Red River Vascular Society:

Historical Perspective from the Surgeons Viewpoint

I am honored to give the first paper for this new society. I hope the Red River Vascular Society will prosper and have an impact upon our region. It is always a pleasure when one of your students refers to you as a historical figure. I agreed to give a welcome but did not think I had time to prepare a reputable talk. However, in reviewing my CV I found I have published three papers and one book chapter on the subject of hemodialysis access. So, I propose to give you a short historical prospective based on the data from these papers and the era as I lived it.

Dr. Wilhelm Kolff, a Dutch Jewish physician invented the hemodialyser during the Nazi occupation of Holland. Dr. Kolff said he was always afraid to finish the machine for fear the Nazis would kill him. At the end of World War II he made a tour of England, Canada, and stopped in Boston. He left a set of plans with the Brigham Hospital Department of Medicine. They made a new model which they called the Brigham-Kolff kidney and started dialyzing patients with acute renal failure in the late

forties. Initially dialysis was used only for acute renal failure because they used intermittent needle puncture of Femoral, Carotid, or Axillary vessels, and these could be used for only a limited period of time. As might be expected, periodically patients were dialyzed who were thought to have acute disease but who actually had anurea superimposed on chronic renal disease. These patients did not recover and ultimately died because of lack of vascular access. The first efforts to perform hemodialysis chronically were led by two pioneer nephrologists, Shriner in the northwest, Seattle I believe, and Scribner in Washington, D.C. Scribner is credited with devising the first arteriovenous shunt. The original publication was by Quinton, Dillard, and Scribner published in Transactions of the American Society of Artificial Internal Organs in 1960, but for some reason the procedure soon became called the Scribner Shunt. This procedure consisted of two plastic tips inserted into plastic tubes. The tips were placed into the radial artery and usually a cephalic vein. They were delivered through the skin at some small distance away from the vessels and connected externally creating a fistula. For dialysis they were disconnected and attached to dialysis catheters. With

meticulous care they would sometimes last for several months, but eventually failed almost inevitably from infection. I first used Scribner shunts on patients we were dialyzing in preparation for renal transplants. I did my first renal transplant in the fall of 1964. A patient came to us with uremia, who had been turned down by Scribner for dialysis because he was an uneducated bricklayer. We didn't have a dialysis unit at the University of Buffalo, but the Medicine Department had an old Kolff-Brigham Kidney covered with a tarpaulin and locked in a closet. A friend of mine and I broke into the closet and confiscated the kidney. We cleaned it, read some instructions and dialyzed the patient 3-4 times before we found a cadaver kidney. We had no dialysis unit and none of our nephrologists were inclined to work hard enough to do dialysis chronically so a young colleague and I started our own unit. The Scribner shunt took a lot of our effort. In 1966 Brescia, Cimino, Appel, and others published a paper in the New England Journal of Medicine entitled: Chronic Hemodialysis Using Venipuncture and a Surgically Created Arteriovenous Fistula. As surgeons with experience with Scribner shunts, we promptly recognized this as a major step forward and began using the

technique. A well-functioning Cimino AV wrist fistula remains, to this day, the best dialysis access.

I moved to the Tulane faculty in late 1968. At that time LSU had a large dialysis program and no transplant program, while Tulane had a transplant program and no dialysis. Dr. Frank Gonzalez, who had led dialysis, had a large grant to determine if outpatient dialysis was practical with indigent patients. We worked together effectively for several years until the natural suicidal tendencies of Louisiana academic institutions broke it apart leaving two inferior programs. I did the first AV fistula in Louisiana, which attracted a good deal of attention. We developed our own small operating room that we could use at any time off the dialysis and transplant unit in the Charity Hospital. At about this time, as the resources for dialysis expanded, the criteria for candidates were expanded and soon we were seeing an increasingly older population with many complicating diseases. It became more and more difficult to perform wrist AV fistulae. We, as well as the rest of the world, started experimenting with interposition grafts. Bovine static heterografts were popular for a while until their complications of pseudoaneurysm and infection

became apparent. As the patients became more complicated it was necessary to become more and more creative. We tried interposition saphenous vein grafts and some dacron grafts until Gore-Tex became available. This material proved better because there was considerable ingrowth of fibrous tissue and local infection did not necessarily spread up and down. I will conclude by discussing a few slides from the papers published with my name on them.