. The controlled porosity of the particles excludes platelets, red blood cells, and serum proteins, which are then concentrated on the surface of the particles. This activity produces an “instant gelling” followed by the formation of a fibrin mesh.

### **Application:**

At the end of the dialysis the needle is withdrawn half way. The particles are then poured on the puncture site and a band-aid is applied on the puncture site. The needle is then withdrawn fully and folded gauze is applied on the top of the band-aid to maintain the manual pressure until the bleeding has stopped.



Withdraw needle half way



Apply Medafor powder liberally



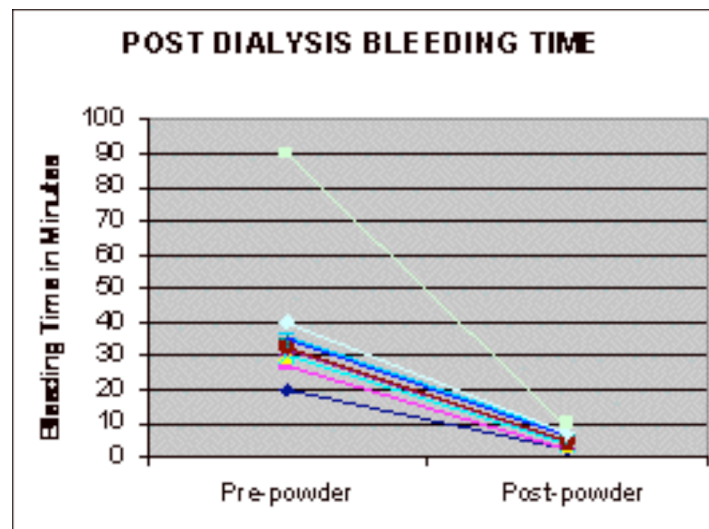
Apply gauze, hold pressure, remove needle, secure with tape

### Results:

Retrospectively the data was reviewed in 20 patients who had received microporous particle for prolonged bleeding. Application of Microporous Polysaccharide Particles along with manual pressure reduced the bleeding time from average 35 minutes to 5 minutes ( $p=0.0001$ ) in this group.

No break through bleeding or infection was noted during 7 days of post procedural follow up. Among the 20 patients, the average age was 65, 45% were diabetic, 65% were female, 40% had a primary fistula, and 60% had a graft.

The average baseline post dialysis access bleeding time in this group at baseline was 35 minutes (range 20 minutes to 90 minutes).



### Conclusion:

Use of Microporous Polysaccharide Particles along with manual pressure significantly reduced the post dialysis bleeding in high-risk patients. No side effects were noted in this short-term study.