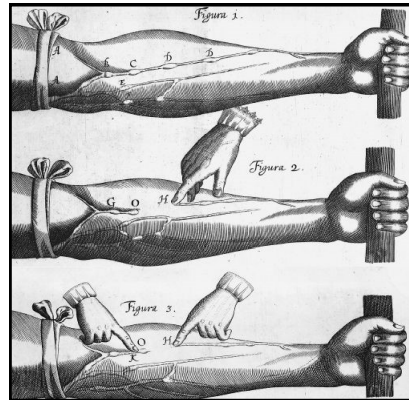




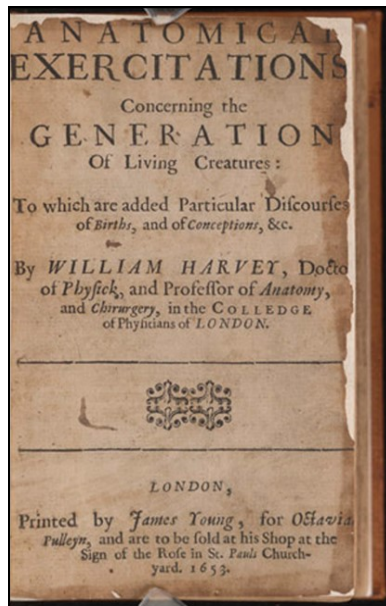
Historical Background



William Harvey discovered blood circulation and managed to prove it scientifically (1578-1657)



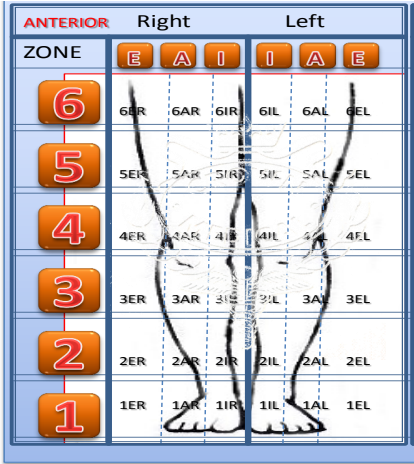
In the West, the explanation of blood circulation is attributed to William Harvey who, as far back as 1628, published his *Exercitatio anatomica de motu cordis et sanguinis*. This work was presented as medical evidence in that regard. It establishes the heart as the organ that pushes blood through the body's arteries. This physician applied a thorough methodology to his studies. The reigning theory up to then was that of Galen, who claimed blood moved back and forth in the heart.



2 The 3D Venous Map

Objectives of this Chapter:

- Representing or documenting the patient’s venous pathology in graphical form.
- Identifying the affected areas and their anatomical interrelationship with the lower-limb vein and artery network.
- Acquiring the basic knowledge to represent the incompetent perforators.
- Using the documentation of the 3D Venous Map in order to apply the therapy estimate technique for each patient, which is a basic element for choosing the treatment technique.
- Establishing the venous map as a vehicle for controlling the therapy process, as well as for communication between the doctor and his or her therapists.



What is the 3D Venous Map?

The 3D Venous Map is the three-dimensional graphic representation of the patient's disease. This map integrates all of the descriptive elements of venous insufficiency for each location on the lower limb.

Objectives and Benefits of the Venous Map

Filling out the 3D Venous Map facilitates our decision-making process. The map has three basic objectives:

1. Serving as a means of information exchange among all the parties involved in the sclerotherapy process.
2. The venous map allows you to document the venous insufficiency in graphical form.
3. It serves as a basis to determine the estimate of required therapies.

The venous map is helpful in the sense that it describes the extension of the venous problem and gives you the possibility of indentifying possible problem areas. Because it provides an overview of the circulatory problem, we have devoted a whole chapter to it in order to improve its understanding.

Sclerotherapy professionals face a great challenge when it comes to defining the prognosis and evolution of any disease. They are faced with an even greater difficulty when trying to define with minimal error the number of therapy sessions that a patient will require to achieve the goal of his or her treatment: eliminating varicose veins.

Elements Provided by the 3D Venous Map

What information elements does the 3D Venous Map provide?

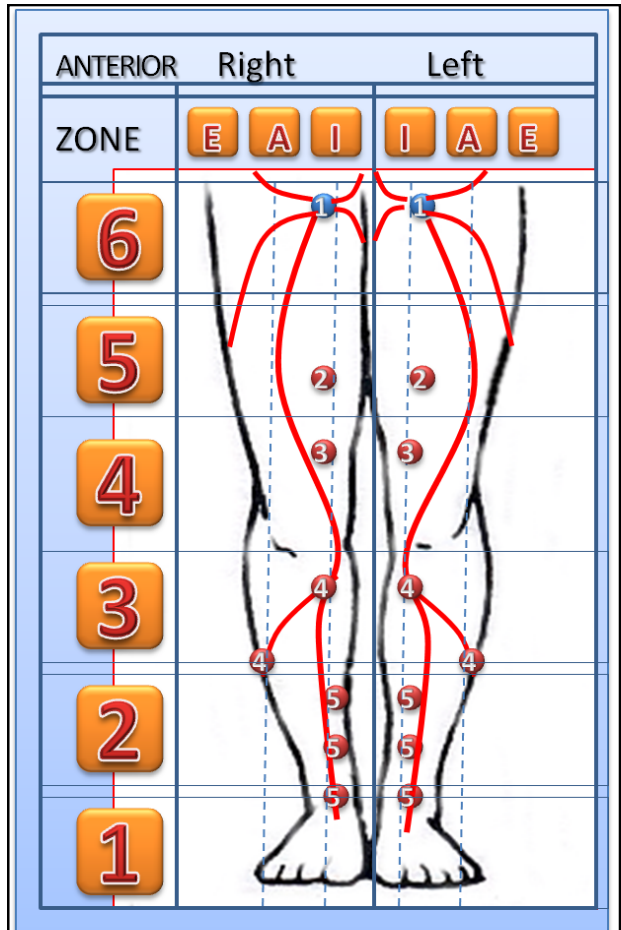
- It reflects the affected areas.
- It pinpoints areas with a high risk of complications.
- It provides an anatomical reference for the circulatory problem.
- It objectively classifies the extent of varicose disease.
- It provides the basis for choosing the sclerotherapy technique that should be applied.

3D Venous Map

How is the 3D Venous Map filled out?

In order to fill out the venous map you must understand the meaning of each of its variables. These are explained below, along with the codes used.

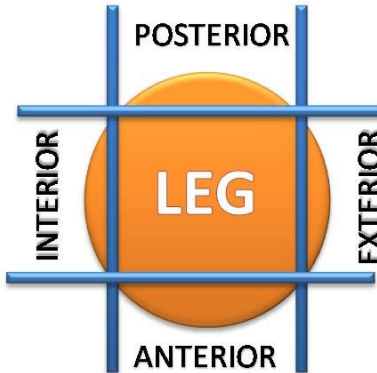
The Crown Medical 3D Venous Map divides the lower limbs into six areas for each leg. These are numbered from 1 to 6. Area number 1 refers to the distal end—the feet and ankles—and area number 6 refers to the upper third of the lower limbs, where the saphenofemoral junction is found. See the following chart:



Each area has its own anatomical features and its own perforating veins.

The 3D Venous Map

Each area has four sides or quadrants: anterior, posterior, interior and exterior (see chart). That is, a cross-section is made for each area.

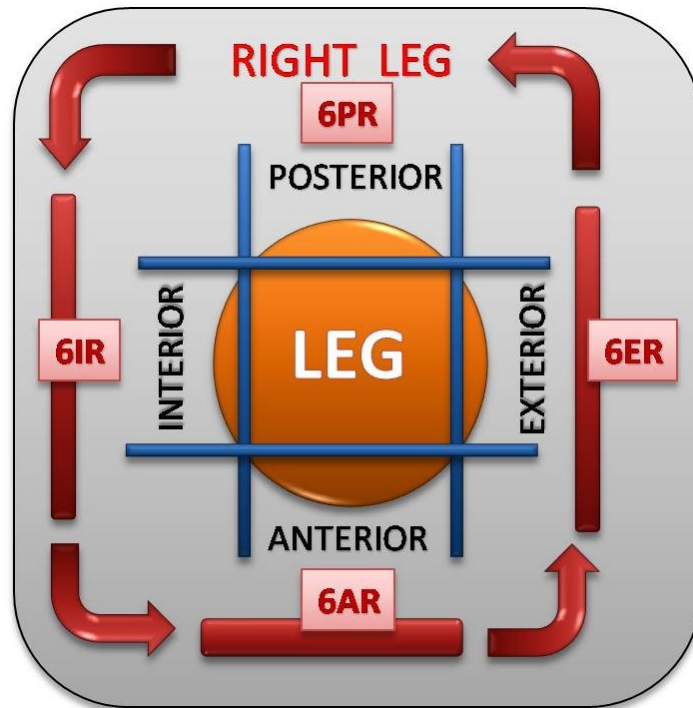


Each leg is therefore divided into 24 different sections. All in all, there is a total of 48 possible areas of treatment (see chart).

THE 48 AREAS AND THEIR CODES													
ANTERIOR						POSTERIOR							
Right			Left			Left			Right				
ZONE	E	A	I	A	E	ZONE	E	P	I	P	E		
6	6ER	6AR	6IR	6IL	6AL	6EL	6	6EL	6PL	6IL	6IR	6PR	6ER
5	5ER	5AR	5IR	5IL	5AL	5EL	5	5EL	5PL	5IL	5IR	5PR	5ER
4	4ER	4AR	4IR	4IL	4AL	4EL	4	4EL	4PL	4IL	4IR	4PR	4ER
3	3ER	3AR	3IR	3IL	3AL	3EL	3	3EL	3PL	3IL	3IR	3PR	3ER
2	2ER	2AR	2IR	2IL	2AL	2EL	2	2EL	2PL	2IL	2IR	2PR	2ER
1	1ER	1AR	1IR	1IL	1AL	1EL	1	1EL	1PL	1IL	1IR	1PR	1ER

The 3D Venous Map

A specific code is established for each area of treatment. This code, by itself, constitutes a communication tool among the different health professionals involved in the sclerotherapy process. It allows them to exactly define the anatomical location of the area in question.



For example:

6IR = This means area number 6, interior (I) face of the right (R) leg.

6ER = This means area number 6, exterior face of the right leg.

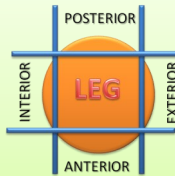
The 3D Venous Map

The medical office should have a coding system. Otherwise, it becomes very complicated, even inaccurate, to try to precisely describe the spot where any given therapy was applied. When this coding system is used in the venous map, knowing what area is being worked on becomes extremely simple, practical and accurate at all times.

Coding System for the Crown Medical 3D Venous Map

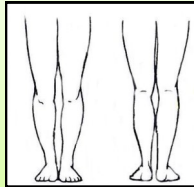
1 to 6

1. The first digit defines the level or area of the leg to which it refers. These are the levels (1 to 6). Level 1 is the ankle. Level 6 is the upper part, where the saphenofemoral junction is found.



2. The second digit defines one of the four parts of the cross-section or circumference, within the level it refers to. The third digit refers to the Anterior, Posterior, Interior or Exterior part.

- 3.- The third element represents the leg:



R= Right leg

L= Left leg

To sum up, let us see how easy it is to use the coding.

R3E = Right leg, level 3 (knee), exterior face.

L6I = Left leg, upper part (saphenofemoral junction), interior face.

Once the affected area has been identified, its physical description shall be made. Possible difficulties or complications that may arise should be analyzed, thus defining the venous condition of the area in question.

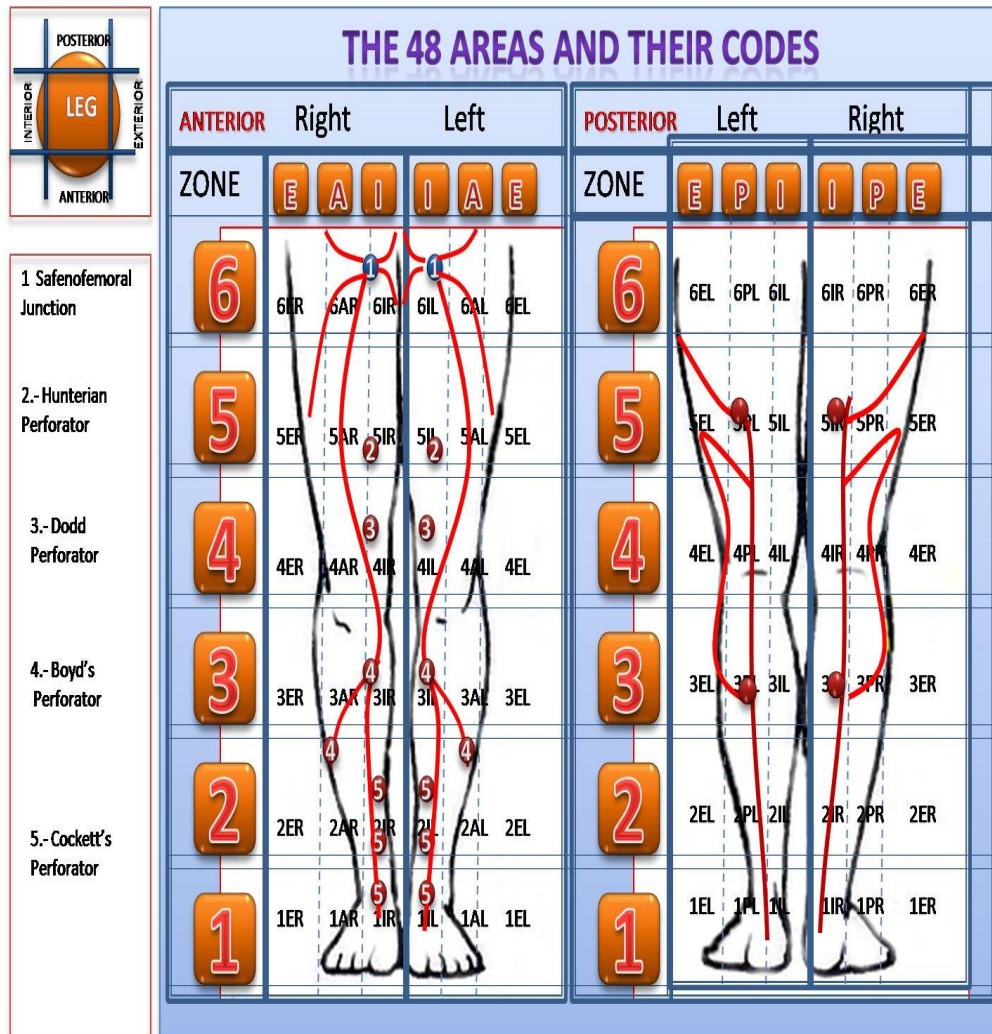
Let us see the following chart that defines all possible 48 areas, now with the anatomical points of highest interest when it comes to evaluating the treatment of varicose veins.



CROWN MEDICAL 3D VENOUS MAP

The anatomical points of interest to evaluate in venous pathology are marked with a red dot.

The venous map features the most common perforators (See chart).



Procedure for Filling Out the Venous Map

- 1.- Have the patient stand on a platform that is at least 1.5-foot or 0.5-meter high. This way, the examiner, when sitting on a chair, would be facing the patient's knees.
- 2.- Wait at least one minute for the whole superficial vein system to become dilated. Depending on age and physical condition, have the patient perform some type of exercise that may help fill up the network of veins.
- 3.- Starting from the top down and from right to left, mark all visible veins with a skin marker. The purpose of this step is to document the visible insufficient areas, and the results of functional tests of the lower limbs. The following maneuvers may be used.

1-Trendelenburg test

2-Heyerdale and Anderson test

3-Pratt's test

4-Perthes test

5-Baistrocchi's test

6-Oschner's test (elastic bandage test)

These maneuvers are performed in order to detect:

- 1.- Valve insufficiency of the saphenous vein.**
- 2.- Saphenofemoral insufficiency**
- 3.- Locating incompetent perforators**
- 4.- Deep level damage.**

If you wish to know how these functional tests are done, you may refer to the chapter on the initial medical visit, where they are explained in detail.

- 4.- Non-invasive diagnostic tests such as ultrasound (Echo-Doppler) as well as plethysmography or other diagnostic methods may be used in order to identify areas of insufficiency.

- 5.- Document the clinical manifestations of the disease. For this procedure you need to rely on the Crown Medical Multifactorial Scale, which includes the CEAP International Classification.

International Venous Classification (CEAP)

What is the CEAP International Classification?

CEAP is an English acronym to designate a classification developed by an international ad hoc committee of the American Venous Forum in 1994.

It was developed with the purpose of classifying venous insufficiency by levels, thus providing a diagnostic standard and a method to improve scientific exchange.

“**CEAP**” corresponds to the four categories that were taken into account to arrive at such a classification, as detailed below:

Clinical severity	Clinical condition of the patient
Etiology	Etiology of the venous problem
Anatomy	Anatomy of the venous problem
Pathophysiology	Venous pathophysiology.

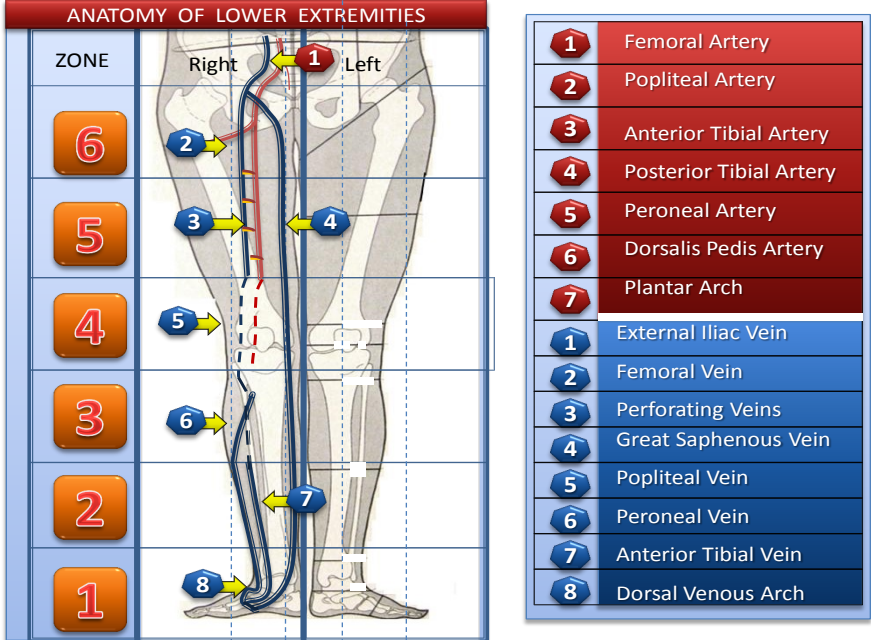
Let us take a look at each CEAP variable.

The 3D Venous Map

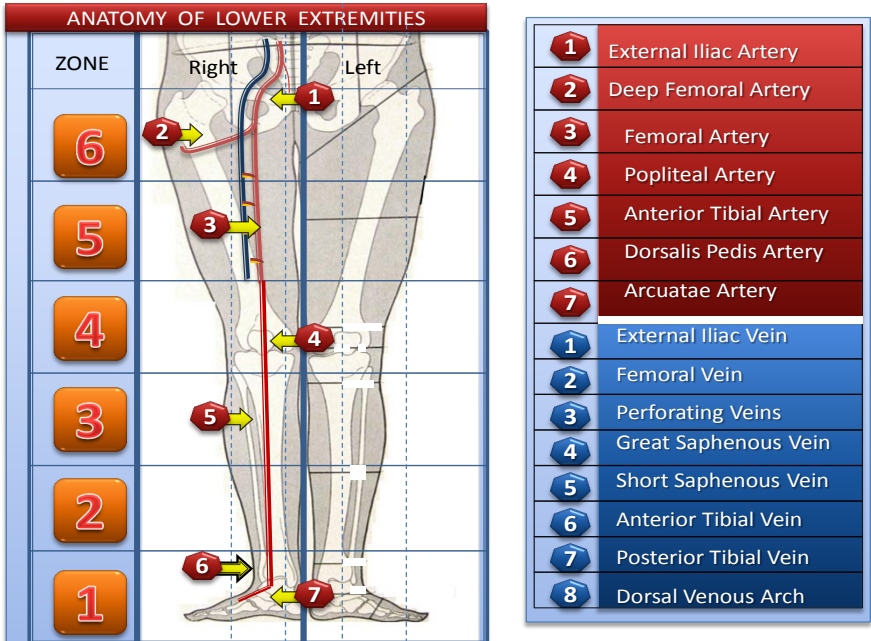
CEAP Classification	Definition
Telangiectasia	Dilated intradermal venules under 1 mm in caliber. Also called vascular spiders.
Reticular veins	Dilated intradermal venules 1 to 3 mm in diameter. They are usually tortuous. Also called blue veins, venulectasias or intradermal veins. This does not include normal veins that can be seen through transparent skin.
Varicose Veins	Dilated subcutaneous veins equal or larger than 3 mm in diameter. They are tortuous, and may involve the saphenous veins and their tributaries. Other synonyms are: swollen veins and varicosities.
Corona Phlebectatica	A pattern in the shape of a crown or fan made up of many small intradermal veins. It involves the medial and lateral faces of the ankle and the foot. It is a sign of advanced venous disease.
Edema	It generally affects the ankles, but it may extend to the whole leg. It must be differentiated from lymphatic edema.
Pigmentation	A dark-brown coloration of the skin due to extravasation of blood. It usually occurs in the ankles and may extend to the whole leg.
Eczema	Erythematous dermatitis that may progress in the form of blebs (phlyctenas), or a papular rash on the skin of the leg.
Lipodermatosclerosis	Localized chronic inflammation and fibrosis of the skin and subcutaneous cell tissue. It sometimes involves a contracture of the Achilles tendon.
White Atrophy or Atrophie Blanche	Circumscribed atrophy, often circular, with dilated capillary points and hyperpigmentation. Is sign of severe CVD.
Venous ulcer	A chronic defect of the skin often located in the ankle.

The 3D Venous Map

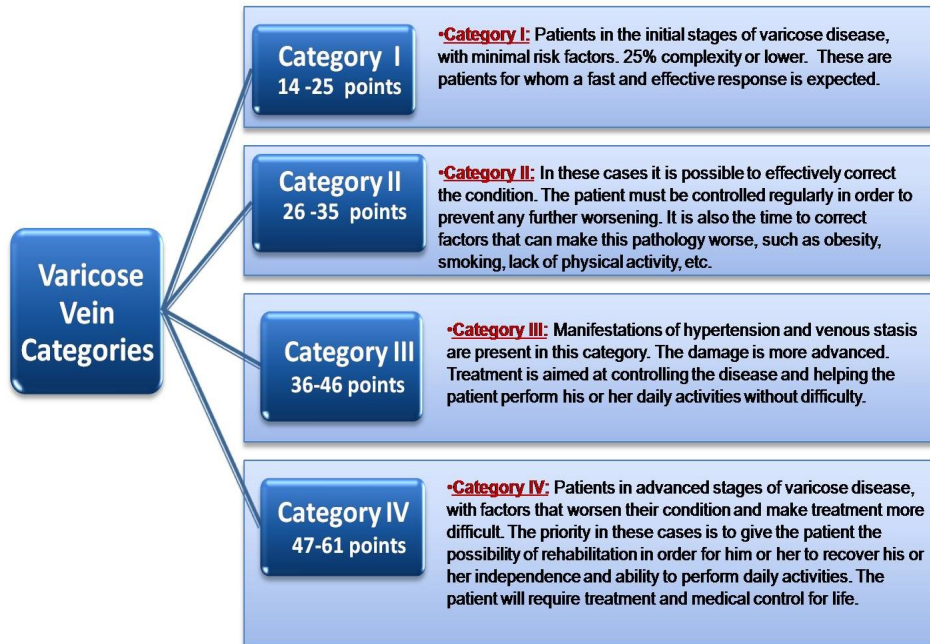
Venous Map



Arterial Map



The 3D Venous Map



ASSESSMENT OF VARICOSE VEINS						
Gender	1	2				
Age	1	2	3	4	5	
Ethnicity	1	2	3	4		
Type of Skin	1	2	3	4	5	
BMI	1	2	3	4	5	
Toxic Habits	1	2				
Physical Activity	1	2	3	4	5	
Assoc. Disease	5	5	5	5	5	
(C) Clinical	1	2	3	4		
(E) Etiology	1	2	3			
(A) Damage Level	1	2	3			
(P) Physiopatology	1	2	3			
Skin Change	1	2	3	4	5	
Degree of Disability	0	2	3	4	5	
TOTAL POINTS Crown Multifactorial Scale: <input type="text"/>						

