

# M.D. NEWS

A BUSINESS AND LIFESTYLE MAGAZINE FOR PHYSICIANS

special section: mis



## Laser Promotes Ulcer Healing

By Larry A. Stern, MD

For nearly one million American adults, venous leg ulcers represent a painful and debilitating disease. The vast majority of leg ulcers are due to venous disease, and up to half of individuals with untreated varicose veins will develop an ulcer. Risk factors associated with venous disease include family history, increasing age, obesity, pregnancy, and prolonged standing.

Varicose veins are often associated with aching, heaviness, itching, and swelling. Over time, the symptoms may worsen to include eczematous skin changes, pigmentation, atrophy blanche, and ulceration. The skin changes and ulceration are characteristically located just proximal to the medial malleolus, which implicates venous disease involving the great saphenous vein. Cutaneous manifestations may occur in other distributions, however, depending upon the pattern of the superficial or perforator vein disease.

In the evaluation of varicose veins and venous ulcerations, venous duplex ultrasound is the diagnostic modality of choice. Ultrasonography allows for the assessment of venous patency, as well as venous valvular function. In a typical examination, the deep and superficial venous system is visualized, as well as perforator veins. Valves are positioned at intervals in the venous system, and are designed to allow flow of blood upward toward the heart, preventing flow in the reverse direction. In individuals with severe venous disease, the valves become dysfunctional, or incompetent, and the normal efficient flow of blood becomes stagnant. This results in venous hypertension and dilatation, and results in an inflammatory process which leads to the extravasation of fluid and cellular components.

Traditional conservative treatment methods have included measures designed to diminish venous pressure and aid venous return to the heart. These measures include

leg elevation, avoidance of idle standing and sitting, and weight control. Exercise and ambulation are encouraged, as the contracting foot and calf muscles during activity serve as a pump to enhance venous return to the heart. Additionally, graduated compression stockings or compression wraps are utilized to improve venous hemodynamics and minimize lower extremity edema. Unless contraindicated, compression of 30-40 mm Hg is utilized.

It has long been known that procedures designed to treat varicose veins must address the underlying cause of venous hypertension due to incompetence of the venous valves. The valvular incompetence is most often identified in the saphenous veins, which are anatomically a part of the superficial system of veins. The great saphenous vein, which is the longest of the superficial veins in the lower extremity, courses from the groin to the ankle on the medial aspect of the leg. The small saphenous vein is located posteriorly in the calf between the popliteal space and the ankle. Procedures intended to treat varicose veins, therefore, must include elimination of the saphenous veins if valvular incompetence is demonstrated. In the past, it was necessary to physically remove the diseased saphenous vein from the leg in a procedure known as "stripping," which required incisions, was somewhat painful, and involved a significant period of convalescence.

In recent years, new minimally-invasive techniques have emerged in the treatment of unsightly varicose veins. A procedure known as endovenous laser ablation has been shown to be as effective as the traditional vein stripping procedure, but requires no incisions and is associated with little or no discomfort. The procedure can be performed in the office setting using local anesthesia and mild sedation, with return to normal activity within a day or two. The procedure involves placement of a long,

slender laser fiber within the dysfunctional vein using only a small needle. The procedure is performed using ultrasound imaging to guide the placement of the laser fiber and the anesthetic. The laser is used to generate heat which creates a thermal effect, thereby sealing the vein shut and arresting blood flow through the diseased vein. Venous blood flow then is automatically rerouted through alternate healthy pathways. When treating varicose veins, additional adjunctive procedures are sometimes necessary.

Venous ulceration is a manifestation of advanced venous disease. Traditionally, venous ulcers require many months to achieve healing, and recurrences are common. Customary treatment protocols include compression, a variety of topical preparations, and serial debridements.

Recent research has documented the role of endovenous laser ablation in the treatment of venous ulcers. Clinical studies have shown that the use of endovenous laser ablation in the presence of saphenous vein incompetence significantly decreases ulcer recurrence. Additionally, emerging evidence suggests that endothermal ablation techniques can significantly enhance and expedite the healing of existing venous ulcerations.

In summary, the advent of minimally-invasive outpatient endovenous ablation has revolutionized the treatment of varicose veins in recent years. Evidence is now accumulating that these procedures also promote venous ulcer healing as well as decrease ulcer recurrence. Armed with this information, wound care specialists now have an additional alternative in the comprehensive approach to ulcer management.

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