



VARICOSE VEINS – A COMPRESSION STOCKING THERAPY TO PROVIDE FOR THE PRIMARY TREATMENT – A LITERATURE REVIEW

P. N. Rajarajan^{*1}, P. Jeganathan¹, K. Rajeswari¹, N. Sumathy¹ and A. Uma Devi²

^{*1}Assistant Professor, Department of Microbiology, The Madura College, Madurai.

²Assistant Professor, Department of Microbiology, Mannar Thirumalai Naicker College, Madurai.

***Corresponding Author: Dr. P. N. Rajarajan**

Assistant Professor, Department of Microbiology, The Madura College, Madurai.

Article Received on 21/11/2019

Article Revised on 11/12/2019

Article Accepted on 31/12/2019

ABSTRACT

Varicose veins are a common condition affecting the lower limbs. Apart from being a cosmetic problem, it can have some serious complications if not treated in time. Varicose Veins can be explained as a disorder of the veins especially of legs wherein they get affected due to the backward flow and turbulence in the circulation of the blood. The veins get perverted, become enlarged due to a condition called edema. The disease also shows many associated symptoms which worsens the condition of the varicose veins. The present article deals with brief introduction regarding the etiopathogenesis of varicose veins, related causes and symptoms, the non-surgical treatments and the study of compression therapy involves special elastic stockings or compression bandages that put gentle pressure on the legs to help prevent swelling. The aim of writing this review is to evaluate the role of compression stocking in the primary treatment of varicose veins.

KEYWORDS: Complications, Varicose veins, Varicose ulcer, compression stocking.

INTRODUCTION

Varicose veins have been recognized as a chronic disorder since ancient times as their discussion is documented from the days of Hippocrates 2500 years ago.^[1] The condition, affected by man's upright position and by gravitational forces, is wide spread, involving at least one out of five individuals in the world, hence making this a very common condition. 20% of the population suffers with varicose veins.^[2] The term varicose is derived from Latin word varicose, which means dilated. Varicose veins are a common condition caused by weak or damaged vein walls and valves. Varicose veins may form whenever blood pressure increases inside your veins. This can happen because of pregnancy, constipation, a tumor, long hour standing or overweight and obesity. Varicose veins are common. The prevalence has been variously reported from as little as 2% to over 20% in population studies.^[3] This enormous variation results from the different populations studied, different definitions applied and the different assessment or examination techniques used. Western studies have shown that 20% population suffer from varicose vein and 2% have skin changes preceding to venous ulceration.^[3] As the patient's clinical manifestations are not obvious, in addition to the nursing measures, such as the appropriate rest, avoiding the long standing, elevating the affected limb and other basic

principles, external pressure can be applied to treat the patient with primary varicose veins of lower extremity.

Causes of varicose veins

The circulation of oxygen-rich blood from the lungs to all parts of the body, our arteries have thick layers of muscle or elastic tissue. To push blood back to heart, our veins rely mainly on surrounding muscles and a network of one-way valves. As blood flows through a vein, the cup-like valves alternately open to allow blood through, then close to prevent backflow. In varicose veins, the valves do not work properly and allowing blood to pool in the vein and making it difficult for the muscles to push the blood uphill. Instead of flowing from one valve to the next, the blood continues to pool in the vein, increasing venous pressure and the likelihood of congestion while causing the vein to bulge and twist. Because superficial veins have less muscle support than deep veins, they are more likely to become varicose. Any condition that puts excessive pressure on the legs or abdomen can lead to varicose veins. The most common pressure inducers are pregnancy, obesity, and standing for long periods. Being sedentary also may contribute to varicosity, because muscles that are out of condition offer poor blood-pumping action.



Fig. 1: Swollen Varicose veins.

Risk factors of varicose veins

The risk of varicose veins increases with age. Aging causes wear and tear on the valves in your veins that help regulate blood flow. Eventually, that wear causes the valves to allow some blood to flow back into your veins where it collects instead of flowing up to your heart. Women are more likely to develop the condition. Hormonal changes during pregnancy, premenstruation or menopause may be a factor because female hormones tend to relax vein walls. Hormone treatments, such as birth control pills, may increase your risk of varicose veins. During pregnancy, the volume of blood in your body increases. This change supports the growing fetus, but also can produce an unfortunate side effect like enlarged veins in legs. Hormonal changes during pregnancy may also play a role. If other family members had varicose veins, there's a greater chance. Obesity is

being overweight puts added pressure on your veins and Standing or sitting for long periods of time. Your blood doesn't flow as well if you're in the same position for long periods.

Complications

Complications of varicose veins are Painful ulcers may form on the skin near varicose veins, particularly near the ankles. A discolored spot on the skin usually begins before an ulcer forms. Blood clots are occasionally, veins deep within the legs become enlarged. In such cases, the affected leg may become painful and swell. Any persistent leg pain or swelling warrants medical attention because it may indicate a blood clot a condition known medically as thrombophlebitis. Bleeding is also occasionally, veins very close to the skin may burst. This

usually causes only minor bleeding. But any bleeding requires medical attention.



Fig. 2: Varicose veins in twisted form.

Compression therapy

Compression therapies as treatment choices for the patient, including medical elastic stocking therapy, elastic bandage therapy are commonly used.

Medical elastic stocking therapy

Medical elastic stockings, which are also known as vein-driven socks, are medical products designed specially and irreplaceable methods for treating varicose veins of lower extremity and preventing complications. Medical elastic stocking is one of the most widely used methods among mechanical compression methods because of its advantages of convenience, ease of use and sustained therapeutic function; it is applied to prevent varicose veins of lower extremity, relieve swelling and discomfort of leg, and support treatment during recovery period after lower limb vein stripping operation.^[4] It is more suitable for patients with poor body condition, asymptomatic, inability to tolerate surgery, disease limitation, varicose veins in pregnancy, and so on. By increasing the weaving density and strength of elastic material at ankle joint and calf, medical elastic stocking can achieve the designed pressure gradient, which means that the pressure decreases upward from the ankle gradually. Medical elastic stocking is a method for promoting venous blood flow back, preventing blood stasis of lower limb vein and making swelling of affected limb disappear through contracting the muscle of legs so as to pressurize the vascular cavity.^[6] According to the magnitude of pressure, the medical elastic stocking can be divided into low-pressure preventive type (daily health care for high-risk group, postoperative care), first-level middle pressure treatment type (treatment and prevention for

superficial varicose veins), second level high pressure treatment type and third level high pressure treatment type. Second-level or third-level high pressure treatment is commonly chosen. Meanwhile, the circumference of the ankle and the distal fibula of the calf should be measured firstly, and then proper elastic stockings are chosen according to the measurement results. If the measured result is between two models, try to select a smaller size. Medical elastic stockings have many advantages in preventing deep vein thrombosis after operation of primary varicose veins of lower extremity, relieving edema symptom, improving comfort and shortening hospitalization time. However, there are also some disadvantages such as time-consumption, laboriousness and inconvenience to wear. Medical elastic stockings are unsuitable for elderly and obese patients. Some products also contain latex and some other allergic substances, therefore, it is likely to cause allergies. In the early postoperative period of varicose veins of lower extremity, patients usually have lower limb edema and medial leg wounds. When wearing elastic stockings, the patient needs to pull the elastic stockings to the sides, and sock body in calf area will be pulled repeatedly, so as to smooth twist and crease. Therefore, it is unavoidable to clamp the wound, which causes the pain of the wound. What's more, the uncomfortable warmth of a compression stocking is mentioned as the reason why this type of surgery is usually postponed to colder seasons.^[7] As a result of gauze treatment for the wound after varicose vein surgery, wearing process is very easy to cause dressings off, which will result in wound exposure or even re-dressing, and bring inconvenience. Elastic bandage therapy.



Fig. 3: Compression stockings for varicose veins.

Elastic bandage as a basic therapy for treatment and prevention of varicose veins of lower extremity, the effect of treatment is directly from the pressure on the limb to promote the venous blood circulation of the lower limb, so that it can relieve pain and swelling of the affected limb, and elastic bandage is mostly used as a liner due to its functions for keeping the dressing in place and preventing limb edema.^[4,5] Elastic bandage should be bandaged from far to near. In addition, the high pressure should be put on the far side, and the low pressure should be put on the near to promote the blood flow. Tightness of the bandage and the pressure are the key to the successful treatment, otherwise it is easy to produce post operative complications, leading to surgery failure. Compression therapy systems include single or multi-layer bandages, and the elastic bandage can be divided into short, medium, long-stretch. Besides, the

choice of the elastic bandage should depend on various parameters, including convenience of use, and the patient's acceptability.^[6] Compared with medical elastic stocking, elastic bandage has the disadvantage of inconvenient use, and it is not easy to control. Patients do not have a good grasp of the pressure of the elastic bandage, which means that wearing bandage is too loose to achieve therapeutic effect, but too tight may cause pain, limb swelling, insufficient blood supply, and even ischemic necrosis.

DISCUSSION

There are various treatment methods for patients with varicose veins of the lower extremity. High-risk groups should pay more attention to some changes of their lifestyle. Smoking and obesity are risky factors for varicose veins of the lower extremity. Daily exercise,

including walking, ankle flexion and extension exercises, can improve the function of the gastrocnemius muscle pump, reduce lower extremity congestion and promote venous return. Moreover, patients should avoid sedentary station for a long time. Compression therapies are often used for patients to reduce edema, and different kinds of compression therapies on prevention of postoperative edema on donor legs are usually applied at four regions: foot (A area), heel (H area), ankle (B area) and calf (C area). Compression therapy, including medical elastic stockings, elastic bandages is the treatment choice for care. Compression stockings work simply by squeezing the leg, thereby reducing the amount of blood and pressure in the veins. There are various brands, styles, and colors of stockings available. The degree of pressure applied around the leg should be guided by a health care professional. Ideally, they should be fitted when the leg is not swollen, and they can be made-to-order for each patient. Older or obese individuals often have difficulty putting on the stockings, which must be worn when the patient is standing. These stockings typically lose some degree of the compression over time so they may need to be replaced regularly. Other treatment like surgical therapy are also available but it has high cost, large trauma, permanent scars and long recovery time needed. But there is no way to completely prevent varicose veins. But improving your circulation and muscle tone may reduce your risk of developing varicose veins or getting additional ones. The same measures can take to treat the discomfort from varicose veins at home can help prevent varicose veins, including exercising ,watching your weight, eating a high-fiber, low-salt diet, avoiding high heels and tight hosiery, elevating your legs and changing sitting or standing position regularly.

REFERENCES

1. Johnson G. The management of venous disorders in Rutherford RB 'Vascular surgery, 4th ed. Philadelphia: W.B. Saunders, 1994; 2: 1671-882.
2. Scurr JH. Venous disorders in Russel RCG, Williams NS, Bulstrode CJK. Baily and Love's short practice of surgery, 24th ed. London: Arnold; 2004; 954-69.
3. Russell RCG, Williams NS, Bulstrode CJK, "Venous disorders" in Bailey and Love's Short practice of surgery, Ch. 24; 24th Edn; Arnold publications, 2004: 954-973.
4. Partsch H, Wininger J, Lun B. Compression stockings reduce occupational leg swelling. *Dermatol Surg*, 2010; 30: 737-743.
5. Chassagne F, Molimard J, Convert R, Giraux P, Badel P. Numerical approach for the assessment of pressure generated by elastic compression bandage. *Ann Biomed Eng.*, 2016; 44: 3096-3108.
6. Hanna R, Bohbot S, Connolly N. A comparison of interface pressures of three compression bandage systems. *Br J Nurs*, 2013; 17: 16-24.
7. Houtermans-Auckel JP, van Rossum E, Teijink JA, Dahlmans AA, Eussen EF, Nicolai SP, Welten RJ. *Eur J Vasc Endovasc Surg*, 2009; 38: 387-391.