

Unstoppable: Chad Brumpton's Story

The Wounded Warrior Project is a non-profit organization whose mission is to honor and empower wounded warriors by providing unique, direct programs and services to injured service members, raising awareness and enlisting the public's aid, and helping injured service members aid and assist each other.

This is Chad Brumpton's story; just one of thousands of wounded warriors that have been aided by the Wounded Warrior Project.

May 8, 2005, Mother's Day – Al Qaim, Iraq – near the Syrian border – south of the “Golden Gate Bridge.”

It's 4 a.m. on the first day of Operation Matador, also known as “The Battle of Al Qaim.” Staff Sergeant Chad Brumpton, tank commander of Company “C” 4th Tank Battalion, his platoon attached to Company “A” 1st Tank Battalion, was the tank section leader for the reaction force of two tanks and four Humvees.

Their mission: Assist a team from Camp Raider in securing a 50-foot bridge on the Euphrates River, due to the team from Camp Raider getting stuck somewhere in route to the Golden Gate Bridge.

As soon as the team reached the city it was a fight to the bridge. Chad's team was able to get to the “Golden Gate Bridge,” secure it and wait for the team from Camp Raider to arrive, which ended up taking five hours. It was five hours of sporadic gun fire, mortar rounds impacting, and rockets whizzing by. After turning the bridge over to the Camp Raider team, Chad's section started to move out.

“All of the sudden someone sets off an IED (improvised explosive device),” says Chad. “It punched a hole through the



Photo courtesy of the Wounded Warrior Project

tank, right under my left foot.”

The blast thrust Chad's head up into the hatch, knocking him unconscious.

“It punched a hole through the tank, right under my left foot.”

“When I came to, the inside of the tank looked like a trash heap. I tried to communicate, but the bomb severed all power, busting up everything. The entire time we're getting shot at — mortars and rockets — they just kept attacking.”

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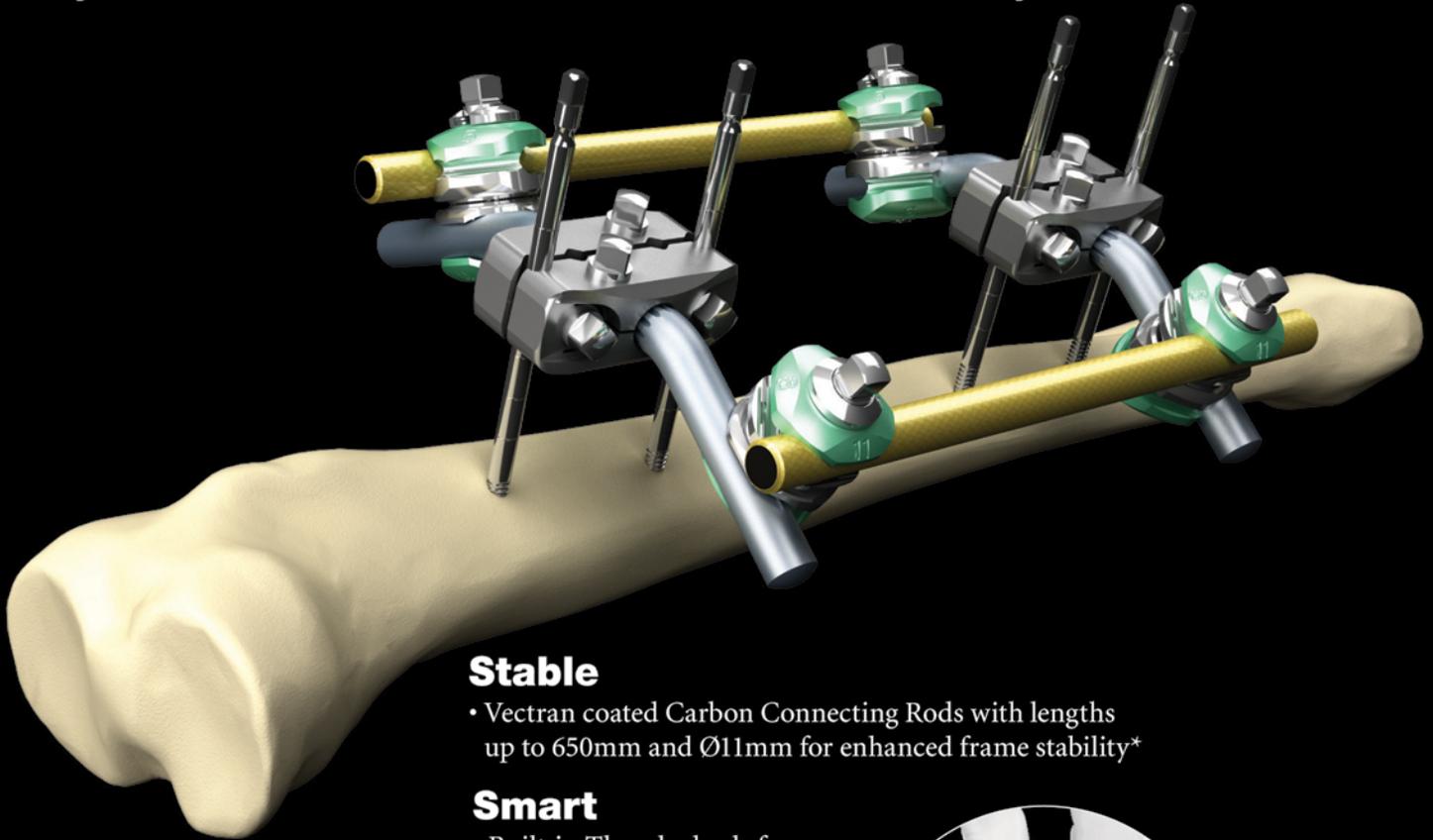
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Hoffmann® 3

Stryker's most versatile External Fixation System



Stable

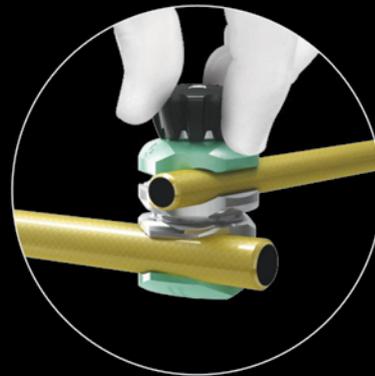
- Vectran coated Carbon Connecting Rods with lengths up to 650mm and Ø11mm for enhanced frame stability*

Smart

- Built-in Thumbwheels for provisional tightening
- Delta-Couplings for multiple bar or pin sizes

Simple

- Snap-Fit connections for multiple bar or pin sizes
- Single point of tightening for enhanced efficiency



*White Paper (NL11-NA-TR-2465): Comparison between the Hoffmann II MRI and the Hoffmann 3 Systems: The mechanical behavior of the connecting rods and a monoplanar bilateral frame. E. Wobmann, MSc; M. A. Behrens, MSc; S. Brianza, PhD; T. Matsushita, MD, DMSc; D. Seligson, MD. Based upon Biomechanical Test Reports from Stryker Trauma AG, Selzach; BML 11-072 and BML 11-059.

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New Concepts in Orthopaedic Care

As we enter the 21st century, new products and technologies will be a critical component of orthopaedic care. Advances in biomaterials; nanotechnology; bone substitutes; and bone growth stimulating compounds; and injectable pharmaceutical protection of repair constructs exist or are on the horizon.

Bio-engineered biomaterials to replace ligaments and tendons are available or are in clinical testing. These include the creation of scaffolds capable of biological in-growth or stem cell seeding and which have sufficient biomaterial properties to maintain integrity during maturation. New processes permit modification of human tissues (allografts), and/or ani-

mal tissues (xenografts), with simultaneous bacterial, viral, and alphagal cleansing. Soon, off the shelf, grafts for tendon repairs (cruciate replacement), or ligament reconstruction will be available.

Nanotechnology: The production of nanoparticles to release antibiotics, hormones, and/or growth factors; to modify interstitial environments and to measure compartment pressures will be common place within the next decade. These will change the entire landscape of healing.

Bone substitute and bone stimulating agents exist and are constantly being improved. The next generation will define the role of osteoconductive vs. inductive

constructs and pharmacologic options. Crucial is the controlled delivery of osteo-inductive agents by engineered biomaterials or nanotechnology.

BIO-PROTECTION™ using injectable drugs to protect repair sites after operative or conservative repair is a reality. Injection of Botulinum toxins to decrease force generation during active mobilization after tendon repairs is a reality. The future roles of these agents in enhancing recovery after muscle strains and fracture repair is a developing reality.

The challenge is how to integrate these new concepts into clinical care in an evidence-based and cost effective manner.

Unstoppable *continued from page 1*

Chad had experienced IEDs before — most hardly scratched the paint on his tank. This one packed the equivalent of a 500-pound bomb.

“I lost a lot of blood, and my left leg was just barely hanging on. They medicated me to Al Qaim for triage, and I was becoming delusional from the shock and blood loss. I started thinking, ‘I’m a POW’ so I kept repeating my name, social security number, and blood type.”

Chad woke up two days later in pain on a flight to Germany’s Landstuhl Regional

Medical Center. Yes, Chad was alive. But his injuries were severe.

“Both my legs from the knee down were shattered to little pieces. My left hand, thumb, and wrist were shredded up and broken. I received four compression fractures in my lower back.”

Over the next two years, Chad endured 19 surgeries — many were attempts to salvage his legs.

“I really wanted everything to go back to the way it was. That was part of my drive. But I had to take some pretty heavy narcotics just to be able to get out of bed and step on the floor. My left foot really didn’t work. There was so much nerve damage and there was constant bone on bone contact.”

Finally, the pain was unbearable. So Chad made a decision and informed his doctor, who asked “Are you sure?” Chad answered with an emphatic “yes.”

“I became a bilateral below knee amputee on January 24, 2008. It took me a year to make that decision. I met with a post-traumatic stress disorder (PTSD) psychologist during that time to help me

deal with my fears. I wanted to know I could go back to my regular life even though part of my body was missing. I was determined to overcome any psychological repercussions.”

Chad says his initial prosthetic legs made him four inches taller and he felt like he was walking on stilts — but at least he was walking.

“I won’t let anything hold me down, especially my disability. After the explosion, doctors told me I’d never walk again, but on the day I was discharged from the hospital, I walked out. There was no way I was going to let anything stop me.”

Now Chad not only walks, he runs.

“I’ve recently received a pair of running legs. It was the first time I was able to run in five years. I have been able to be more active with my amputation than I was when I was going through limb salvage. I’ll never quit. To the end I’ll fight or find a way to fix it.”

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For more information please visit woundedwarriorproject.org.



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WOUNDED in ACTION

An Art Exhibition of Orthopaedics



2nd Forward Surgical Team by Lt. Col. Anthony Beardmore, MD

Rehabilitating both the body and spirit of wounded warriors is what we face. Through a partnership with AAOS, ORS, OTA, and S... in Action” was born.

The art celebrates the strength and spirit of injured troops, as well as the commitment of the orthopaedic surgeons who assist them. All of the artists in *Wounded in Action: An Art Exhibition of Orthopaedics* explored, both literally and figuratively, their feelings toward the skeletal wounds — the majority of which are the result of war. The art speaks to the men and women who live with orthopaedic injuries and family members who support them through the process. Orthopaedic surgeons who treat wounded military and their families are affected by war and their own experience with such injuries are

None of their relationships to war injuries are simple. It is often hopeful, it often disturbs. There is patriotism, but there is also a reality. Figuratively, it is an acknowledgement that there is real pain and suffering from war injuries. The exhibition also highlights the resilience and prove the ability of Wounded Warriors to reach their goals and return to service.

Included in these pages are just a few pieces of the art. For more information and to view the entire collection, visit woundedinactionart.org.



Duty to All by Mark Dahl, MD



Gunner by Noah Breuer



Faithful by Celeste Collier



Special Ops: Operation by Ruth Ficker

ACTION

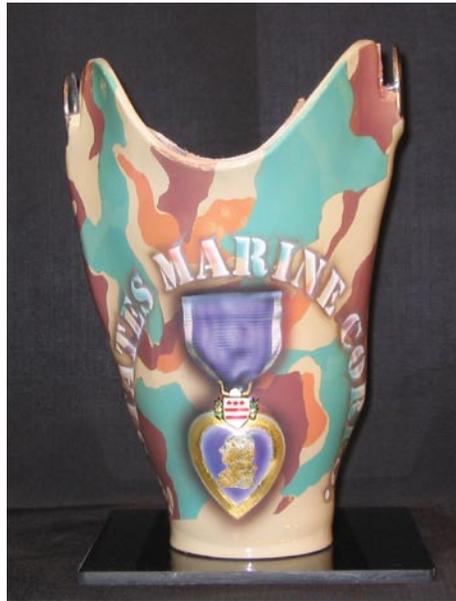
Advancements

one of the most difficult challenges
WOMOS, the art exhibit “Wounded

wounded civilians, and their families,
assist them on their journey to recov-
of *Orthopaedic Advancements* have
the loss of limbs and other musculo-
The artists include military person-
helped them through their recovery
civilians and whose lives have been
also artists in this exhibition.

e. Thus, while the artwork can be
ere also is disillusionment. Collec-
suffering among those with severe
need for continued research to im-
their full potential and, hopefully,

the art created through this project.
ction, please see www.woundedin-



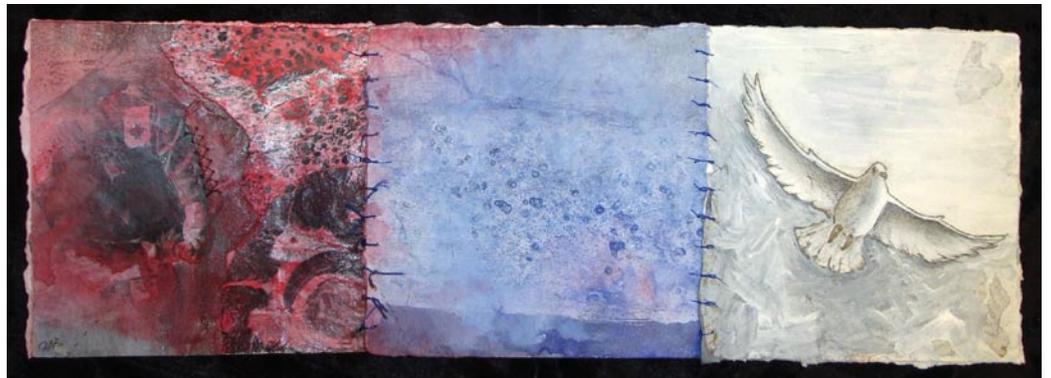
Below-Knee Prosthetic w/US Marine Corps & Purple Heart by Daniel Horkey



Phantom Footprints by Greg Carden



Things That We Carry by Col. Damian Rispoli, MD



On the Mend by Judith Batten

All images reproduced courtesy of the American Academy of Orthopaedic Surgeons' *Wounded in Action: An Art Exhibition of Orthopaedic Advancements* exhibit.

The Power of Google; the Power of Your Reputation

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In less than one year, a major behavior change occurred in the way that patients find and screen orthopaedic doctors. Sixty-five percent more patients who searched for physicians online began seeking out physician ratings sites as their top reference check. This has led to one of the most controversial debates about how a doctor's reputation impacts the profitability and satisfaction of practicing medicine.

The Changing Industry and Lack of Regulations

Orthopaedic surgeons practice one of the most profitable specialties in the medical market—and everyone knows it. Today, more than 100 internet companies are buying out domains with physician names and putting up advertisements about their reputations, patient satisfaction scores and other statistics, all with the purpose of luring doctors to buy their services. Some have turned to smear campaigns by publishing antiquated data about a physician's practice.

Physician ratings sites have taken up TV, radio and internet advertising, spreading awareness that patients can now check out reviews about doctors before they schedule appointments. In fact, medicine is one of the last industries in which ratings are important, but it's the only industry where the business owners simply don't acknowledge this behavior. The repercussions are disastrous for many practices. For others, this has turned into major profits.

Even reputable companies that assign credibility to these internet companies and celebrate them for their advocacy fail to understand the hidden business mod-

els. There is no system of checks and balances. It's the Wild West, by all means.

While on the one hand companies are advertising the need for transparency in the healthcare system, what they're doing, in fact, is adding to the problem. They're purchasing advocacy by presenting the dream of transparency, but all they're doing is exposing things that most physicians cannot control.

There is not one physician-ratings company better over all the others. The competition among them is fierce, and the common commodity they're all striving to own is your name.

What is the Main Problem?

Doctors are NOT in control over their own names and reputations. Everyone owns their names but them.

The Solution

Step One: Google your name.

Step Two: Buy domain names for your name. Own your trademark. Do it today. Do it right now.

Step Three: Even if you're employed by a group practice or a hospital, please realize that if you don't have at least a website for your name, you're at the mercy of all 100 of those internet companies. Getting a website is a requirement for the 21st century. What successful business does not have a website?

Step Four: Embrace patient satisfaction reviews and customer service. I recently published 12 case studies in which I outlined the ROI results from promoting several practices, hospitals and surgery centers. They all had one thing in common: every practice we advertised for which we featured the physicians' expertise and reputations had significantly

higher ROI and more refined patient volumes to their specific areas of sub-expertise.

In one case, we advertised to get more fee-for-service patients for elective services or out-of-network patients. The behavior of site visitors leaving the doctor's/hospital's website back to visit Google or Physician Review sites was 100%. The top statistic they searched for: other patients' satisfaction.

Changing Patient Demographics

Patients are willing to travel to see an expert, especially a celebrated expert. With deductibles and co-pays on the rise, patients have increased out-of-pocket expenses, and as a result they want the most optimal care possible—but they also want satisfaction. They want a great experience.

This also explains their behavior prior to scheduling appointments. We've documented many cases in which patients would go across the street to a different doctor, not because of his sub-expertise, but just because they were able to verify online that he's a caring doctor.

It's All About Customer Service and Patient Satisfaction

HCAHPS scores (Hospital Consumer Assessment of Healthcare Providers and Systems) are a reality whether you want them or not. Patients will look at those scores and compare them to everything else they can find. Hospitals will capitalize on this, as they will significantly enhance their patient volumes by taking them away from independent doctors who do not advertise their services and satisfaction scores.

It's also a hard and brutal reality that a doctor's reputation is no longer about his expertise and bedside manner, but rather a few sentences on a random review site.

The Technology Available To Streamline the Process of Customer Service

New technology available on an iPad makes it easy for you to gather feedback from every patient. All you have to do is ask one very important question and hand over the tablet with a pre-loaded application. It takes five seconds. All waivers are already included and it's all HIPAA- and FTC-compliant.

Before the patient leaves the office, you will have his opinion. The patient has the choice whether he would like to publish it for public knowledge. But you will also have the choice to review negative comments and observations and be allowed the opportunity to rectify the situation. In fact, we had one case in which an awful review turned into "This is the first time I had a doctor who showed me how much my experience matters."

The Process of Streamlining Customer Service is Critical for a Practice

Every patient should be given the opportunity to voice his/her opinion. The patients who do will become advocates of your practice and your expertise. And if published, their advocacy will work for you 24/7. How's that for excellence in marketing?

Simon Sikorski, M.D. is the CEO of Healthcare Marketing Center of Excellence, a company devoted to improving doctors' reputations and turning practices around to be more profitable and satisfying. He published 12 case studies outlining the importance of physician reputations and the outcomes on profitability in August. Please reach him via HealthcareMarketingCOE.com.

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Disaster-Rx Blog an interactive forum about the practice of orthopaedics in austere environments

As orthopaedic surgeons, it is important to be prepared to provide quality care with limited resources. The Disaster-Rx Blog (Disaster-Rx.com) is part of the Disaster Preparedness and Trauma Center Toolbox and provides a real-life look at planning and implementing orthopaedic treatment in ever-changing disaster and combat settings.

Military orthopaedic surgeons from around the globe share their experiences treating injuries in less-than ideal settings and invite their orthopaedic colleagues to participate in case discussions. We look forward to your input on our most recent case:

Twelve-year-old Muna Z. was playing outside her home when a half buried object caught her eye. As Muna Z. pulled her would-be treasure from the ground, it detonated.

"Muna Z.'s father sought medical help in the local area, but was turned away, so he brought her to our combat support hospital. We quickly determined she had sustained a traumatic blast amputation of her right index finger, near amputation of her middle finger, and associated fractures of the second and first metacarpal bases. He explained his biggest fear was that her hand would be amputated and what that stigma would mean for her future life in the community. Realizing this stigma, as well as the functional activities of daily living (ADL) challenges Muna Z. will now face in her life, we did our best to perform a salvage," the surgeon recounted.



The surgical team's first task was to clean and revise her amputations. They removed her index finger metacarpal because it was already fractured near its base and removed about half of her middle finger metacarpal to debulk the closure/flap area.

Doing what they could without subspecialty availability or modern fluoroscopic imaging, the surgical team then performed a closure with a drain.

They made sure the closure wasn't under tension and Muna Z. could reach the tips of her ring and small fingers with her thumb.



"We tried to do as much as we could for her, seeing how she'll only have access to very limited care at an Afghan hospital, which is where she'll be transferred next."

Question: What other options could be considered for soft tissue coverage of a hand if local coverage is needed?

Did You Know?

About 70 percent of war wounds are musculoskeletal injuries and 7 percent of those with major extremity wounds also sustain loss of limbs.

Woundedinactionart.org



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Editorial: Treatment of the Wounded Warrior



Upper extremity neurovascular compromise in the wounded warrior associated with a “critical” vascular component that requires arterial or venous reconstruction for tissue survival is challenging. During World War

II, there were only 3 successful arterial repairs of 2,471 arterial injuries and 68% of amputations were secondary to arterial injury. The upper extremity amputation rate following vascular injury was 24% in WWII. During the Korean conflict, the upper extremity amputation rate was ~30% without repair and ~3% with repair; this rate was ~5% during the Vietnam conflict. In Afghanistan and Iraq, the amputation rate has increased to 9-10% primarily secondary to the mechanisms of injury (e.g., improvised explosive devices). Nevertheless, adherence to basic principles will enhance upper extremity salvage of complex neurovascular injuries and permit secondary neural, soft tissue and osseous reconstructions (Clouse, *WD, Vascular Surgery*, 20:429;2006).

Today the patency of vascular repairs below the brachial artery is potentially good to excellent with failure relegated to complica-

tions secondary to systemic events, infection and concomitant injuries. In an evaluation of 153 patients with 218 vascular injuries, upper extremity salvage rates approached 95% (80). Risk factors associated with amputation loss included war injury, brachial plexus injury, skeletal injury, compartment syndrome, and graft failure (Sohn, *VY et al. Archives of Surgery*, 143:783;2008). The keys to success are: prompt diagnosis that the injury is “critical,” delineation and adjustment of treatment based upon factors that are predictive of outcome, protocols that regulate and simplify process; strict adherence to debridement, extremity skeletal stabilization (preferably using rigid internal fixation), and planning to optimize future procedures, especially nerve grafting.

The goal of revascularization is to provide nutritional perfusion that responds to pulsatile stress and to decrease inappropriate vasospasm. One of the main causes of late failure is infection making debridement and stabilization of the wound crucial. The ability to provide temporary perfusion using shunting followed by transfer and definitive arterial revascularization is an important option. Maximizing outcome requires preparation, planning, precision of execution, perseverance in your goal to restore a perfused limb, protection of the re-

pair sites, and the prevention of late complications, especially infection. Following these basic “P’s,” patency may be optimized.

It is essential to plan the incisions, optimize debridement, provide stabilization, and carefully consider the graft source or the use of other structures. Coverage is important, especially with the need for secondary operations, and therefore vascular grafts may be tunneled obliquely through areas that are less injured. In attaining skeletal stability, liberal shortening to improve soft tissue envelopes is important. Keep in mind that arteries and veins from other amputated extremities can be useful, as can arteries from the uninjured abdominal areas. The need for prophylactic fasciotomies is a crucial consideration; critical vascular injuries in austere environments in systemically injured and hypotensive casualties is recommended before transfer. The need to repair arteries first and to clear distal vascular beds of toxic metabolites is also important. Flushing these areas with bicarbonate and other products is of value, but extra corporeal perfusion with saline etc. is not needed in most cases.

If these principles are followed, secondary reconstructions that provide functional limbs are probable.

— L. Andrew Koman, MD