

Crucial Overlooked Disease- Varicose veins

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Introduction

- Veins used to carry blood with a small amount of oxygen in our body to the lungs and heart.
- Varicose veins are painful and can lead to injury or damage to the legs.
- This condition of varicose veins can be caused by narrowing of the valves in the arteries, or inflammation of the arteries called phlebitis.

What are veins and what is their function?

- Veins are the type of blood vessels which returns deoxygenated blood from all the organs in the body toward the heart so that it can pump that blood to the lungs for its conversion into oxygenated blood
- **Function 1:** When the different organs of our body use oxygen from the blood to perform their functions, they will release the used blood which contains waste products (such as carbon dioxide) into the veins.
- Then these veins transport this deoxygenated blood to the heart and return it to the lungs, where the waste carbon dioxide is then released and more oxygen is loaded by the blood and taken back to the rest of the body by the arteries and now this blood is known as oxygenated blood.
- **Function 2:** Veins also have function of acting as a store for unused blood.
- When our body is at rest, only some portion of the available blood in the body circulates.
- The rest of the blood remains in inactive state in our veins and that blood enters active circulation when the body will become more active and needs additional blood to carry out oxygen demand of the entire body.
- This storing capacity is because of the elasticity or ability of expansion of the walls of the veins.
- **Function 3:** Veins have different sizes which depend upon their location and their function.
- The largest veins are located in the center of the body, function of these veins is to collect the blood from all other smaller veins and channeling it into the heart.
- These larger veins get branched into smaller and smaller as they move away from the center of the body.
- The veins which are closer to the skin surface are known as superficial veins.
- The veins which are deeper and closer to the centre of the body are known as deep veins.
- There are some other veins which connect the superficial veins to the deep veins, and those types of veins are known as perforating veins.

According to the report of **Cleveland Clinic**, “**What are varicose veins and spider veins?**”

- **Varicose veins:** Veins which bulge with pools of blood when they fail to circulate blood properly. These visible and bulging veins are called varicose veins. They are more commonly seen in the legs and thighs, but they have tendency that they can develop anywhere in the body.
- Large varicose veins are even visible, bulging, palpable means they can be easily felt by touching, are long and dilated >4 millimeters in diameter).
- **Spider veins:** Small "spider veins" can also appear on the skin's surface. These look like short and fine lines, "starburst" clusters, or a web-like maze.
- “They are not palpable. Spider veins are also most commonly seen in the thighs, ankles, and feet”.
- Sometimes they may also appear on the face.
- The medical term for spider veins is ‘telangiectasia’

Incidence

Varicose veins affect:

- 20-25% of adult females
- 10-15% of adult males

Risk factors-

Heredity:

Heredity is the most common contributing factor for causation of varicose and spider veins.

Dr Abhilash (2020) stated that “**Gender:** Women are more likely to suffer from varicose veins.”

Approximately four times more as men are affected, this suggests that female hormones may be a risk factor.

Age: Generally, most elderly individuals shows some degree of varicose vein occurrence.

Occupation: Occupations which requires prolonged standing cause a great amount of pressure to develop in the leg veins.

Obesity: increased weight of body causes a great amount of pressure on the veins in the legs.

According to **British Vein Institute**, “**Pregnancy:** it is seen that upto 70-80% of pregnant women develops varicose veins during the first trimester of their pregnancy as it causes an increase in hormone levels and blood volume which in turn causes veins to enlarge.”

In addition to this the enlarged uterus within the pelvis also causes obstruction to blood flow and increased pressure on the veins.

Approximately 60-70% of varicose veins caused due to pregnancy will get disappeared within about three months of delivery

What causes varicose and spider veins?

- When there is absence or weakness of valves in the veins, it may cause poor venous circulation (blood flow in the veins) and that can lead to varicose veins.
- Valves present inside veins normally acts to ensure that blood in the veins does not flow in a backward direction (retrograde) which is away from the large (deep) veins and the heart.
- These valves are mainly located in perforating veins and some deep veins.
- In some other cases, weaknesses in the vein walls can cause pooling of the blood.
- The walls of the blood vessels may become weaker and less competent than normal, which cause the volume of blood in the veins to increase, which ultimately leads to varicose veins.

Less commonly, varicose veins are also caused by such diseases as:

- Phlebitis (inflammation of the veins),
- Blood clots or because of any obstruction to blood flow in the veins.
- Congenital abnormalities of the veins.

Stages of varicose veins

- C-0: no visible or palpable signs of venous disease.
- C-1: "Telangiectasia / reticular veins."
- C-2: Varicose veins
- C-3: Edema
- C-4: skin changes appear due to venous disorders: pigmentation eczema.
- C-5: skin changes due to venous disorders, lipodermatosclerosis and atrophy blanche.
- C-6: skin changes occur with active ulcers (Venous insufficiency).

Symptoms

- Aching and heavy legs (often worse at night and exercise).
- Cramping
- Itching
- Swelling
- Fatigue
- Some people may complain of a dull ache and pressure sensation felt from varicose veins

Other less common, but more severe symptoms of varicose veins may include:

- Bleeding
- Thrombophlebitis (blood clot within the varicose vein)

- Skin ulcer
- In the case of chronic venous disease, the skin may also become fibrotic and scarred, leading to the formation of an opposing "hourglass" appearance.
- The appearance of spider veins on the affected legs.
- Swelling of the ankle is especially noticeable in the evening.
- The appearance of light brown skin by shiny skin near the affected vein.
- Redness, dryness and itching of the skin areas called stasis dermatitis or venous eczema that occur as a result of waste products formed on the leg
- Cramps can develop especially if you move “suddenly like standing.”
- In some people the skin above the ankles may shrink (lipodermatosclerosis) because the oil under the skin becomes hard.
- White spots such as spots can be seen on the ankles. This is known as “atrophieblanche.”

PATHOPHYSIOLOGY

- There are two vascular systems in the lower legs, deep and superficial.
- Connecting the two systems has many branches.
- To maintain adequate venous compensation by gravity, there are two main approaches:
- The presence of valves, which prevents blood from flowing back
- The deep venous system is aided by pressure exerted on the muscles, apparently the calf muscles
- In the case of varicose veins it is the beginning of these two processes that are often problematic.
- It was thought that valve dysfunction, which led to blood clots / stasis, was the cause of the open vein, but that hypothesis no longer exists, and the current assumption that a weakness in the vein wall causes a narrowing of the artery.
- If this happens around the valve, then the valves of the vein will no longer be able to meet in the middle and the valve will fail, resulting in back blood flow
- The most commonly involved ducts are those near the sapheno-femoral tract (in the area of the artery), however they may occur in other areas for example where the saphenous artery and popliteal artery meet.
- This is how the main varicose veins develop.
- Secondary varicose veins are less common, and are caused by pelvic or abdominal masses that prevent blood from returning to the lower legs.

- There are several other vascular problems that are often mistaken for varicose veins.
- Common varicose veins are often called truncal arteries.
- Reticular veins are thick veins that are not part of the saphenous vein system, while Telangiectasia (more commonly known as Thread veins or Spiderveins) are filtered venules.
- These are not varicose veins, but are associated with them, and as a result their treatment will be introduced over time.

Diagnosis

- Taking history
- Physical examination
- Trendelenburg inspection
- Further investigations

Taking history

Medical history includes questions about:

- Vascular problems
- Severe leg injuries
- Leg ulcers that a person may have had before.
- Any other risk factors, including family history of varicose veins.
- Any symptoms (such as swelling, fatigue, or cramps in your legs) and what the person has been doing to treat their symptoms.

Clinical evaluation of varicose veins

- The patient should take off his pants, wear underwear, and STAND as gravity allows the size of the veins to be seen.
- In testing, complete vascular distribution should be noted (especially which leg) As well as the presence of any skin changes (eczema / hair loss / redness / presence of sores).
- Be sure to check both the front and back of the legs as the short saphenous is running through the back of the leg.
- Tapping should be done after asking if the patient is in pain.
- Check that the veins are weak, which may be a sign of thrombophlebitis, or hard, which may indicate inflammation.
- Also touch the skin around the veins with any signs of dermatosclerosis or atrophic Blanche. Have the skin warm when you touch it



- Place your fingers on the body (5cm inferiomedial to the femoral pulse).
- Make the patient cough. If the mixture is not suitable it will enjoy a soft liquid.
- The Trendelenburg test, although infrequently and informally, is a useful test
- Have the patient lie on the floor with the leg raised.
- Tie a tourniquet area around the saphenofemoral junction and get the patient to stand up; you should see a slower blood flow to the arteries from the bottom of the tourniquet.
- Check the veins as you remove the tourniquet.
- If the saphenofemoral joint is ineffective, then there will be sudden blood flow to the arteries from above the tourist site.
- If this is not the case, repeat, gradually moving the tour area away, until there is room for inefficiency.
- Abdominal tests are used to try to detect any abdominal or abdominal cramps that can cause secondary varicose veins.
- Color Doppler scans venous scans are a common examination of varicose veins, as they indicate the location and degree of valve dysfunction, as well as a thorough venous system examination.
- If there are problems with the arteries, surgery is also considered an arteriogram
it may be necessary to prevent the formation of ulcers after surgery.

Management

1. Conservative
2. Active
3. Surgical

Conservative- Therapies vary depending on the size and location of varicose veins, the presence of symptoms, and in cases associated with skin changes (for example, inflammation, dermatitis or ulcer, for example).

• In short, potential treatments may include:

- Leg height while sitting or lying down,
- Squeezing clothes with single or multiple systems,
- Pressure stock
- Anti-inflammatory drugs
- gel applicants

Kerker (2018) stated that “How can compressed stockings help with varicose veins?”

- Compression stockings work by simply pressing the leg, thereby reducing the amount of blood and pressure in the arteries.
- Ideally, they should be worn when the leg is not swollen.
- Older or obese people often have difficulty wearing socks, which should be worn when the patient is standing.

Anti-inflammatory drugs and gel applicants

- Anti-inflammatory drugs such as ibuprofen and aspirin can be used as part of a non-invasive treatment for thrombophlebitis.
- Gel articles applied for the treatment of varicose veins related symptoms, such as inflammation, inflammation and stiffness

Effective treatment

- Sclero-therapy (injection of fluid or foam into a vein to form a lump and permanently destroy a vessel),
- Laser treatment
- Surgery (removal of varicose veins, or vascular dislocation).

What is sclerotherapy?

- Sclerotherapy "involves the use of a special needle to inject something directly into a vein.
- Sclerosants can be used with 5% Ethanolamine oleate, 0.5% Sodium tetradecyl sulphate
- This solution irritates the lining of the veins, causing the vein to swell and the blood to clot.
- The vein then turns into red tissue which can eventually disappear in appearance.
- The most commonly used substances in sclerotherapy are hypertonic saline and sodium tetradecylsulfate (Sotradecol), and polidocanol (Aethoxysklerol, Asclera).

Laser Treatment

- Laser and light pulse (ILP) treatments kill small spider veins and small varicose veins by heat.
- Heat causes red tissue, which eventually closes the vein.
- Side effects can include slight discomfort in the affected area, skin changes, and blister formation

Vascular Surgery

- For varicose veins that are too large to respond to sclerotherapy or laser treatment, surgery is an option.
- The most common procedure for binding and undressing - tightening the vein and removing the problematic part.
- This can be done with local or general anesthesia.

- If the vein is close to the skin surface, it may be removed with a small piece of tissue that does not need to be sewn

Endless Laser

- Endo-venous laser is a new technique in veins that was only surgically treated.
- A small amount of laser fiber is placed inside the vein, pressure is applied to the vein, and the laser transmits lumps of laser light.
- This causes the vein to collapse.
- Patients also report mild pain and faster recovery than nausea and vomiting.

Radiofrequency Ablation

- Radiofrequency ablation is another form of varicose veins.
- A small catheter delivers radiofrequency energy (instead of laser energy) directly to the vein wall, causing it to burn and collapse.
- About a year later, the vein disappears.

Cryosurgery

- The cryo-probe is transferred to the saphenous vein following saphenofemoral ligation, and the probe cools with No₂ or CO₂ at a temperature of 85 degrees Celsius.
- The vein is stiff and can be reversed after 5 seconds of cold.

Alternative therapies and medicines

Chestnut extract has been shown to work with chronic venous insufficiency (CVI), a condition associated with varicose veins in which the leg arteries have difficulty restoring blood to the heart.

Vegetables can help improve inflammation and discomfort, but be sure to talk to your doctor before trying to extract horse chestnut seeds or other vegetables or dietary supplements.

Prevention

Exercise:

- Move your legs.
- “Walking is a great way to promote blood circulation in the legs.”

Wear pressure socks:

- They lighten the legs and help the arteries and veins to move blood more efficiently.

View your weight and diet:

- Losing extra pounds takes unnecessary pressure on your arteries.
- Low-salt foods can prevent inflammation caused by water retention.

Remember your choice of clothing.

• ***Avoid high heels.***

- Low-heeled shoes are more effective for calf muscles, improving muscle strength and performance. Avoid tight-fitting clothing that catches your waist, legs, or hips

Raise your legs.

- To improve leg circulation, take short breaks throughout the day and raise your legs above your heart rate.
- According to **Times of India report (2020)**, “Avoid sitting for long periods of time or standing for long periods of time. Change your position regularly to encourage blood flow. Try to walk every 30 minutes.
- Avoid sitting with your legs crossed. This position prevents the occurrence.”

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