



Michigan Vascular Center (MVC) - Mission Statement

MVC exists to improve the quality of life for patients by providing the most comprehensive, innovative and best possible vascular care based on sound principles of treatment.

MVC exists to render that care with compassion, respect, & integrity; exercising the best possible thought and judgment for the patient's benefit.

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Wishing All the Peace, Joy and Hope of the Season

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We at the Michigan Vascular Center

Wish all in our community
the peace, joy and hope
of the upcoming Christmas season

And a Happy New Year!



In the spirit of the season, we express our appreciation and gratitude for the support you have provided us and look forward to serving you, your patients and our community in the coming New Year.

We are grateful to practice in a community rich in the spirit of giving. We recognize and extend our thanks and appreciation to all who volunteer their time and donate their resources, whether for the less fortunate in this community, for multiple personal charities or for your fellow physicians at the local, state or national level. Your stories are many and varied and while your efforts rarely make headlines, your impact is noticeable and appreciated and the lives of many have been enriched.

We would also like to extend our greetings to your families, staff, and all who provide support on a daily basis. We recognize their effort and we appreciate their input.

Thank you. Peace to all and Happy New Year!

The Physicians and Staff of the Michigan Vascular Center

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Inside this issue:

Happy New Year!	1
Update on Deep Venous Thrombosis (DVT) Management	2
MVC Core Values	8

Update on Deep Venous Thrombosis (DVT) Management

DVT is a highly morbid, and occasionally lethal disease. Despite numerous minor advances in the field, for decades the fundamental treatment of this disease has remained unchanged. In this issue of the *Vascular Voice*, we're pleased to highlight two revolutionary advances in the treatment of DVT: clot removal and retrievable vena cava filters.

The Numbers

The number of DVT cases is staggering—roughly 2 million new cases are diagnosed annually in the U.S. and of these 36% are iliofemoral. The risk factors for DVT are well established (see Table 1) and non-invasive duplex ultrasonography has very high diagnostic accuracy rates. The U.S. incidence of pulmonary embolism (PE) is 600,000 with an estimated 200,000 deaths each year. To better put this in perspective, AIDS causes about 15,000 and breast cancer causes about 40,000 U.S. deaths per year. In addition to the tragic personal side of these numbers, the overall monetary cost is high with most estimates around \$1.5 billion dollars per year.

Table 1. Risk factors for DVT
Thrombophilia
Age >40
Malignancy
Trauma
Surgery
Paralysis/ periods of immobility
Long-haul air travel
Obesity



(Continued on page 3)

Update on Deep Venous Thrombosis (DVT) Management *(continued)*

The Gold Standard?

Society’s return on this expenditure is marginal. With anticoagulation (the standard of care) 29-84% of patients develop post-thrombotic syndrome (PTS). The venous hypertension of PTS is due to the combination of outflow obstruction and venous valve destruction. This highly morbid condition leads to chronic edema, pain, skin changes and ulceration. Patients with more proximal (iliofemoral) disease fare worse, with up to 90% developing significant post-thrombotic symptoms. The dramatic symptoms of PTS typically occur after a long latent period, often several years later. However, only one month after anticoagulation therapy, 50% of patients report worsening quality of life on standardized surveys. Numerous studies identify prevention of repeat DVT as the most important factor in avoiding PTS (see Table 2.)



Table 2. Prevention of Late Complications after DVT
Avoid re-thrombosis
Use elastic compression stockings
Eliminate superficial venous reflux
Thrombus removal before valve destruction occurs

Update on Deep Venous Thrombosis (DVT) Management *(continued)*

A Good First Step

Pharmacologic thrombolysis has been used selectively for many years. The published results from centers of excellence are encouraging with complete or partial lysis and vein patency in about 2/3 of patients. Short term patency rates and symptom resolution can be achieved in about 80% of patients and about 80% have long-term symptom resolution. Urokinase had been the drug of choice with the best balance of safety and complication rates. Since the drug's withdrawal from the market, the risk of thrombolysis has increased, and intracranial hemorrhage rates of 1-2% can be expected. This often lethal complication has dampened our group's enthusiasm for venous thrombolysis.

A Better Option

Pharmaco-mechanical treatment combines the lytic advantages of tPA with gentle clot removal via endovenous catheters. More rapid clot removal is possible, eliminating the need for the multi-day ICU stays associated with lytic infusions. Most importantly, the technique is safe, with no systemic lysis and remote hemorrhage.

Two devices have proven most successful and have been useful in our hands. The first approved was the Angiojet device by Possis Medical. This catheter uses saline jets to create a low pressure zone and draw thrombus into the device for removal. The more recently available device is the Trellis system from Bacchus Vascular. This device incorporates occlusion balloons placed proximal and distal to the clot. The isolated clot is then infused with lytic and dispersed using an oscillating wire within the catheter. Liquified thrombus is subsequently aspirated out of the patient's body.

(Continued on page 5)



Update on Deep Venous Thrombosis (DVT) Management *(continued)*

Both of these techniques are a great advance over anticoagulation alone or surgical thrombectomy. They can be performed percutaneously with local anesthesia and success rates are outstanding. Both devices spare the fragile venous valves. If the thrombus is removed within the first two weeks, normal valve function should be preserved. The trellis has been used in over 1500 U.S. patients. Complete removal of acute clot has been possible in over 80%, with only a single treatment in 80%. Most importantly, no major bleeding events, no PEs, and no cases of renal failure or hemolysis have been reported. Long-term symptomatic relief should mirror that of catheter-directed lytic therapy but remains to be seen.

**BOTH TECHNIQUES
ARE A GREAT
ADVANCE OVER
ANTICOAGULATION
ALONE OR
SURGICAL
THROMBECTOMY**

(Continued on page 6)



Trellis® Peripheral Infusion System from Bacchus Vascular

Bacchus Vascular Announces the U.S. Clearance for the TRELLIS®-8 Isolated Thrombolysis Catheter

Santa Clara, CA – March 28, 2005 – Bacchus Vascular, Inc. announces the recent U.S. Food and Drug Administration (FDA) clearance of the TRELLIS®-8 Peripheral Infusion System. The TRELLIS-8 is an advanced drug infusion catheter designed for the treatment of Deep Vein Thrombosis (DVT) and Arterial Occlusions by enabling targeted delivery of clot-dissolving drugs. The TRELLIS-8 clearance is for the infusion of physician specified fluids, including thrombolytics, into the peripheral vasculature.

Update on Deep Venous Thrombosis (DVT) Management *(continued)*

The Ideal Patient for Treatment:

As always, we remain happy to provide consultation for any patient with venous thrombosis. Patients most suitable for clot removal have iliofemoral or complete popliteal/femoral DVTs of less than a month's duration. The patients with the most to gain are ambulatory and have a good life expectancy. Those facing surgery or with a high risk for PE also are ideal candidates for clot removal. By avoiding systemic lysis, this technique can also be used in the gravid patients with extensive, symptomatic DVT. The procedure can be performed in the in-patient or out-patient setting. (see Table 3)

Table 3
Ideal Patient for
Percutaneous DVT Removal

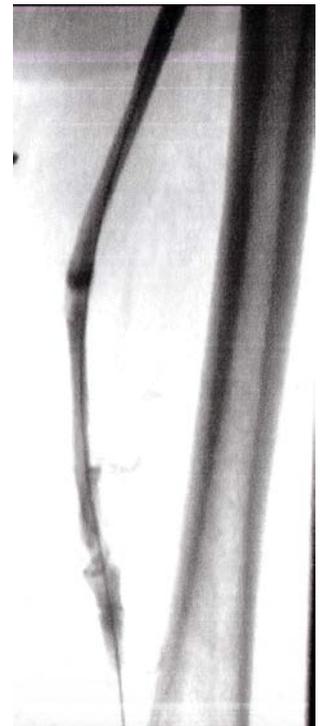
Extensive proximal (iliofemoral) DVT
Ambulatory, active
Younger with good life expectancy
High risk for PE/ low pulmonary reserve
Facing surgery

In addition to its utility in the prevention of post-thrombotic symptoms, clot removal is the best method of minimizing the risk of subsequent DVT. Often, an underlying venous stenosis will be revealed which we can effectively treat with endovascular techniques.

(Continued on page 7)



Pre-Procedure DVT



Post-Trellis®

Update on Deep Venous Thrombosis (DVT) Management *(continued)*

The Role of Retrievable IVC Filters:

As you know, we have been using retrievable IVC filters for roughly five years. These are particularly useful for patients with a definable episode which led to the DVT or PE and a contraindication to anticoagulation. Several different brands are available with similar success rates. They have proven to be safe for permanent placement, with minimal rates of IVC thrombosis or device migration. In patients who no longer need the filter, they can be removed via jugular vein access up to about three months after insertion. This further minimizes the risk of late caval thrombosis, especially in the patient with an occult hypercoagulable state.

These filters are ideal for the perioperative or trauma patient with iliac or IVC free-floating thrombus. The filters can be placed via femoral or jugular approaches and provide a line of defense against PE while clot removal is performed.

An Exciting Time . . .

As Vascular Surgeons, we've experienced a remarkable transformation of the field over the last decade or so. Arterial disease has taken the lead in this regard, and our group has maintained a position near the leading edge of these changes. Venous thrombotic disease is now catching up. We're excited about this relatively new ability to really improve the quality of life for those patients with extensive DVTs. These new tools allow us to offer clot removal and valve sparing with the safety that we've both been waiting for. Please feel free to call anytime to discuss this new treatment paradigm or for a list of references!



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MVC Core Values

- We are a professional organization –a team– working equally in a common cause: To provide the best possible vascular care for the physicians, patients, and institutions of our community.
- We share a commitment to excellence in the vascular care of patients through the pursuit of knowledge, communication, innovation, and research.
- We value our employees and incorporate them into our team.
- We commit to each other to honor & pursue these values.



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