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Trends on management of superficial venous disease

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ABSTRACT

Venous disease is more common in the society but less addressed than peripheral arterial disease. This is commonest in people who are sedentary workers, people standing for prolonged period, obase. Usually this group of people do not visit a doctor until it restricts him from regular work, ultimately causing a burden in the community. Early diagnosis of venous disease and its' management is important. Understanding venous pathology, educating people about disease, conducting awareness program among target group of people are essential. Superficial venous disease includes both venous insufficiency and venous thrombosis. Management options of varicose vein and thrombophlebitis are discussed in the presentation.

Keywords: Superficial venous disease, Varicose vein, Chronic venous insufficiency, Superficial thrombophlebitis

INTRODUCTION

Superficial venous disease broadly falls into two categories i.e. venous insufficiency/reflux (varicose veins, chronic venous insufficiency) and veno-occlusive disease including thrombosis (superficial thrombophlebitis, deep vein thrombosis). In 50% of the general population, superficial venous disease presents in the form of 'spider veins' or 'reticular veins' and 20-25% cases varicosities, pigmentation and ulceration.

SUPERFICIAL VENOUS SYSTEM

Superficial venous system includes saphenous veins, lateral venous complex, deep venous system and perforating veins.

CALF-PUMP SYSTEM

The venous supply to the leg is via a deep and superficial low-pressure system. Flow of blood directs from the

peripheries toward the heart maintained by calf-pump system. Valves within the vein helps overcome the pull of gravity and maintains a unidirectional flow of blood. When these valves become incompetent, retrograde flow of blood leads to venous hypertension, resulting in superficial venous disease.³

SUPERFICIAL VENOUS INSUFFICIENCY

Superficial venous insufficiency (SVI) is a common condition that occurs when there is decreased blood flow from the leg veins up to the heart. Without adequate flow, the blood can pool in the leg veins and result in common conditions, such as spider veins, reticular veins and varicose veins.⁴ It occurs when the venous wall and/or valves in the superficial leg veins are not working effectively, making it difficult for blood to return to the heart from the legs. Symptoms of superficial venous insufficiency are tired heavy legs, pain, swelling, skin changes, ulcers (Figure 1). The predisposing factors are hereditary, standing occupation, chair sitting, tight

underclothes, raised toilet seats, lack of exercise, smoking, oral contraceptives. Superficial venous disease is well described by the CEAP classification, which have clinical, etological, anatomical and pathophysiological components (Table 1) (Figure 2).⁵



Figure 1: Skin changes (Lipodermatosclerosis).

Table 1: CEAP classification.

Clinical	C0 - No visible or palpable signs of venous disease C1 - Telangiectasias or reticular veins C2 - Varicose veins C3 - Edema C4 - Changes in skin and subcutaneous tissue secondary to CVD C4a - Pigmentation or eczema C4b - Lipodermatosclerosis or atrophie blanche C4c - Corona phlebectatica C5 - Healed ulcer C6 - Active venous ulcer C6r - Recurrent active venous ulcer
Etiology	Ep - primary Es - secondary En - no venous cause identified
Anatomy	As - superficial veins Ap - perforator veins Ad - deep veins An - no location identified
Pathophysiology	Pr - reflux Po - obstruction Pro - reflux and obstruction Pn - no pathophysiology identified



Figure 2: Varicose vein.

MANAGEMENT OF CHRONIC SUPERFICIAL VENOUS INSUFFICIENCY

Diagnostic evaluation

Diagnostic evaluation includes a. history and clinical examination, b. non-invasive vascular laboratory testing which now routinely includes duplex color scanning, c. invasive investigations or more complex imaging studies including ascending and descending venography, venous pressure measurements, magnetic resonance imaging.⁶

Treatment options

Treatment options for superficial venous disease includes conservative treatment, vein ablation treatments, surgical procedures. The mainstay of conservative treatment are avoiding long periods of standing, keeping legs above the thigh while sitting, avoiding crossing legs, maintaining ideal body weight, walking program, compression therapy and micronized purified flavonoid fraction.⁷ Compression therapy includes elastic compression bandages, compression stockings, pneumatic compression therapy (Figure 3). Vein ablasion is the most modern treatment option for superficial venous disease. A number of endovenous modalities are getting popular for the treatment of varicose vein. Endovenous laser ablation therapy is the first endovenous procedure that had made the revolution in the treatment of varicose vein. Other ablasion techniques are radiofrequency mechanochemical ablasion, glue, steam and the recent microwave ablasion (Figure 4). Surgical procedures are the traditional methods includes flush ligation of long saphenous vein at the sapheno-femoral junction; short saphenous vein at the sapheno-popliteal junction, stripping of long saphenous vein and phlebectomy (Figure 5).



Figure 3: Compression stockings.



Figure 4: Endovenous laser treatment.

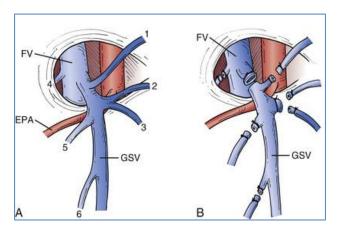


Figure 5: Flush ligation of long saphenous vein at sapheno-femoral junction.

Post-operative care

Immediately after surgery or endovenous ablasion the legs are wrapped with elastic bandages which are kept for 24 to 72 hours followed by application of graduated compression stockings (23-32 mm of Hg) for the day time and continued for 6 months. During the postoperative period patient should sit with his feet elevated, coconut oil to be applied to the skin of whole leg throughout the period before sleep followed by keeping the legs slightly elevated above the trunk while sleeping. Patient should return to work and driving within a week of surgery if endovenous procedure is done, in a month after flush ligation. Swimming and cycling are allowed after dressing have been removed. For prevention of the superficial venous disease or for avoiding recurrence after surgery, patients must be advised to control weight, to perform adequate physical exercise, avoidance of smoking, avoidance of sedentary activities, control of hypertension, modification of profession.

Superficial thrombophlebitis

Thrombophlebitis is a common disease of the superficial veins that most commonly occurs in the lower extremities (especially in the great saphenous vein; vena saphena magna) and often is connected with varicose veins. It can also occur elsewhere, e.g., on the neck (external jugular vein), on the chest (Mondor's disease) or in the upper extremities.8 In superficial thrombophlebitis an inflammatory process of the venous wall is almost always present in addition to thrombosis. The prognosis of superficial thrombophlebitis is usually good. A more extensive superficial venous thrombosis may spread to the deep veins. Deep venous thrombosis has been described to be associated with about 20% and pulmonary embolism with about 4% of superficial venous thrombosis that have been more than 5 cm in length.⁸ Ultrasonography is helpful in the differential diagnostics and it is recommended to exclude deep vein thrombosis. D dimer is not helpful. A superficial thrombophlebitis of ≥ 5 cm in length is according to current guidelines treated with a mid-treatment dose of low-molecular-weight heparin (LMWH) or with a prophylactic dose of fondaparinux for 6 weeks. In addition, topically administered non-steroidal antiinflammatory drugs (NSAIDs) may be used if needed. Predisposing factors for superficial thrombophlebitis include damage to the venous intima (superficial trauma, drug infusion, intravenous use of illicit drugs), decreased venous flow (varices, chronic venous insufficiency, prolonged immobilization), pregnancy, increased thrombotic tendency (malignancy, coagulation disorder, hormonal therapy) or a combination of these. However, the condition may also appear without any clear predisposing factor. It may be associated with vasculitis like polyarteritis nodosa, Behcet's disease and commonly Buerger's disease (i.e. thromboangiitis obliterans) which usually affects the small and medium-sized arteries in smokers. Approximately one third of patients with thromboangiitis obliterans also have superficial venous thrombi. Recurring superficial venous thrombi in a young person who smokes much suggest Buerger's disease. The

common clinical picture shows painful, reddish and swollen affected venous area. The vein is hard and tender on palpation. An extensive phlebitis often is associated with fever and a mild increase of C-reactive protein level. A superficial venous thrombosis may spread to the deep veins. Deep vein thrombosis is the more likely to spread either to the saphenofemoral junction in the groin or to the perforator veins in the popliteal area. The diagnosis is based mostly on clinical examination. Ultrasonography is recommended to confirm the diagnosis and to exclude deep venous thrombosis. The aim of treatment is to alleviate local symptoms as well as to prevent thrombosis from spreading into the deep veins and embolization to lungs. Symptoms may be alleviated with compressive stockings, cold compresses and by keeping the leg elevated. The recommended treatment (American College of Chest Physicians 2012) for a superficial thrombophlebitis of ≥5 cm in length is either a mid-treatment dose of LMWH (e.g. enoxaparin 60 mg once daily) or with a prophylactic dose of fondaparinux (2.5 mg once daily) for 6 weeks. Similar treatment is indicated, if the thrombus is located (irrespective of its length) at a distance of less than 3 cm from the saphenofemoral junction located in the groin.8 6-week therapy with rivaroxaban (10 mg once daily) is also a good option.9 During pregnancy, LMWH treatment is used and continued throughout pregnancy and for 6 weeks after the end of pregnancy. 10 If the criteria for anticoagulant therapy described above are not met, the patient may use oral NSAIDs, which alleviate symptoms but do not affect the thrombotic process. Topically applied NSAID products can also be used as an addition to anticoagulation therapy. Topically applied anticoagulant cream may alleviate the symptoms of a local venous thrombosis, but there is no evidence that it would prevent the spreading of the thrombosis to the deep veins. Antimicrobial therapy is not needed and it should only be commenced if the patient clearly has another concomitant infection. Surgery appears not to be beneficial in the acute phase of superficial thrombophlebitis.8

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