Phlebectomy Techniques for Varicose Veins

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KEYWORDS

• Ambulatory phlebectomy • Stab phlebectomy • Microphlebectomy
• Microextraction • Stab avulsion • Removal varicose veins

KEY POINTS

- Ambulatory phlebectomy is the gold standard for removal of symptomatic residual veins after truncal reflux has been treated. This can be staged or performed concomitantly.
- Phlebectomy can be performed in a clinical or operative setting with local tumescent anesthesia to augment dissection and provides adequate pain management and hemostasis.
- Complications of phlebectomy are rare and can be minimized with appropriate risk management and proper patient selection.
- Although ambulatory phlebectomy is well known and the adopted preference of most practitioners, there are other options and new emerging techniques, such as transilluminated powered phlebectomy and cyanoacrylate closure.

HISTORY

Gaius Marius, Roman statesman, general, and 7-time consul, gained an unprecedented control of the Roman Army throughout the Mediterranean. He was passionately respected by his troops, often eating with them and sharing in their labors. He marched with them through the empire, through North Africa, into the Alps, and against the Germanic tribes and the Gauls of northern and western Europe.

His recurrent rise and falls from power were renowned throughout the "modern world." Less famous is his development of severe venous disease as a result of his campaigns and refusal to undergo treatment of his contralateral leg, once completing a phlebectomy without anesthesia. He is quoted as saying that "the cure is not worth the pain."

The description of venous disease and treatment is well documented. In 400 BC, Hippocrates was the first to conceptualize phlebectomy. He described several

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sequential punctures in the vein could be used to get rid of the "bad blood" that fed a venous ulcer. The *Ebers Papyrus* warned against treating the "Leg Serpents," describing death from presumed hemorrhage and/or infection.

Aulus Cornelius Celsus was the first surgeon to perform a phlebectomy by taking a blunt hook or cautery to destroy the veins and made large incisions with compressive bandages.[1]

Unfortunately, much of his writings were lost or destroyed, and the art of phlebectomy was lost for more than 5000 years until Robert Muller, a dermatology-trained phlebologist from Switzerland, rediscovered it. He was growing frustrated by the poor results of sclerotherapy on larger veins, and he began using small hooks from broken hemostats to remove the veins via small holes.

By 1956, Muller had refined his procedure and presented it to the French Society of Phlebology in 1967 and the International Congress of Phlebology in 1968. These presentations were not well received. He described them as "a total fiasco. Everybody agreed that it was a ridiculous method, after which I could have buried myself together with the invention."[2] It was a slow and steady group of disciples that continued the procedure and adopted it across the world and now the United States as the procedure of choice to remove these veins.[3] Today, these interventions are performed regularly on a growing population of venous disease sufferers.

AMBULATORY PHLEBECTOMY

Ambulatory phlebectomy, stab avulsion/phlebectomy, microphlebectomy, and microextraction are all interchangeable terms to describe this technique. It consists of a method by which the larger varicose veins are removed through small skin punctures and hooks specifically designed for this purpose. It is often performed in the outpatient setting using local anesthetic and tumescent anesthesia.

Tumescent anesthesia was originally developed by Klein[4] in 1987 for liposuction and was adopted by Cohn and colleagues[5] in 1995 to avoid the painful and time-consuming infiltration of local anesthetic and to reduce the risk of lidocaine overdose. This commonly contains saline, epinephrine, and lidocaine.

The authors commonly use the term stab phlebectomy and always use a tumescent anesthesia for these patients, often under general anesthesia.

The goals of therapy are to remove the residual or remaining large refluxing veins of the limb after ligation or ablation of the source of reflux. This provides an effective and economical way to provide complete treatment of the symptomatic residual veins with a good cosmetic result.

PREOPERATIVE ASSESSMENT

Upon evaluation of the patient, a complete history, including previous deep vein thrombosis (DVT), chronic edema, family history of venous insufficiency and venous thromboembolic disease, and surgical interventions, should be collected. Each patient's reflux should be identified with venous duplex, and if unilateral or deep system reflux is noted, consideration of pelvic congestion or May-Thurner should be included.

Patients with poorly controlled diabetes, hypercoagulable state, and arterial disease should be considered higher risk. Patients who are pregnant, have infection, or have severe edema should be delayed until these issues have been resolved.