Temporary Shunts Help Stabilize Vascular Injuries Incurred in Iraq

BY DAMIAN MCNAMARA
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Fort Myers, Fla. — Surgeons in Iraq have successfully stabilized patients with vascular injuries by placing shunts in the affected area as quickly as possible, Col. Donald Jenkins, MC USAF, reported at the annual meeting of the Eastern Association for the Surgery of Trauma.

About 1,000 patients per month are treated at one of two major U.S. military hospitals in the Baghdad area. But after a military offensive in November 2006, physicians at one hospital treated 400 patients in 10 days. Of 25 shunts placed during this time, 24 were successful, said Dr. Jenkins, trauma medical director at Lackland Air Force Base, Tex., and an ACS Fellow.

“The lesson is to put it on right and put it on soon,” he said. “We do initial salvage surgery at the forward unit—save the life, ligate a vessel, save the limb. The most important things are stopping hemorrhage and avoiding infection and sepsis.”

Protocol requires all patients to have the shunt removed before leaving the country. “We never send a patient out of Iraq with a shunt. We always repair first,” Dr. Jenkins said at the meeting, which was jointly sponsored by Wake Forest University. He added an anecdote about one exception: “There is a horrifying but interesting story about a Marine who had a shunt in place for 3 weeks. Physicians in San Diego did an x-ray and wondered what was in his arm—it had closed over.”

Patients must be stable before discharge. Dr. Jenkins explained that when patients are transported overseas to Walter Reed Army Medical Center in Washington, “there are about 16 hours where we cannot intervene further, except for IV fluids, antibiotics, and pain medications.”

“We have one certified vascular surgeon as a ringer who could help out when necessary, but everyone [trauma surgeons and general surgeons] did the vascular surgery,” he said.

In response to a question about shunt management, Dr. Jenkins said, “We do not heparinize shunt patients, and the shunts stay in place as long as they have to.”

Dr. Jenkins said he is fortunate to be able to find out what happens to patients after they leave Iraq. Without feedback from clinicians in Germany, he and the other surgeons in Iraq would not know whether their acute interventions made a difference in long-term outcomes.

An Argyle shunt is placed in the left brachial artery, which was disrupted by a penetrating combat injury, to provide temporary circulation.

Vascular Shunt for Injured Limbs Wins FDA Approval

A shunt that connects the ends of severed blood vessels and restores blood flow to injured limbs earned Food and Drug Administration approval in early February.

“The device offers surgeons a new tool to potentially avoid the need for limb amputation following traumatic injury,” Dr. Daniel Schultz, the director of the FDA's Center for Devices and Radiological Health, said in an FDA statement announcing the approval.

The device can be implanted on the battlefield and other remote areas to temporarily maintain blood flow to injured limbs until the victim can be transported to a surgical facility. That can “help save the limbs of soldiers critically injured in combat, as well as individuals in other trauma settings and emergency situations,” according to the FDA statement. Because of the critical need for the device, the FDA's division of cardiovascular devices worked closely with the manufacturer, allowing the agency to review and approve the device in only 1 week.

The Temporary Limb Salvage Shunt (TLS) has been used successfully outside the United States and is the first device approved for treating these types of injuries, according to the FDA. The Scottish company Vascutek manufactures the TLSS.

The shunt’s self-sealing elastomeric membrane makes it possible to inject drugs directly into the shunt without blood loss. Beveled ends facilitate placement within the severed blood vessel, and graduated markings provide visual confirmation that the device has been implanted properly, the statement said.

—Elizabeth Mechcatie