DISORDERS OF VENOUS SYSTEM

Varicose Veins

"Any dilated, elongated and tortuous vein irrespective of size"

Varicose veins are common in the superficial veins of the leg which are subject to high pressure when standing. Varicose Veins represent a significant clinical problem not only a cosmetic issue but they represent underlying chronic venous insufficiency with the ensuing venous hypertension which lead to a wide spectrum of clinical manifestations ranging from mild symptoms to cutaneous findings like varicose veins, reticular veins, telangiectasia, swelling, skin discoloration & ulceration.

Etiology:
Varicose veins more common in women, and are linked with heredity. Other factors are pregnancy, obesity, menopause, aging, prolonged standing, leg injury, and abdominal straining. Varicose Veins are bulging veins that are larger than spider veins, typically 3 mm or more in diameter.

The cause of primary varicose veins is incompetent venous valves that result in venous hypertension. Secondary varicose veins result from deep venous thrombosis and its sequelae or congenital anatomic abnormalities.

Symptoms:

1. Aching, heavy legs (worse at night and after exercise).
2. Appearance of spider veins (telangiectasia) in the affected leg.
3. Ankle swelling.
4. A brownish-blue shiny skin discoloration near the affected veins.
5. Redness, dryness, and itchiness of areas of skin (stasis dermatitis or venous eczema) because of waste products building up in the leg.
6. Minor injuries to the area may bleed more than normal & or take a long time to heal.
7. Lipodermatosclerosis, the fat underneath the skin becomes hard.
8- Atrophie blanche .. whitened irregular ‘scar like’ patches at the ankle.

9- Restless legs syndrome

**Complications**

1- Pain, heaviness, inability to walk or stand for long hours thus hindering work.

2- Skin conditions/Dermatitis which could predispose to skin loss.

3- Skin ulcers especially near the ankle (Venous Ulcers).

4- Long standing venous ulcers is a pre malignant (Ca., or Sarcoma)

5- Severe bleeding from minor trauma.

6- Superficial thrombophlebitis (blood clotting within affected veins. It can extend into deep veins leading to a more serious problem.

7- Acute fat necrosis may occur, especially at the ankle of overweight patient more in females.

**Venous Assessment**

the patency of the deep venous system and valvular competence should be determined prior to operative treatment. The deep system is usually patent if there is no history of DVT.

**Perthes test & Brodie-Trendelenburg test**

**Doppler in Varicose veins diagnosis**

Duplex US with color-flow imaging (sometimes called **triplax ultrasound**: This is a special type of 2-dimensional ultrasound that uses Doppler-flow information to add color for blood flow in the image.

**Treatment of Varicose Veins**

**Non surgical treatment**

It include :

- Elastic Support
- Periodic elevation of the lower extremity
Exercise of the leg muscles

Anti inflammatory medication (ibuprufen or aspirin)

Diosmin (Daflon) 500 mg tab increases capp.resistance &decrease capp. Permeability

Sclerotherapy

Endovascular laser and radiofrequency ablation

**Surgery in Varicose veins**

To be done only when there is definite clinical and Doppler evidences of venous incompetency and reflux.

**General indications are :-**

Symptoms of aching, heaviness & cramp

Complications of venous stasis such as pigmentation, dermatitis, indurations, superficial ulceration and thrombosis of varicosities

Surgery is not indicated for those patients who obtain relief by elastic stocking support

**Operation includes:-**

1-High ligation at the saphenofemoral or saphenopopliteal junction.

2-Insertion of stripper into the greater or lesser saphenous vein.

3-Removal of the tributaries.

4-Resection of the incompetent perforator veins.

5-Stripping of the saphenous veins

6-Closure

**Complications of Surgery :-**

1-Dysesthesia due to injury to the sural or saphenous nerve.

2-Subcutaneous haematoma.

3-Postoperative wound infection
DEEP VENOUS THROMBOSIS

Is the formation of a blood clot (thrombus) in a deep vein. It commonly affects the leg veins, such as the femoral vein or the popliteal vein or the deep veins of the pelvis. Occasionally, the veins of the upper limbs are affected (Paget–Schrotter disease). Thrombi usually develop first in the calf veins growing in the direction of flow of the veins. Extensive DVT can extend into the iliac veins or the inferior vena cava. There is a significant risk of the thrombus embolizing and traveling to the lungs causing a pulmonary embolism.

Etiology

Virchow’s triad

Is a group of three factors affect clot formation

1- Rate of flow
2- Thickness (consistency) of the blood.
3- State of the vessel wall

Deep veins thrombosis occurred in the left leg more than on the right leg due to compression of the left common iliac vein by the overlying right common iliac artery.

Risk factors:

- Recent surgery or hospitalization
- Advanced age
- Obesity
- Infection
- Immobilization
- Contraceptive pills
- Tobacco
- Air travel (Economy class Syndrome)
- Thrombophilia (tendency to develop thrombosis)
Signs & Symptoms:-

The classical symptoms of DVT include:

-Pain, swelling & redness of the leg & dilatation of the surface veins.

-Clinically silent DVT unless pulmonary embolism develops.

May occur in 25% of all hospitalized patients.

Physical examination

Physical examination is unreliable for excluding the diagnosis of DVT.

1. The increase in the circumference of the affected leg as compared with the contra lateral limb.

2. **Homans’ test**: Dorsiflexion of foot elicits pain in posterior calf but it is of little diagnostic value and it may be dangerous due to the possibility of dislodgment of loose clot.

3. **Pratt’s sign**: Squeezing of posterior calf elicits pain.

**Phlegmasia alba dolens (Milk leg, white leg)**

The leg is pale and cool with diminished arterial pulse due to spasm. It usually results from acute occlusion of the iliac and femoral veins due to DVT.

**Phlegmasia cerulea dolens (Blue leg)**

There is an acute and nearly total venous occlusion of the entire extremity outflow, including the iliac and femoral veins. The leg is usually painful, cyanosed and edematous. Venous gangrene may supervene.

Intra venous venography

the gold standard in the diagnosis of DVT but because of its invasiveness, it is rarely performed nowadays.

Blood Tests

D- dimer level:

This cross-linked fibrin degradation product is an indication that thrombosis is occurring.
Other blood tests:-

- **Complete blood count (CBC)**
- **Primary coagulation studies (PT, PTT, Fibrinogen)**
- **Liver Enzymes**
- **Renal function and electrolytes**.

**Plethysmography**

A device used to measure changes in blood flow or air volume in different parts of the body. It may be done to check for blood clots in the arms and legs, or other extremities to determine circulatory capacity.

**Doppler ultrasonography**

Duplex US with color-flow imaging (sometimes called *triplex ultrasound*):

**Complication of DVT**

DVTs occur in about 1 per 1000 persons per year. About 1-5% will die from the complications (i.e. **Pulmonary Embolism**).

Although pulmonary embolism can arise from anywhere in the body, most commonly it arises from the calf veins. The venous thrombi predominately originate in venous valve pockets and at other sites of presumed venous stasis. To reach the lungs, thromboemboli travel through the right side of the heart: right atrium; Right ventricle; Pulmonary artery.

**Post-phlebitic syndrome**

It occurs in 15% of patients with deep vein thrombosis.

It present with:

- Leg edema
- Pain
- Nocturnal cramping
- Venous claudication
- Skin pigmentation
- Dermatitis & Ulceration
Treatment Of DVT

1-Hospitalization

Hospitalization should be considered in patients with more than two of the following risk factors as these patients may have more risk of complications during treatment:

- bilateral DVT
- renal insufficiency
- Obesity
- recent immobility
- chronic heart failure
- cancer

2-Anticoagulant

Patients are initiated on a brief course (i.e., less than a week) of heparin treatment while they start on a 3- to 6-month course of warfarin.

In patients who have had recurrent DVTs (two or more), anticoagulation is generally "life-long."

3-Thrombolysis

Is generally reserved for extensive clot, e.g. an iliofemoral thrombosis. Although there may be an increase in serious bleeding complications.

4-Compression stockings

Elastic compression stocking should be routinely applied "beginning within 1 month of diagnosis of proximal DVT and continuing for a minimum of 1 year after diagnosis. Starting within one week may be more effective.

5-Inferior vena cava filter

It reduces pulmonary embolism and indicated in those patients with recurrent pulmonary emboli while on anti-coagulant. It is called Greenfield filter. It may prevent pulmonary embolization of the leg clot.
Prophylaxis

**General Medical Inpatients**

In acutely ill medical patients who have been admitted to the hospital with *congestive heart failure* or *severe respiratory disease*, or who are *confined to bed* and have one or more additional risk factors, including active cancer, sepsis, acute neurologic disease, or inflammatory bowel, we recommend prophylaxis with LDUH Enoxaparin or unfractionated heparin may be used. LMWH may be more effective.

**Surgery patients**

LMWH are routinely administered to prevent thrombosis in patients who have undergone surgery.

LMWH administered S.C. by injection.

Pregnant women who have history of thrombosis may need LMWH. Early and regular ambulation (walking) is important as it activates muscle pump, increasing VR and prevent stasis.