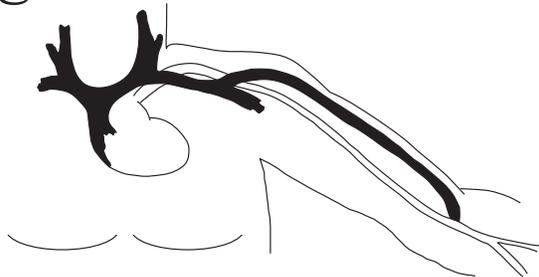


Michigan Vascular Access NEWS

Focusing
on
Fistulas
and
Vascular
Access
Solutions
for
Southeast
Michigan



With monthly discussions on strategies for meeting the DOQI benchmarks for Fistulas and Topics in Endovascular Management of Dialysis Access

VOL. 1 No. 4

April 2004

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What is Michigan Vascular Access?

Michigan Vascular Access, PC is a practice created to bring high-quality Vascular Access services and the latest in research and industry progress to the hemodialysis patients of Southeast Michigan. Dr. Webb is an American Board of Surgery certified surgeon, and Fellow of the American College of Surgeons (FACS) with ten years experience in organ transplantation, general and laparoscopic surgery, and all phases of vascular access for hemodialysis. His practice is currently limited to the care of patients who require solution of their hemodialysis access needs and problems.

To arrange a consultation, please see the contact information on page 4 of this newsletter.

Achieving the DOQI Benchmark for Fistulas in Hemodialysis: Strategies for 2004

INSTALLMENT FOUR

Using the biggest vein in the arm - transposing the basilic vein

Where possible, the cephalic vein is used for wrist or elbow level fistulas. It is usually located anteriorly, is relatively shallow, and is usually relatively straight with few branches. This is the vein most surgeons prefer to use for creation of an AV fistula. Unfortunately, the cephalic vein may be small, tortuous, and in many patients has been ruined by previous intravenous catheters.

Finding options for the patient beyond the standard wrist or elbow fistula requires that we consider using a previously underutilized resource - the basilic vein. The basilic is the biggest vein in the arm, but is placed

far medially (making it an inconvenient location for cannulation), and deep. The vein runs under several layers of brachial fascia (connective tissue), is surrounded by nerves, and can be close to the brachial artery. To use it in its natural position is impractical, painful and possibly dangerous.

Since transposition of the basilic vein was described in the 1980s, experience has been growing in the use of this vein. In general, the basilic vein is mobilized through a long incision on the medial part of the arm from elbow to axilla. Branches are ligated and divided. The vein is divided near the elbow, drawn through a subcutaneous tunnel lateral to the incision, and connected to the brachial artery (see diagram next page). Because the incision is long and creates a large raw

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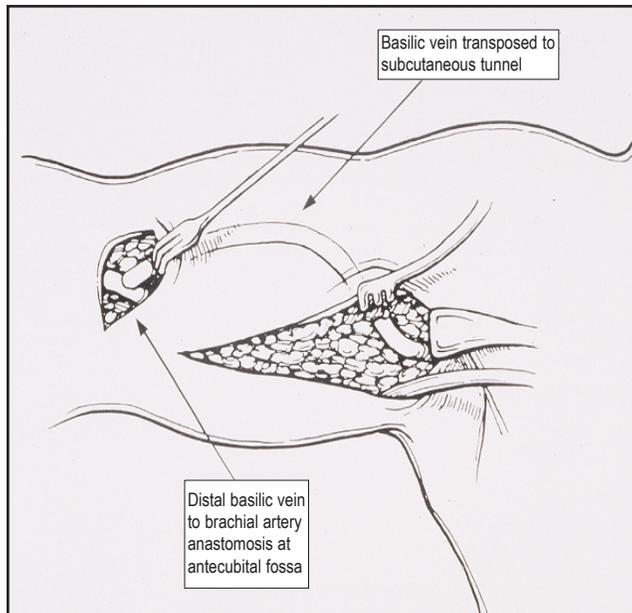
surface that can ooze a large amount of tissue fluids, I always leave a drain in the wound and keep the patient in the hospital overnight.

In general, a basilic vein must be 4 millimeters to be usable in a first-time operation. Then, a month or more must pass before the fistula is considered for use. The one-year unassisted patency for basilic fistulas has been reported to be as low as 50%, reflecting in many studies relative inexperience with this technique.

Several strategies can be employed to increase the yield of this operation. Experience of the surgeon is important. I have done nearly 50 of these operations in the last three years, and I am still learning new tricks related to basilic fistulas. My one-year patency over the last two years is close to 90%. It is important to find a surgeon who is beyond the learning curve in this operation.

Secondly, it has been observed empirically that basilic transpositions done after previous access in the same arm are more successful. The basilic vein above a forearm graft or fistula may have been "built up" over time from receiving increased blood flow. Veins of seven, eight, ten millimeters or more are frequently seen in the outflow of forearm accesses. When the forearm access fails, the large and previously toughened basilic vein can be transposed and used for dialysis

within weeks (see the fistula of the month). This operation is a very high-yield procedure in the hands of an experienced access surgeon. The venous outflow of forearm grafts or failing fistulas should be examined with ultrasound to discover these options for transition to an upper arm fistula.



"The vein is divided near the elbow, drawn through a subcutaneous tunnel lateral to the incision, and connected to the brachial artery."

In patients whose median antecubital vein is patent and in continuity with the basilic vein, an antecubital fistula can be a useful first step to an upper arm fistula. The antecubital vein is fistulized in such a way to create flow to the cephalic and the median antecubital. If the cephalic

vein develops, well and good. If not, frequently the median antecubital and basilic become large enough to use.

One advantage to a basilic fistula is that it always is transposed, and is usually tunneled right under the skin. Cephalic fistulas can be transposed (or superficialized), but are most often used in their native position, which is below a fascial layer, and usually deeper. A correctly tunneled fistula should be easy to palpate, visualize and cannulate.

The recent enthusiasm for PICC lines represents a threat to the basilic vein. Previously protected by depth, this vein is now being used more and more, and like the cephalic vein before it, is being ruined for use in creating dialysis access. Fortunately, experience in declotting basilic veins, or removing parts of it entirely for use as an autologous graft is growing. Nevertheless, it is my position that PICC lines in renal patients can lead to loss of fistula options, and should only be used when absolutely necessary.

In short, being able to use the basilic vein is an important option for dialysis patients whose cephalic veins are inadequate. Chances for creating a useful fistula are greatly increased when the access surgeon considers using the basilic vein and is familiar with the operation.



"ACHIEVING THE DOQI BENCHMARK FOR FISTULAS IN HEMODIALYSIS — STRATEGIES FOR 2004"

is a one-hour presentation of 18 strategies and a demonstration of practical surgical techniques to increase the number of fistulas created, matured, successfully cannulated and maintained over time. Surgical examples are drawn from the author's full-time vascular access practice.

For an advance presentation of this talk, contact Michigan Vascular Access at 734.502.1239.

NEXT MONTH!

**FOREARM FISTULAS:
USING THE FOREARM
VESSELS ABOVE
THE WRIST**

Endovascular Topics

Endovascular maintenance of dialysis access

In the March issue of *Michigan Vascular Access News*, we discussed the reasons for referring patients for a shuntogram - to recognize that all access requires maintenance, that signs of failure allow us to predict when an access is about to fail, and the importance of taking care of our accesses without procrastination so we don't find ourselves in an emergency situation.

A shuntogram may be urgent or elective depending on the severity of the "warning signs", but generally can be arranged as an outpatient procedure at a time convenient to the patient. Because sedation may be used, the patient is generally asked not to eat anything after the evening before, and to have someone drive him or her.

Patients are advised to take their blood pressure medications with a sip of water. Diabetics are asked to hold their insulin dose the morning of the procedure. Most often, patients on coumadin, Plavix or aspirin are not required to stop their blood thinners prior to the procedure.

Patients with mild allergies to iodine contrast (hives, itching) are prepared with prednisone, zantac and benadryl to reduce the risk of allergic reaction. Patients who went into shock or had their airway close up due to iodine allergy should only have their procedure done under the supervision

of an expert anesthesiologist who is prepared to manage this risk.

Once the patient is comfortable in the procedure room, the arm or leg with the problem access is cleaned and then walled off with sterile sheets. The graft or fistula is accessed with a needle, and a small tube placed for contrast injection. The graft or fistula is studied from its origin in the arm or leg all the way to the heart, with x-rays taken during contrast injection.

All narrowings in the circuit can cause failure of a graft or fistula, and all significant narrowings are stretched with a balloon from the central vessels out to the arterial anastomosis. Although the most common place for stenosis is at the venous anastomosis of a graft, narrowings in the central veins (from previous catheters), in the graft or at the arterial anastomosis are also very common, and may need to be treated to avoid thrombosis of the graft or fistula.

When all narrowings have been successfully stretched, a strong thrill (vibration) should be felt over the graft. A weak thrill can mean that an inflow problem has been missed. Continued pulsatility usually means that a significant outflow stenosis (narrowing) still exists.

The access is re-examined and retreated until a satisfactory result is obtained, or until nothing else can be done. Sometimes larger balloons are needed for a stubborn stenosis, or on occasion, a stenosis that does not

respond to stretching alone may require a stent. Pressure or flow measurements may guide the surgeon in knowing when to quit, or when to keep working. Problem accesses that cannot be fixed endovascularly may require operative revision or replacement.

In conclusion, endovascular maintenance of dialysis access is guided by the appearance of signs that indicate the graft or fistula is beginning to fail (see "Warning signs for grafts and fistulas" below). Endovascular treatment is less invasive, less costly, and less inconvenient than surgical revision. Since it is typically elective or only semi urgent, usually it can be scheduled at a time of the patient's choosing.

Endovascular maintenance is the preferred way for patients with failing grafts or fistulas to keep their accesses functioning, and to avoid emergency trips to the hospital for clotted access.

◆ *To arrange a elective shuntogram, please call 248.391.6676 and leave contact information for scheduling. For a declot or other urgent procedure call 734.502.1239 or pager number 248.570.3081.*

◆ *To arrange a presentation of "Endovascular Management of Hemodialysis Access," or Thrombolysis of Dialysis Access Conduits," contact Michigan Vascular Access.*



Warning signs for Grafts and Fistulas

- ❖ Prolonged bleeding from access after dialysis - over 20 minutes.
- ❖ Change from a "buzz" or vibration felt over the graft or fistula to a pounding pulse.
- ❖ More than one episode of infiltration or bruising around the graft or fistula.
- ❖ Poor dialysis (insufficient clearance, recirculation) due to low flows.
- ❖ A trend toward decreasing blood flows in a graft or fistula.
- ❖ Elevated venous pressures on dialysis.
- ❖ Swelling of the hand or arm on the side of the graft or fistula.
- ❖ Development of "new veins" or popping out of old veins.
- ❖ Pain in the graft or fistula.
- ❖ Swellings in the graft or fistula.

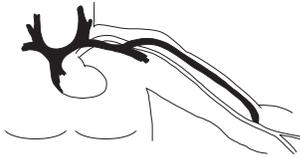


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**Michigan Vascular
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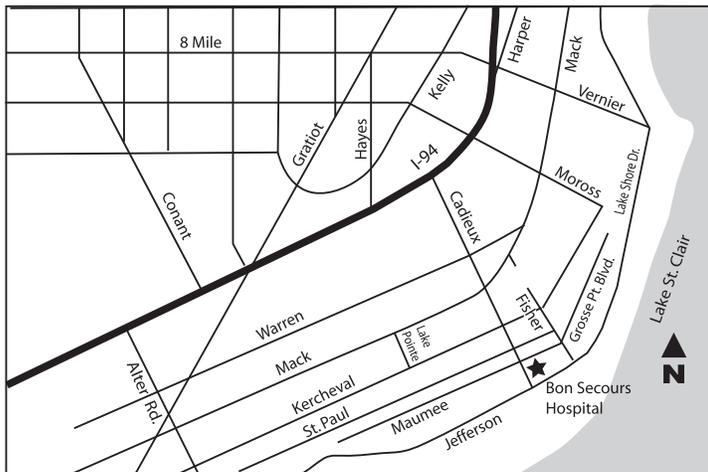
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April 2004

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