

# Strategies In Surgery

## Vascular Surgery Innovations

- Abdominal Aortic Aneurysms
- Diabetic Foot Problems
- Carotid Artery Disease

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The vascular surgeon of the future is a different species than vascular or “cardiovascular” surgeons of the past. Today’s vascular surgeon is not only trained in open operative care of patients with arterial, venous and lymphatic diseases but also has extensive experience in the non-invasive vascular laboratory and endovascular techniques, including diagnostic arteriography and endovascular interventions.

Today’s vascular surgeon has completed a one- or two-year vascular fellowship, is board-certified by the American Board of Vascular Surgery and has extensive experience with non-interventional management of vascular disease as well as currently available open or endovascular techniques. OU Physicians surgeons utilize all these modalities and are preparing young physicians to enter this field.

### Abdominal Aortic Aneurysms

One of the most exciting technological developments in the last decade has been the endovascular repair of abdominal aortic aneurysms. Three FDA-approved devices are currently on the

market. Basically, all of them work by taking an arterial graft much like that in current use, attaching some form of self-expanding stent to the orifices of the graft and inserting the graft into the “normal” part of the aorta and iliac arteries via catheters inserted through cutdowns in the groin. (Figures A & B)

This effectively excludes the aneurysmal wall from the pressure of the aorta by channeling the blood through the graft, thus “curing” the patient of his aneurysm. No major laparotomy is needed, so the procedure is much better tolerated than a major operation, especially in patients with other significant co-morbidities.

In fact, almost one-third of these procedures done by OU Physicians vascular surgeons are done with epidural anesthetic. Patients generally do not require ICU care and can usually go home in 24 to 48 hours. We have seen a change in operative morbidity and mortality as well. Traditionally, these patients experienced



**Figure A. Pre-op abdominal aortic aneurysm**



**Figure B. Post-op endograft repair of abdominal aortic aneurysm**

a five percent peri-operative mortality, were in the hospital for a week and required a month or six weeks to fully recover. With endografting we have not had any deaths. Patients essentially are back to their pre-op health in one or two weeks.

### Diabetic Foot Problems

The diabetic population in our state is huge. Problems with blood flow to diabetic patients' feet and the resultant ulcers, gangrene and amputation are staggering! OU Physicians vascular surgeons are ready to help your diabetic patients with their foot and circulatory problems.

Routine ankle:arm pressure index measurements may not be accurate in these patients because of calcified arteries. However, pulse volume recordings, toe:arm pressure index measurements and transcutaneous oxygen measurements can all help to differentiate diabetics with large artery occlusion problems from those with strictly small artery disease.



**Figure C. Greater saphenous vein bypass graft to the posterior tibial artery**

When large vessel disease is suspected, the patient should undergo

arteriography which helps determine the plan for arterial revascularization. While these patients occasionally can benefit from balloon angioplasty or peripheral stenting, their unique problem of tibial artery occlusive disease usually requires a bypass procedure to distal tibial or even pedal arteries. (Figure C) Routine performance of these procedures by OU Physicians vascular surgeons has resulted in major

limb salvage in over 70 percent of patients treated – essentially all of whom were on their way to a major amputation.

### Carotid Artery Disease

Stroke and stroke prevention continue to be of major emphasis in our practice. State-of-the-art, non-invasive duplex scanning by certified vascular technicians has shown sensitivity and specificity rates in the 95 percent range, allowing many interventions on carotids without the expense and dangers of arteriography. (Figure D)



**Figure D. 90 percent stenosis of right internal carotid artery at its take off from the common carotid artery**

The peri-operative stroke rate in these patients, many with significant co-morbidities, has remained under 2 percent for the last five years. Investigation into the use of endovascular stenting with cerebral protection is a continuing project. OU Physicians vascular surgeons are comparing the use of these stents to open surgical endarterectomy to determine the best way to care for these patients.

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