

## **What are Varicose Veins?**

Varicose veins and Telangiectasia (spider veins) are usually normal veins that progressively stretch, bulge and become visible. Varicose veins may be caused by a hereditary factor; the father or the mother may have varicose veins, or in some cases, even one of the grandparents or an uncle / aunt. Besides the hereditary tendency, some other factors can aggravate the varicose veins. One of the main factors that may cause this aggravation is the pregnancy. Another one that is also very important is the use of contraceptives. Standing or sitting for very long periods of time also causes varicose veins. Therefore, people who stand or sit for long periods of time, who use contraceptive or who have several pregnancies and present the hereditary tendency, have a strong possibility of developing the problem. The hereditary factor reaches men and women equally, but a very larger proportion of women will have varicose veins because of the effect of the feminine hormone that aggravates the problem.

## **Varicose veins: a problem since the antiquity**

The varicose veins of lower extremities have been studied and treated since the antiquity. There are references to treatments that raise from more than 2000 years ago. In Doctor Amynos's sanctuary, close to the Acropolis of Athens, a sculpture was discovered in an excavation. This sculpture probably represented the gratitude of a Greek person and it showed a leg with thick and visible varicose veins. The concern of the medicine about the varicose veins began in the origins of the civilization history. That happens because the varicose veins are visible. Then, for the practitioners of the old medicine, who did not have adequate instruments to examine the human body, the cause and effect relationship of the symptoms with the presence of the veins, that are easily visible, was soon made. Due to the fact that it is a visible disease, it concerns the women in the XXI century.

## **The varicose veins and the changes of the sixties**

The change of habits in the last decades, mainly the use of mini-skirts in the sixties, caused a great development in the treatment of the varicose veins of the lower extremities, especially in Brazil. Our country is known all over the world as a pioneer and an innovator when it comes to techniques for the treatment of varicose veins of lower extremities. The development of the sclerotherapy and of new equipment for cryosclerotherapy to treat the telangiectasies ("spider veins"), the use of the crochet hook, surgeries of varicose veins and microvarices using the microincisions, and even the wide range of techniques that can be used in each particular case, were developed here, by doctors who were good observers, who had very good sense and privileged creativity. All that allowed them, with few resources, to develop innovative techniques used all over the world. We can say, and of course, with certain pride, that in the area of Phlebology (the study of the veins) the place that has the best technology in the world is Brazil. I can mention the Brazilian phlebologist and vascular surgeon's creative characteristics, but of course, other factors should be taken into account: Brazilian women's concern with the body. Not only because of the climate that demands light clothes, but also because the pursue for beauty by Brazilian women, which is unique in the world.

## **The types of Varicose veins**

There are two types of varicose veins: the primary, that are caused by the hereditary factors, and the secondary, that appear because of diseases during the life.

The primary varicose veins are the responsible for the unaesthetic red and blue lines of several sizes in the woman's legs and also for the varicose veins of larger sizes. The primary varicose veins are the most frequent ones.

The secondary ones are the most difficult ones to be treated. They are erroneously called "internal varicose veins". "Internal varicose veins" do not exist. But, what do exist are serious problems of diseases in the internal veins, that are the secondary varicose veins.

We can also consider the varicose veins, in a simplistic way, as "less severe" or "more severe". The "less severe" are the ones that, although they are a disease, do not cause an immediate health problem but aesthetic concerns. The "more severe" are the ones that result in serious problems, as bleeding, ulcers (wounds), eczema, infections, redness, stains, thickness of the skin, pain, phlebitis and even the lung clot, that although rare in primary varicose veins, may put in risk the patient's life.

## **The Types of Varicose veins according to the Naturale Clinic**

A scientific classification of the varicose veins, called CEAP, is used all over the world for the scientific researches. But this classification is very complex, and it is not used in practice to treat the patient. In scientific researches, led by doctors of the Naturale Clinic, a new Clinical Classification was developed, known as Functional - Aesthetic Classification or "Francischelli's Classification". It divides the patients with varicose veins in 4 Types or Groups. Each one of the groups has common characteristics that allow us to choose the best treatments.

### **TYPE 1 - PAVD: The varicose veins that are more an aesthetic problem.**

We call Type 1 or **PAVD -Predominantly Aesthetic Venous Disease** - the presence of small varicose veins that are the telangiectasies (spider veins) and reticular veins (microvarices). The telangiectasies (spider veins) are the small red or blue veins of the skin, with the thickness of a hair. They may be very small or a little larger and they are inside the skin. They present several formats, from small lines to large webs. They can be present in all the lower extremities: the thigh, the leg, the buttocks and, in some

cases, in the back. The reticular veins (microvarices) are larger, longer, bluish, and located under the skin, but linked to it. These veins are frequently linked to the telangiectasies. The association of telangiectasies of the thigh's lateral area with these reticular veins that extend on the lateral area of the knee and reach the leg is very common. In spite of being a health problem, these small veins they do not cause immediate risks, but they affect the patient's self-esteem. Therefore, the patient usually seeks the doctor for the aesthetic subject. That is the reason why we called this type **PAVD - Predominantly Aesthetic Venous Disease**. They are the small varicose veins of the skin, such as the telangiectasies (spider veins), and under the skin, such as the reticular veins (microvarices). Although it is not a health problem in a short term, it is still a long term disease because some problems may appear, as bleeding, for example.

**Type 2 - FAVD: The varicose veins that are a health problem (functional) as well as an aesthetic problem.**

We call Type 2 or **FAVD - Functional and Aesthetic Venous Disease** - the presence of veins of medium and larger caliber. It is a disease already and it involves some risks and problems for the patient. For that, it should be treated. Besides, it can cause some cosmetic concerns for the patient. In this case the two problems should be considered: the disease (functional) and the aesthetics. **FAVD - Functional and Aesthetic Venous Disease** - happens when the patient presents both, the varicose veins that needs treatment to avoid complications, and concerns about the appearance.

It is important to recognize these two conditions: the disease (functional) and the appearance (the aesthetics), because during the treatment the doctor should not only correct the disease, but also use aesthetic techniques to fulfill the desire of a better appearance of the patient's lower extremities.

A perfect balance between the two factors is desirable in the treatment. This type of varicose veins is very frequent, and aesthetic and functional techniques are used for this

treatment, so that the disease is corrected and, at the same time, an aesthetic result is also obtained. For this double characteristic, this condition type needs specific attention from the doctor, and it is classified in one separated group.

**Type 3 - FVD : The Varicose veins that are a health problem (functional) without an aesthetic concern by the patient and that still haven't presented complications.**

We call Type 3 or **FVD – Functional Venous Disease**, all of the situations of varicose veins where the aesthetic subject is not involved. In this case, the disease (functional) is present, without the patient's concerns with the appearance (aesthetics). In some cases the varicose veins can reach great dimensions before presenting complications. The treatment, in this case is directed more to the functional subjects of the venous disease, although the concern with the appearance is present for the most careful doctors.

**Type 4 - CVD: The varicose veins that are a health problem (functional) and that already present complications.**

We call Type 4 or **CVD – Complicated Venous Disease**, all of the situations when varicose veins have shown complications . The most frequent complications are Trombophlebitis , Leg Ulcers, Hyper-pigmentation , the Venous Eczema, Bleeding , Fibrosis, the Dermatitis Ocre, Infections , Pain, and Pulmonary Embolism. In this case, the disease (functional) is present, without the patient's concern with the appearance (aesthetics). They are usually patients who have had this problem for a very long time without treatment, and that already present complications. In this case, the doctor concentrates more on the disease, that is very serious, and that could cause serious restrictions for the patient.

All these types follow an evolution, but it does not mean that one type will necessarily evolve to the other. The varicose veins always get worse, but each patient will have a different history. The disease is chronic and it should always be accompanied by a competent vascular surgeon that will know how to choose the best treatment alternatives,

## **Why the varicose veins appear**

The defect in the varicose veins is in the valves and in the walls of the veins. There are two types of veins in the lower extremities: the superficial veins that are in the fat layer under the skin and that can be visible, and the deep veins that are in the middle of the musculature of the leg and they are not visible. There are communicating veins that link the superficial and deep veins. The valves guide the blood in the veins of the members, always from the superficial veins to the deeper ones, through the communicating veins. They impede the blood to go the wrong way when the person is standing or sitting.

The arteries take the blood from the heart to the whole body. The blood then, after oxygenating and feeding the cells, returns to the heart through the veins. When the person stands or sits, the blood goes to the feet easily, because the heart impels it. But how does the blood return if there is no in the leg? When we stand or sit, there is a certain difficulty for the blood to return to the heart. In the people whose veins have normal valves and walls, the blood waits for the opportunity to return, without causing any alteration. In the people whose valves are faulty, an inversion in the flow road of the blood happens. The blood then starts going from top to the bottom and from the deep to the superficial veins. This fact causes an increase of the blood volume inside the superficial veins, resulting in the dilation process and the emergence of the varicose veins. The blood goes back to the heart through the peripheral heart, that actually, exists. It is the musculature of the calf. But this heart only works when we move, contracting and relaxing the muscles of the leg. When the muscles contract, they impel the blood upward accomplishing the circulation.

## **The Role of the Saphenous Veins**

We have 4 Saphenous Veins: 2 in each member. There are the Long Saphenous Vein and the Short Saphenous Vein. The Long Saphenous Vein is a vein that goes from the internal part of the ankle to the groin, in the internal surface of the leg and thigh. The Short Saphenous Vein goes from the lateral part of the ankle to the knee, in the posterior part of the leg. The Saphenous Veins are little important for the normal circulation of the leg and because of that, they can be removed without problems. But as they are superficial veins, of easy access, extensive, and of good caliber with thick walls, they are removed to substitute other occluded vases, as the coronary arteries, the main arteries of the heart. The Saphenous Veins are then a type of "substitute " of vases for the body.

However, the Saphenous Veins have connection with all of the veins of the surface of the leg, and they are frequently involved in the varicose veins disease. When this happens, they are very extensive, and they need to be removed. The doctor never removes all the four. He only removes the sicker ones, leaving the ones that are perfect or little sick, because then can eventually be necessary in heart surgeries, or even to substitute other important vases of the body that are altered or that suffered a cut as in an accident, for instance.

All of the veins of the members are interlinked. It is as if it was a tree, where the Saphenous Veins are the roots, their branches are the trunks, the microvarices are the branches, and the vases are the leaves.

In the treatment it is important to identify where the problem is and to treat all of the areas that are involved to obtain a good result. If the vases (the "leaves") are involved , then only they will be treated. If the microvarices ("the branches") are also involved , then they should also be treated. Otherwise they will produce new "leaves". If the "roots" (the Saphenous Veins) or the "trunks" (their branches) are sick, then all of them should be treated.

For this reason, a detailed clinical exam should be made by the doctor in the initial consultation, that will determine the flow of the blood. Knowing the type of the varicose veins, the doctor can decide on the best treatment. If necessary, the doctor will request ultrasound, pletismography or even x-rays or angioressonance for better evaluating the alterations and planning the treatment. But the most experienced doctors, with a simple clinical exam, can already diagnose and know exactly what to do to correct both, the aesthetic problems and the venous disease.

### **Standing or sitting may increase the problem of varicose veins.**

The positions that increase the probability of varicose veins is standing or seating. As I've already mentioned, when people are in these positions there is a difficulty for the returning of the blood in the circulation and it is exactly when the varicose veins appear. Being in movement makes the calf heart work, what will impel the blood upward, avoiding varicose veins. When we lay down, the heart is in the same level of the leg, what facilitates the return of the blood. If we put our feet up, the heart is down and the feet higher. Then, the blood returns much more easily.

### **Why veins of several sizes, from the “spider veins” of the skin to the large varicose veins appear**

When the larger veins of the surface expand, the large varicose veins may appear. When it is the branches of these veins that expand, or in the initial phase of the disease, we have the microvarices that are bluish itineraries seen under the skin. When the veins of the skin are the ones that expand, we have the spider veins, whose technical name is telangiectasia: tele means far, angio means vase and ectasia means dilatation. Therefore, dilatation of the far vase.

The Saphenous Veins are the main superficial veins, and they are involved in the process of appearance of varicose veins. As I mentioned before, there are two in each leg: the Long Saphenous Vein and the Short Saphenous Vein.

There are links among the varicose veins, microvarices and "spider veins". Everything happens as if it was a net, that transmits the pressure of the blood volume. The ones that dilate first are the ones that receive larger volume of blood in the wrong direction (from the top to the bottom and from inside to outside, the inverse of the normal – which is from the bottom to the top and from outside to inside), or where the blood gets more blocked. The veins of the skin generate the "spider veins". When they expand, the micro veins appear. The expanding of these microvarices result in varicose veins. If the inverted flow or the accumulation of blood reaches only a part of the veins, only these ones will expand; if they reach all the veins, then all of them will dilate.

If the flow in the inverted direction happens only in the skin, the spider veins will appear. For its treatment, it is enough to take care of these small vases. But if a vein forces the flow in the inverted direction to the skin, this creates the vases to accommodate the blood. The treatment then is not only to remove the vases, but also the vein that is causing the inverted flow and the accumulation. This situation is called "combined telangiectasies"; the vases are linked to a vein and both have alterations. This process is very wide in the lower extremities and it may reach several types of vases at the same time or separately. The same way, a saphenous vein can cause an inverted flow to the veins of the skin or to peripheral ones. Depending on the veins that dilate, we will have a different type of varicose veins.

A careful initial exam carried out by a doctor is very important before any treatment takes place, because with a clinical exam or an ultrasound, he will identify these flow patterns and understand if there are problems in the Saphenous Veins (roots), in the peripheral ones (trunks), in the reticular or microvarices (branches) or in the telangiectasies or spider veins (leaves). Once identified, he will suggest the best treatment options, considering the disease and the aesthetics.

The varicose veins may affect the health in different levels, but there also are aesthetic issues involved.

The varicose veins of TYPE 1 are mild varicose veins that do not expose the patient to immediate complications, although they can cause stains and bleeding in the future. They are the ones of greatest aesthetic concerns.

The ones of types 2 (aesthetics and functional) and 3 (functional) can be mild or severe, depending on the stage. But even if they are considered mild ones, the disease already exists, predicting problems for the future, and they should be treated, whenever possible.

The one of the type 4 are the severe varicose veins; the ones that can provoke serious complications as thrombophlebitis, clots, edemas, eczema, ulcers (wounds) and bleeding. They are a serious disease that may not show symptoms for years. The complications takes the patient to incapacities and even to risk of life, when thrombophlebitis and clots happen. However, even these more severe varicose veins can be easily treated with modern techniques that accomplish correction with low scars and marks.

The mild varicose veins can be treated in agreement with the own patient's desire and with the doctor's orientation. On the other hand, the severe varicose veins should be treated whenever possible. The treatment of the mild varicose veins, although it is not immediately necessary from medical point of view, is not useless, because these varicose veins that now configure a problem that affects specially the patient's self-esteem, will be a severe disease in the future. Furthermore, although rarely, they can present complications. Then the aesthetic treatment of varicose veins is not only a good for appearance but it's also a treatment for a disease. To treat the aesthetic varicose veins is to "unite the useful to the pleasant". Pleasant is to improve the appearance and the self-esteem; useful is to control a disease that can cause complications in the future.

## **The Complications of the Varicose Veins**

We call Type 4 or CVD – Complicated Venous Disease all of the situations where complications have already happened. The most frequent complications are Trombophlebitis, the Leg Ulcers, Hyper-pigmentations , the Venous Eczema, the Bleeding, Fibrosis, the Ocre Dermatitis, the Infections, the Pain, and the Clot of Lung. They are usually patients who have had this problem for a very long time.

All these types follow an evolution, but it does not mean that one type will necessarily evolve to the other. The varicose veins always get worse, but each patient will have a different history and it doesn't mean, although it is possible, that the type 1 will turn into type 4.

### **Trombophlebitis**

The blood should flow inside of the vases, without interruptions. However, when a bleeding happens as in an accident or caused by some disease, or even a controlled bleeding as the ones of any surgery, the body tries to protect itself and control this situation that causes a risk of death. The most important is the coagulation system. The coagulation then is a good thing, when it happens for protection. But in certain situations this coagulation system can malfunction and cause serious problems.

When a vein has sick walls, as in the varicose veins, or if the system that makes the blood flow, the venous pump of the calf is working poorly, as in forced rests because of diseases or in long trips, the Venous Thrombosis can happen.

The Venous Thrombosis can be superficial or deep. The superficial happens in the vases of the surface of the member and the deep in the internal vases of the leg .

## **Superficial Trombophlebitis**

The venous thrombosis can have several causes, and among them, the Varicose Veins. When the coagulation of the blood inside the superficial veins happens, it is called Superficial Trombophlebitis.

When the veins of the members are extensive, as in the varicose veins, the whole process of flow of the blood is in jeopardy. We can say, in a simple way, that when the blood doesn't have a good flow in vein, it tends to coagulate, forming a clot (the thrombus) inside the vein. The superficial thrombophlebitis is one of the complications of the varicose veins. A coagulation inside the vase happens, interrupting the circulation as if it was a cork.

The patient complains about pain, redness and swelling in the varicose veins. The Superficial Venous Thrombosis has an effective treatment, but the great problem is that, although rarely, the clot can progress through the superficial veins to the deep veins. It can also, starting from the deep veins or through great superficial veins, release small pieces of coagulated blood, the embolus.

The embolus can, through the circulation, reach the lung. It stops there, impeding the circulation to happen and putting the life in risk. The progression of a Thrombus to the lung is called the Clot of Lung or Pulmonary Embolism.

## **Deep Venous Thrombosis**

The Deep Venous Thrombosis, or DVT, is a fearsome occurrence, because it puts in risk the patient's life. Several are its causes, and one of them is the presence of Varicose Veins of Lower Extremities. It is a serious disease that is characterized by the formation of clots inside the deep veins of the leg. One of its main consequences in a short term is the Clot of Lung which can lead to death, prolong or complicate hospitalization after a surgery or even make the individual disabled for certain social activities and work, when it causes sequelae.

The pos-phlebitic syndrome can happen some years after DVT. It is characterized by swelling, dark coloration and hardening of the skin, eczema (chronic allergy of the skin) and ulcers (wounds) due to the alterations and scars left by DVT in the venous system. Certain people have risk factors for this disease. There are certain situations that can cause the disease; they are the risk situations. The individual factors and risk situations can characterize the patient as being in the risk group for the development of the disease. This risk is called Thromboembolic Risk .

We can mention as main individual risk factors for DVT, besides the varicose veins: people older than 40 years old, obesity, individuals who have already had thrombosis, the use of contraceptives and therapy of hormonal replacement, neoplasia, pregnancy and puerperal period, individuals with genetic abnormality of the coagulation system, traumatism, surgeries, immobilization for long periods, hospitalization, diseases of the heart or lungs, and serious infections.

## **Pulmonary Embolism**

The Lung Clots happens when a piece of the clot that was formed inside the deep veins of the leg is released and reaches the blood vessels of the lungs. Depending on the size of the clot, the person cannot survive. In the case of varicose veins, although it can happen, the Pulmonary Embolism is a rare occurrence.

## **Dermatitis Ocre**

The difficulty that the blood has to return to the heart in the cases of varicose veins, ends up in stasis and swelling . The swelling and stasis cause a series of alterations in the lower extremities, mainly in the more distal part. The migration to the skin of elements of the blood happens, and they stay in places where they should not be. The presence of

iron, derived of the hemoglobin of the blood, gives the skin of the leg or the ankle a dark and rusty aspect, called "Dermatitis Ocre."

### **Eczema**

Blood stasis also causes the inflammation of the skin, resulting in a venous eczema. The skin itches, peels and swells. It is an unpleasant and inconvenient problem caused by the varicose veins.

### **Varicose Ulcer**

It is a difficult to control complication of the varicose veins. Furthermore, it is an unpleasant condition. The Venous Ulcer appears after a long evolution of the varicose veins. It is a wound, that can have a great extension, reaching a great part of the individual's leg.

### **Bleeding**

The Bleeding is a serious complication that happens when the varicose vein increases so much of size, that breaks the skin that recovers the vein and perforates it, causing a profuse bleeding.

### **Swelling**

It is a sign of venous stasis. The individual's lower extremities are swollen, mainly in the end of the day.

## **Pain**

Usually the patients with varicose veins complain about pain in the lower extremities associated with the weight and fatigue sensation that gets worse with the heat. Other factors may cause pain, such as sitting or standing for very long periods of time during the day, being, therefore, more intense in the end of the afternoon. In the women those uncomfortable symptoms tend to get worse in the premenstrual period and pregnancy. Associated with these symptoms, people usually complain about itching, tingling, heat, cramps, and the swelling of the ankles and lower extremities. These symptoms are proportional to the amount of varicose veins.

## **The order in which the complications appear**

In a large number of patients, the varicose veins can be present for many years without complications, but the treatment should not be postponed, because the complications can take many years to appear, When they finally appear in a more advanced age, the effective treatment cannot be established anymore.

In the beginning of the evolution of the Varicose Veins of lower extremities, it is observed the weight sensation or fatigue in the end of the day. The visible varicose veins of several sizes appear slowly. The edema begins to appear in the end of the day. After there is the pigmentation (dermatitis ocre) and eczemas may appear. In evolution of the disease, Trombophlebitis, ulcers and bleeding may occur .

## **Prevention**

We should remind that the varicose veins are a chronic problem that depends on hereditary factors. This tendency will accompany the patient for his lifetime. We cannot speak in cure for varicose veins, but in control. Using the approach of the Continuous Treatment for Varicose Veins, we can promise that the primary varicose veins won't be neither an aesthetic nor a health problem for the patient. Some preventive measures can be used to lessen the tendency of have varicose veins. These measures are going to be described and I'm going to explain how they work.

Elastic stockings: they are the main preventive measure. They act deviating, through the communicating veins, the blood of the superficial veins where the varicose veins are formed, to the deep veins, where varicose veins do not exist. The people with important hereditary tendency and the ones who sit or stand up for a long time for professional reasons should wear elastic stockings. These medicinal stockings, although they seem simple, must be prescribed by a specialist. The correct stockings have to be used, according to the disease presented by each person. We've found many mistakes related to the usage of medicinal stockings without medical orientation.

Avoid the sun and the heat: The sun, sauna, and very hot and long baths cause the heating of the skin and the flow of a larger amount of blood to the vases of the skin. If a larger amount of blood flows in the superficial vases, they get used to that and dilate. The heat is a factor that favors the emergence of vases in the people that are predisposed to have this problems.

Effective measures include avoiding sauna, very hot and long baths, and the sun on the beach. When exposed to the heat of the beach or in the swimming pool, people have to be sure to enter the water every 15 or 20 minutes to avoid the heating of the leg. Sunbathing should be avoided and never happen after 10 o'clock a.m., when the harmful sun beams are more frequent.

Avoid overweight: The weight excess overloads the circulation and causes varicose veins. To have good nutritional habits is healthy for the whole body. The weight excess also causes cellulite, which is associated with the microvarices and telangiectasies (spider veins).

Do exercises: The exercises improve the muscular strength of the leg and, therefore they improve the return circulation. The best ones are walking, running and swimming.

Avoid the use of hormonal contraceptives: The feminine hormones (pills, menopause treatment, hormonal replacement) keep liquids and they increase the pressure inside of the veins. They also soften the walls of the vessels and they are some of the main factors that cause varicose veins.

Avoid sitting or standing for a long time: As already seen, the varicose veins appear when people stand or sit and they don't appear when people are laying or in movement. When, for professional or social reasons it is necessary to be sit or stand for a long time (at work, in parties, in long trips), we should move the feet, as if we were accelerating a car. This movement of the ankle, called back-flexing, makes the musculature of the calf to contract rhythmically, putting the "outlying heart" in action. That makes the circulation work and avoids varicose veins.

High heels : there was a myth that high heels were harmful. But recent researches carried out by the State University of Campinas showed that high heels are not only not harmful, but can be beneficial.

Varicose veins of lower extremities are a very frequent problem, that affects most of the women and many men too. Maybe it is one of the diseases that, although it is common, is the most ignored by the people. The lack of information and the prejudice against the disease is evident: from the confusion in relation to the heart surgery, where the "bypass operation" is confused with Saphenectomy, that is a type of varicose veins surgery, until the wrong concept that it is not worth to treat the varicose veins, because varicose veins will appear after some time again.

## **Questions and answers about varicose veins**

### **Do internal varicose veins exist?**

They don't exist. The internal or deep veins are protected by the musculature that impedes their dilation. What really exists are other serious diseases that affect the internal veins, but not the varicose veins. Even though the superficial veins are inside the fat tissue, that doesn't protect them and that's where the varicose veins appear.

### **Can the varicose veins, the microvarices and the telangiectasies happen altogether?**

Yes. They are signs of the same disease. In short: it is the increased pressure inside the veins, caused by alterations in the valves, resulting in an inverted blood flow, causing the dilation of the superficial veins. This happens due to a hereditary tendency and it is worsened by several factors. The veins are present in the lower extremities since the birth, but they don't get attention. When the dilation happens as a result of the disease, they become visible and unaesthetic.

### **Do varicose veins appear again after some time?**

No. Other varicose veins may appear and they should be treated. A person who has the vesicle or the appendix operated will never have problems in these places again because there is only one appendix and only one vesicle. The veins, on the other hand, will always exist. It is not possible to remove all of them. A vein that was normal in the moment of a treatment can become sick later, because the hereditary tendency will exist during all the lifetime. This fact doesn't invalidate the treatments, because if the varicose veins are not treated, they can lead to serious complications in the future. For this reason, the Continuous Treatment of Varicose veins was designed to control the aesthetic problem and the disease as they appear.

### **Can the superficial veins be removed without causing problems?**

Yes. The veins that really matter are the deep veins, they are the responsible for the venous circulation. The superficial veins can be treated or removed without any consequence for the body.

### **Is there a "cure" for the varicose veins of the lower extremities?**

The varicose veins of the lower extremities are a chronic disease that depends on a hereditary tendency and on aggravating factors. Since it's linked to the hereditariness, we cannot speak about "curing" the varicose veins, because the tendency will always be present and new varicose veins may appear during the life of the individual. However, this disease may be controlled and the people can live their life without the health and aesthetic problem of varicose veins. We can say that, nowadays, only the people who want to have varicose veins will have them. The medicine has modern and simple techniques that control the problem with great functional results.

Vases on the face

### **The Treatments**

We can identify the treatments as preventive or curatives. The preventive treatment is what reduces the occurrence of new varicose veins and the curative eliminates the varicose veins that already exist.

The Program of Continuous Treatment of Varicose Veins includes the Sclerotherapy, the Cryosclerotherapy, the LASER, the Microsurgery with local anesthesia, the Microsurgery with epidural anesthesia, the Conventional surgery of varicose veins, the surgery of varicose veins with Endovascular LASER (EVLT), that will be used according to each kind of problem and to the patient's desire. These are the most modern resources available for the treatment of all of the types of varicose veins of the lower

extremities. The Naturale Clinic has doctors who specialize in all the techniques of treatment for varicose veins. They are able to indicate the best treatment options. In the table below, we see each kind of varicose veins and the adequate treatments. You can also find details about each treatment type.

TYPE	Treatments
Type 1	Sclerotherapy Cryosclerotherapy LASER NdYAG Pulsed Light Microsurgery of Telangiectasies Microsurgery with local anesthesia Microsurgery with Epidural Anesthesia Continued Varicose veins Treatment – CVT
Type 2	Sclerotherapy Cryosclerotherapy LASER NdYAG Pulsed Light Ambulatory Phlebectomy Conventional Varicose Veins Surgery Endovascular Venous Treatment - EVLT Continued Varicose veins Treatment – CVT
Type 3	Ambulatory Phlebectomy Conventional Varicose Veins Surgery Endovascular Venous Treatment - EVLT
Type 4	Conventional Varicose Veins Surgery Endovascular Venous Treatment - EVLT

# Sclerotherapy

Sclerotherapy	
Indication	Type 1 e Type 2
Place for the procedure	Clinic
Rest after the procedure	There is not
Time for the procedure	10 to 20 minutes
Return to the regular activities	immediately
Return to Professionals Activities	immediately
Return to Sport Activities	1 Day
Sun Restrictions	Yes
Cost	Low Cost

The sclerotherapy is a treatment designed to the elimination of the telangiectasies(spider veins). A very concentrated liquid, called sclerosant, is injected through micro needles that are extremely thin, inside the vases. This liquid causes an alteration in the cell of the vase making it disappear. When the liquid continues in the circulation and reaches the

larger vases, it is diluted by the blood and it loses the concentration and, therefore, the effect. This treatment is indicated only for the spiders veins , because if the liquid be applied in larger vases, it can cause stains and serious complications. There is a wide range of substances that can be used and one of the most used is the glucose, due to the patient's great tolerability and because it does not cause any allergy. To avoid complications, it is not convenient to apply great volumes of sclerosant at a time. That's why the treatment should be made by sessions. In each session, a certain sclerosant volume that is well accepted by the patient is injected. The treatments that promise to correct everything in only one day are not suitable, because they increase the risk of complications. The sclerotherapy should not be used in vases of larger caliber. Sclerotherapy, when correctly used in the small vases only, is very efficient and doesn't cause any problems. It doesn't cause much pain. It should always be done by specialist doctors, avoiding complications of the treatment that may happen when the treatment is applied by not trained personnel.

## Cryosclerotherapy

Cryosclerotherapy	
Indication	Type 1 e Type 2
Place for the procedure	Clinic
Rest after the procedure	There is not
Time for the procedure	10 to 20 minutes
Return to regular activities	immediately

Return to Professionals Activities	immediately
Return to Sport Activities	2 hours
Sun Restrictions	There is not
Cost	Low Cost

Cryosclerotherapy is a new, low cost and revolutionary method to treat the spiders veins .

There has always been a desire for a new method, that could be more efficient than the current one. It is a difficult task, because this new method should reduce the number of necessary sessions for the treatment, decrease any painful sensation that could be caused (the current sclerosant treatment presents little pain), be free of complications and have a competitive cost.

The cryosclerotherapy was created in Europe and modified by us . We introduced the method in the Naturale Clinic 6 years ago, and we carried out the first research in the University of Campinas to develop new equipment. The new technology improved and facilitated the application of the method.

Cryosclerotherapy, a very ingenious method, uses the same products (sclerosants) as the normal sclerotherapy, but an equipment reduces the temperature of the product injected to 40 degrees below zero. The sclerosant in that temperature, besides normal effect, has an additional physical effect. The cold destroys the internal wall, eliminating it. A great reduction in the number of necessary sessions is observed for the treatment and maintenance ( increasing the potency of the treatment). Besides, it decreases the painful sensation that was already small (analgesic effect because of the cold) and reduces the

small equimoses that appear during the treatment (because of the constriction of the vases, caused by the cold).

In practice, the researches proved that the treatment reduces to half the number of necessary sessions for the correction, and it presents less complications. For presenting less equimoses, there are no restrictions to sun exposures and to exercises that can be taken within some hours after the treatment (after the doctor's authorization). The cost for session is a little larger than the conventional treatment, but because of the reduction of the number of sessions, the final cost of the treatment ends up being lower than the one of the conventional treatment.

Our clinic was one of the pioneers in the country to use and to develop this new method. We have already accomplished more than four thousand of sessions of cryosclerotherapy, widely accepted by the patients, including the current clients who used the old technique and chose to change to this new method.

## LASER for the Spider veins

### Nd YAG and Pulsed Light

LASER	
Indication	Type 1 e Type 2
Place for the procedure	Clinic
Rest after the procedure	There is not
Time for the procedure	10 to 20 minutes

Return to regular activities	immediately
Return to Professionals Activities	immediately
Return to Sport Activities	2 hours
Restrictions	Sun 30 Days before and 15 Days after
Cost	High Cost

A treatment that was intensively studied in the last decade is the LASER. The LASER equipment produces lights with certain characteristics that can be controlled with perfection. These characteristics make the red blood cells in the vases of the skin select and absorb the light. These selective characteristics cause the alteration of the energy inside of the vases to be eliminated, but they don't harm the other tissues around the vases. Therefore, the objective of eliminating the small vases of the skin is reached.

The LASER enters the skin without harming it and reaches the hemoglobin of the vases, which is red. The hemoglobin that receives the LASER increases the temperature of the blood and causes the elimination of the vase.

In the face, the LASER is more efficient because the vases are very superficial. In other words, a small skin extension exists between the surface and the vases, what reduces risks and facilitates the treatment.

The treatment is accomplished at the clinic, without the need of any anesthesia, allowing the patient to return to his activities on the same day.

There are restrictions for sun exposures before and after the treatment.

The LASER is the best treatment for the vases of the face and small vases of the lap. For the treatment of the lower extremities, the laser is not equally efficient for all kinds of vases. Therefore, we prefer using the LASER associated with the cryosclerotherapy.

The Laser can be used for the smaller and more superficial vases, where it is efficient, and the cryosclerotherapy for the deeper skin vases.

A new type of LASER, the EVLT, has been used in the surgeries with great efficiency. It will be mentioned later in this article

## Microsurgery

### The Microsurgery of Spiders Veins

The Microsurgery of Spider Veins	
Indication	Type 1
Place for the procedure	Clinic or Day Hospital
Hospitalization	Not necessary
Rest	2 Days
Time for the procedure	20 a 30 minutes
Return to domestic activities	2 Days
Return to Professionals Activities	2 Days
Return to Sport Activities	7 Days
Restrictions	Sun bath for 30 to 45 Days

The presence of vases in the skin in the shape of grapes or branches is called combined telangiectasies. These formations have a matrix vein in their base and it is the real

responsible for the small vases of the skin that appear due to the factors that we already explained. In the Microsurgery of Combined Telangiectasia, these small veins are extracted with local anesthesia. This surgery stops the flow of the blood in the inverted direction. Later, the telangiectasias (spider veins) are treated by cryosclerotherapy. The technique is an easy one; it uses one or two small incisions with less than 1 mm. The incisions are so small that don't need any type of suture. The patient returns home immediately after the procedure, resting for 2 days.

## The Microsurgery under Local Anesthesia

The Microsurgery under Local Anesthesia	
Indication	Type 1
Place of the procedure	Clinic or Day Hospital
Hospitalization after the procedure	Not necessary
Rest after the procedure	4 Days
Time for the procedure	1 to 3 hours
Return to domestic activities	4 Days
Return to Professionals Activities	4 Days
Return to Sport Activities	7 Days
Restrictions	Sun for 30 to 45 Days

It is indicated for the lightest cases of microvarices. It can be carried out in a Day Hospital, or in the clinic. Anesthesia is applied only in the itinerary of the microvarices. The microvarices are removed through small incisions; so small that don't need stitches. The surgery is made using micro-hooks that remove the veins and eliminate them. A rest period of usually three to four days is necessary. After that, the normal activities can be restarted. After seven days, the patient can exercise. It is necessary to avoid the sun for some time, which varies according to each case. This procedure removes the reticular veins (microvarices) that are under the skin, forming bluish or greenish lines and that are frequently related to the telangiectasies or vases. These veins are very frequently on the back of the knee and on lateral area of the thigh and the leg. When they are associated the telangiectasies (spider veins), they are a source of inverted blood flow and blood stasis. In other words, they are partly responsible for the emergence of the vases and they should also be treated for better results. It is as if the reticular veins or microvarices were the branches and the vases the leaves. It doesn't make any sense to treat the leaves and to leave the branches that will bear new leaves after some time.

### Microsurgery under Epidural Anesthesia

The Microsurgery under Epidural Anesthesia	
Indication	Type 1
Place for the procedure	Day Hospital
Hospitalization after the procedure	Not necessary
Rest after the procedure	4 Days
Time for the procedure	1 a 3 hours
Return to domestic activities	4 Days

Return to Professionals Activities	4 Days
Return to Sport Activities	7 Days
Restrictions	Sun for 30 to 45 Days

It is basically the same procedure that can be carried out with local anesthesia, but it's used for patients who have a large number of microvarices. In this case the Epidural anesthesia substitutes the local anesthesia. When the varicose veins are in great number, this procedure is more comfortable. The surgery is made at the day hospital. The patient may leave the hospital on the same day. The rest period after the procedure and the restrictions are the same ones indicated for the treatment with local anesthesia.

### **Ambulatory Phlebectomy under Local Anesthesia**

A Ambulatory Phlebectomy under Local Anesthesia	
Indication	Type 2 e 3
Place for the procedure	Day Hospital or Clinic
Hospitalization after the procedure	Not necessary
Restless	4 Days
Time for the procedure	1 a 3 hours
Return to domestic activities	4 Days
Return to Professionals Activities	4 Days

Return to Sport Activities	7 Days
Restrictions	Sun for 30 to 45 Days

This treatment is indicated for patients who have collateral varicose veins of larger caliber (medium or big), but in a small number without the involvement of the saphenous vein. The veins are removed with local anesthesia, as in a microsurgery. The patient can go back home on the same day. The procedure can be accomplished at day hospital or in the Clinic.

## Surgery

### Conventional Varicose Veins Surgery

Conventional Varicose Veins Surgery	
Indication	Type 2, Type 3 e Type 4
Place for the procedure	Day Hospital
Hospitalization after the procedure	Not necessary in most cases - 1 Day in some cases
Rest after the procedure	7 to 30 Days
Time for the procedure	1 to 5,5 hours
Return to domestic activities	7 to 21 Days
Return to Professionals Activities	7 to 30 Days
Return to Sport Activities	7 to 45 Days

It is a procedure that is accomplished at the Day Hospital or in a General Hospital, for patients with varicose veins of medium and thick caliber: Types 2, 3 and 4. The need of hospitalization will depend on the extension of the procedure, and it may vary from patient to patient. The time of rest is longer, from 7 up to 30 days.

This procedure will treat the visible veins and their causes. The Saphenous Veins, the collateral ones, the perforating, and the reticular veins will be removed if they are sick. Therefore, the "roots" (Saphenous Veins ), the "trunks" (collateral branches) and the "branches" (microvarices) are treated. The "leaves" (the vases) will be treated later with cryosclerotherapy.

The choice of the veins to be removed

During the pre-surgery procedures, the patient goes through a phase that we call "demarcation" of the varicose veins. In this phase, the surgeon draws lines on the patient's legs that identify the sick veins. The veins that should be treated in the surgery were identified in advance in clinical exams or through ultrasound, showing the doctor the points that present flow in the inverted direction or stasis. During the surgery, the surgeon will follow the previous demarcation, as if it was a project, so that the results are the best possible.

The issue of the Saphenous Veins

The decision of extracting or not the Saphenous Veins is a very important one. We have 4 Saphenous Veins . The 4 Saphenous Veins most of the time are not visible, but the signs of problems with them are identifiable by specialists. When they are sick, they should be removed. If the Saphenous Veins are extracted or not, the immediate result is not going to vary much. But in a long term, the varicose veins can reappear more easily if the sick Saphenous Vein wasn't removed. The healthy Saphenous Veins, as "roots" of

a tree, do not appear. But if the tree is removed in the level of the earth, without the roots, it will sprout again. Then, to really control the problem and make the solution work longer, the "roots" - Saphenous Veins - , should be eliminated, if necessary. On the other hand, the Saphenous Veins although they aren't important for the circulation of the blood, they can be used as substitutes or steppes, for the coronary arteries that are the vases of the heart, or for the arteries of members, when these are attacked. But the patient doesn't need to worry; the surgeon will always take the best decision, and only remove the sick Saphenous Veins that are useless as substitute. In some cases, only 1 or 2 that present more alterations may be removed, leaving the other ones that are normal or with small alterations, preserved for eventualities. In certain situations, the Saphenous Veins are so altered and cause so many problems that all of them have to be removed. But in these cases, they would be useless as substitutes and they can be eliminated. If they are not removed, the surgery will fail. If they are necessary for a substitution in the future and they are not available, then other techniques can be used, such as the use of mammary arteries and the angioplasties. The Surgeon, using his common sense, always takes all these factors into account and chooses the best for the patient.

### **Endovascular Laser Treatment - EVLT**

Endovascular Laser Treatment - EVLT	
Indication	Type 2, Type 3 e Type 4
Place for the procedure	Day Hospital
Hospitalization after the procedure	Not necessary
Rest after the procedure	4 to7 Days
Time for the procedure	1 to 5,5 hours
Return to domestic activities	4 to 7 Days

Return to Professionals Activities	4 a 7 Days
Return to Sport Activities	7 a 20 Days
Restrictions	Sun for 30 Days

This technique has recently arrived from Europe. It is indicated for the varicose veins of larger caliber and its main advantage is the short resting time after the procedure. Instead of removing the veins of great caliber as the saphenous vein, they are disabled and treated by an optic micro fiber, that transmits the LASER. The vein is not removed but it is disabled and separated from the circulation system. The great advantage is the postoperative that it is much more simple. The surgery produces less bruises too and the patient can return to the normal activities within some days. As all of the treatments, it cannot be used in all of the cases. We have used this new technique as a routine. Its results have been excellent and the doctors at the Clinic Naturale are very satisfied. Clinic Naturale's doctors have actively participated in researches related to EVLT in Brazil.

The equipment used is a LASER of Diode, that emits a light bunch in the range of the infrared. The potency used varies from 4 to 15 Watts. An interesting fact is that a lamp of 15 watts can hardly illuminate a room for someone to read a magazine, but a LASER of 15 Watts is able to perforate the magazine. This luminous energy is quite tamed, and used in the medicine in several fields, such as in the Surgery of Varicose veins.

The equipment imported from Europe is especially developed for this purpose and it is already approved by the FDA of the USA and by the NICE of England, the most rigorous quality control of medical equipment in the world. It is registered in ANVISA of Brazil also.

Therefore, The Clinic Naturale can already offer this modern treatment in its two units and in its Day Hospital and Medical Center São Paulo LASER, of which it is one of the owners.

### Continued Varicose veins Treatment

The treatments of varicose veins are efficient, but it is important that the patient understands the chronic characteristic of the problem. For this reason, the patient need constant contact with the doctor and new procedures may be necessary in the future.

As we have already seen, the varicose veins are a problem caused by a hereditary tendency, which cannot be changed. Therefore, the ones who have this tendency, will have it forever. The treatment of the varicose veins should be initiated as soon as the first symptoms are felt and must take place for all the patient's life. A series of applications for the vases is planned (we prefer the cryosclerotherapy), followed by a maintenance treatment with an application per month or an annual series. If after some time the microvarices appear, a Microsurgery is accomplished with local or Epidural anesthesia. Later, if serious varicose veins, usually after a pregnancy, appear, then a conventional or a LASER Surgery for Varicose veins of Thick Caliber is necessary to solve the problem. With this approach, treating the problems as they appear, the person with tendency to have varicose veins won't have complications. As a result, we have the aesthetic problem solved and the control of a disease that will never present complications. But for efficient and long term results, it is necessary to be aware that the treatment should be made in a continuous and regular way. The patient should always apply the preventive measures and frequently see a Vascular Surgeon / Angiologist that will evaluate the scenario and suggest the necessary treatment. This process is called "Continuous Treatment of Varicose veins Program". It is important to remember that varicose veins don't "appear again" after being treated; what really may appear other veins. That's why the treatment should be continuous. People who already show varicose veins of larger caliber, in fact

the situation of most of the people, can seek for treatment at any time, using the same techniques and making the maintenance since then.