



Chronic Venous Insufficiency (CVI) Ulcer and Peripheral Arterial Disease (PAD)

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Abstract

Approximately 20% of patients with chronic venous insufficiency also have peripheral arterial disease. Ulcers caused by this combination are always more difficult to heal. In addition to all the typical problems associated with chronic venous ulcer disease, these patients have two levels of ischemia. They have the obvious distal limb ischemia secondary to the arterial obstruction along with a local ischemia from edema. The edema of venous insufficiency increases the interstitial fluid which lengthens the distance that oxygen has to diffuse from the capillaries out to the cells. The following case study demonstrates how we were able to resolve these ischemic issues allowing the ulcer to heal.

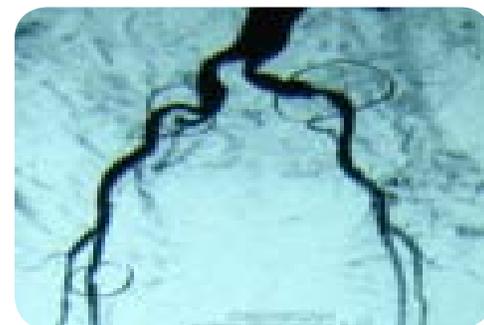
History and Physical Exam

The patient was a 73 year old with a one month history of ulcers on his right lower leg. He was initially treated by his private medical physician with topical antibiotics. His past medical history was significant for chronic edema after a repair of a fractured right femur and a previous resection of an abdominal aortic aneurysm. He was a heavy smoker in the past and was also being treated for dyslipidemia and hypertension. Review of systems was significant for 1—2 block claudication and occasional rest pain. Physical exam revealed good bilateral femoral and popliteal pulses. He had palpable dorsalis pedis and posterior tibial pulses on the left but not on the right. The anterior right lower leg was edematous with obvious stasis changes of the skin surrounding the ulcer.

Before Treatment



MRA



Work Up

Doppler studies revealed ABI's of 0.65 on the right and 0.69 on the left. Transcutaneous oximetry demonstrated reversible local tissue hypoxia. MRA revealed stenosis of the iliac arteries bilaterally, the right superficial femoral artery (SFA) and a patent posterior tibial artery.

Treatment

The patient underwent an arteriogram which revealed mild iliac stenosis, 80% stenosis of the right superficial femoral artery and an occluded anterior tibial artery. The patient underwent a Silver Hawk Artherectomy of the right superficial femoral artery and the right anterior tibial artery. Initial wound treatment included surgical and enzymatic debridement and control of his edema with compression wraps, elevation and salt restriction. Transcutaneous oximetry post endovascular repair showed improvement of the hypoxia but not to a normal level and the ulcer continued to increase in size.

During Treatment



A plastic surgery consult was obtained and the patient underwent a split thickness skin graft. The graft began to slough and the patient was then started on hyperbaric oxygen therapy (HBOT).

During Treatment



Healthy granulation and new skin developed at the ulcer site with the addition of HBOT.

During Treatment



During the course of treatment, the patient became less compliant with elevating his leg and the edema worsened. Healing stalled and the ulcer became macerated and larger due to this increased edema.

During Treatment



The hyperbaric treatments were completed and his ulcer went on to heal after the edema issues were resolved with better patient compliance.

Conclusion



Conclusion

Chronic venous ulcers are very amenable to treatment if the edema can be controlled but they are almost impossible to heal without the patient's full cooperation performing the measures necessary to correct the edema. Arterial insufficiency is not always as obvious as it was in this case. If a venous ulcer persists or fails to improve despite good edema control and the ability to maintain a healthy wound bed, you have to consider peripheral arterial disease as a potential complicating factor.

About Precision Health Care

Precision Health Care is a comprehensive wound healing and hyperbaric medicine service organization dedicated to the development of state-of-the-art hyperbaric and wound healing centers through partnership and collaboration with our affiliate hospitals.

Community-based and patient-focused, we are driven by this mission philosophy: To provide select hospitals safe, comprehensive, compassionate wound healing and hyperbaric services for patients in need.

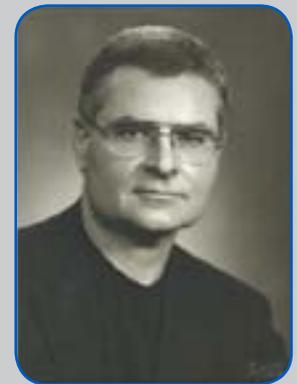
Questions or Comments?

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About the Author



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THE PRIMARY CARE PHYSICIAN SHOULD REFER THE PATIENT FOR ADVANCED WOUND CARE IN A WOUND HEALING CENTER IF THE PATIENT:

- Has a wound that persists for more than 30 days after treatment
- Has a wound and Reynaud's phenomenon
- Has purpura
- Has a wound and hypertension
- Has gangrene or necrotic tissue in a wound
- Has a wound and diabetes