

## 82. Venous Stasis Syndrome = Postthrombotic Syndrome

*Last Updated: 8/18/2005*

**Q1: "I have had DVTs (=deep vein thrombosis) in both legs. Both my legs still hurt. It's not the terrible pain I had when I got the clot, but the legs ache and sometimes it feel like part of the leg is numb. I have to do a lot of walking for work and I'm wiped out at the end of the day. Is that normal?"**

A1: While some people who have had a DVT recover completely, others may be left with some symptoms in the legs: leg swelling, pain, aching, heaviness, and cramping are some of the symptoms. Dark pigmentation (postthrombotic pigmentation - figure 1) may occur, but does not cause symptoms and does not do damage. If there is severe leg swelling skin breakdown may occur, leading to ulcers, which are called "venous stasis ulcers".

**Q2: "I was in the hospital for treatment of DVT and then released on blood thinners. Immediately after release from the hospital I noticed that when standing for even a relatively short time both of my feet would fall asleep. It has been a year and a half since my hospitalization and it continues. I have had further ultrasound tests on both legs and there is no problem with arterial circulation. My doctors have not been able to account for the problem and I was hoping someone would be able to help."**

A2: These symptoms appear to be due to the previous DVT and are part of the postthrombotic syndrome: due to damage in the veins and valves in the veins blood can not flow out of the legs normally; it pools in the legs, particularly the lower legs upon standing, leading to leg swelling and pressure on the surrounding tissues. This can be experienced as unspecific discomfort, leg heaviness, cramping, pain or temporary numbness.

**Q3: "I have a Greenfield filter. I am told that it may not be necessary to continue on my Lovenox® treatments beyond two years because of the possible collateral growth of new veins around the filter located in the vena cava. I understand that in the smaller veins in the legs new spontaneous growth can occur around a clotted area, but since the vena cava is the main return vein from the lower torso does the same thing occur?"**

A3: Collaterals form whenever a vein clots and is blocked, wherever in the body that is. However, these are not new blood vessels that form, but preexisting small blood vessels that enlarge.

**Q4: "I'm 33 and went on the pill last year; and then I developed DVT. I was on coumadin® (= warfarin) for the next 7 months. I would like to know what to expect in the future. Will my leg recover completely, or will the swelling come and go? Will the rigidness come and go? Can I go back to the gym and exercise?"**

A4: DVT symptoms of swelling and pain and discoloration typically improve once blood thinners are started. Our body has proteins (plasmin and plasminogen) that try to dissolve blood clots. However, this is not always completely successful and leftover (residual) clot is found in about 50 % of patients 6 months after the acute event. While many people recover completely after a DVT, some develop chronic swelling, pain and discomfort.

### Terminology

Several different terms are used for the chronic symptoms that can occur after a deep vein thrombosis:

1. Venous stasis syndrome
2. Postthrombotic syndrome
3. Venous insufficiency syndrome
4. Postphlebotic syndrome

These terms all describe the same symptom complex.

What is it? Clots in the deep veins (DVT) lead to an obstruction of blood outflow from the legs or the arms back to the heart. When the body tries to heal from these clots the valves in the veins are often damaged. However, functioning valves are needed to prevent blood from pooling in the legs. Following a DVT the obstruction of the vein and the destruction of valves lead to impaired blood flow from the extremities back to the heart.

If a vein is completely blocked, neighboring smaller veins may enlarge to bypass the obstruction. These bypassing veins are called collaterals and can get quite large, particularly in the pelvis and abdomen in patients with thrombosis of the big vein in the abdomen (= inferior vena cava). Such collaterals can sometimes be seen as prominent veins underneath the skin. If good collaterals have formed, symptoms of leg swelling and pain are often not present or are only mild.

However, in some patients collaterals do not get all that big and can not carry all the blood needed to drain the legs or arms; this then leads to chronic arm or leg swelling, pressure and pain.

### Who develops it?

Patients who have had a DVT may or may not develop the venous stasis syndrome. Typically, the more extensive the DVT was, the more severe the syndrome will be. However, this is not always so: patients who have had very extensive acute DVTs with severe acute symptoms may recover completely and may not be left with any chronic symptoms. Approximately 60 % of patients will recover from a leg DVT without any residual symptoms. 40 % of patients will have some degree of postthrombotic syndrome, ca. 4 % of patients severe symptoms. The symptoms of postthrombotic syndrome usually occur within the first 6 months, may be up to 2 years after the clot. If a patient has done well for ½ - 2 years after the clot it is highly unlikely that he/she will develop the postthrombotic syndrome.

In patients with arm DVT postthrombotic syndrome develops in approximately 15 % of patients. Patients with DVT of larger veins, i.e. those in the shoulder and upper chest area (in medial terms "axillosubclavian DVT") and left-over clot (residual thrombosis) appear to be at particular risk for postthrombotic syndrome, whereas arm clots associated with catheters are at lower risk.

Little is known as to who will develop chronic symptoms and who won't. However, it is known, that patients with DVT who wear daily compression stockings (see below) for several month after the acute DVT will develop significantly less venous stasis syndrome. It is, therefore, important to wear individually fitted compression stockings if there is any leg swelling, beginning within days of the diagnosis of the acute DVT. They are typically worn for several months, if not years.

### Symptoms

- chronic leg swelling
- chronic (or waxing) pain
- diffuse aching
- leg heaviness
- leg tiredness
- leg cramping
- dark skin pigmentation (=postthrombotic pigmentation; figure)
- hardening of the skin
- skin dryness
- formation of varicose veins
- skin ulcer (stasis ulcer)

**Postthrombotic pigmentation** (See figure below) is due to the leakage of miniscule amounts of blood out of the veins into the soft tissues. Blood contains red cells (which are our oxygen carriers) and red cells contain iron. The iron from the red cells that leaked into the soft tissues is bound to a storage protein, and the complex is called hemosiderin, which is brown. The postthrombotic pigmentation may be unsightly and aesthetically disturbing; however, it is not dangerous - it does not harm the skin. If a patient has significant chronic leg swelling the skin may become hard, dry, and scaly (figure). If the chronic swelling is severe, skin breakdown may occur and an ulcer may form (venous stasis ulcer).

## Postthrombotic syndrome



Postthrombotic pigmentation



Healed skin ulcer and postthrombotic pigmentation



Chronic (left) leg swelling, skin hardening, and postthrombotic pigmentation

Graphic assistance: Jeff Harrison, Wilmington, N.C.

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### Treatment:

Prevention is the key issue. If a patient has leg swelling after an acute deep vein thrombosis (DVT) he/she should wear compression stockings (See figure below) to decrease the swelling. These should be custom fitted, i.e. a patient's legs should be measured to find stockings that fit well. They need to have a certain compression pressure, 35 mm Hg (mercury) at the ankle, 25 mm Hg at the mid-calf, and 18 mm Hg just below the knee, so-called grade 2 stockings. Stockings come in many different shapes, sizes, colors, materials, from many different companies. When stockings tend to roll down, one may want to choose a stocking that has a rubber strip at the upper end or one may want to wear a garter belt or compression pantyhose. Also, if there is leg swelling, elevation of the leg above the level of the heart while resting or sleeping is appropriate. In cases of pronounced swelling that does not improve with compression stockings, a compression pump can be tried (for example BioCompression pump®; see [www.medsolupplier.com](http://www.medsolupplier.com)). Normalization of weight may also improve the symptoms quite significantly, as may regular exercise.



Sometimes patients have a very localized narrowing of a vein in the pelvic area after a DVT. This is either due to a congenital narrowing (May-Thurner syndrome - see [Q/A 71](#)) or can be due to scarring of the vessel (stricture). In this case it may be helpful to undergo a vascular radiology procedure where the narrowing is ballooned open or stented.

Skin ulcers may be difficult to heal. Visits with a vein or wound care specialist are indicated. Elastic bandages, such as Unna boots, or foam dressings often lead to wound healing.

**What I typically recommend:**

- In the patient with acute DVT with leg swelling: wear elastic compression bandages (ACE wraps) for a few days, while blood thinner medication is started. Once the leg swelling has decreased, which is often after a few days, the patient is to get individually measured grade 2 compression stockings, if there is still leg swelling. It is not clear whether below-knee or above-knee stockings are better. Typically, I recommend a below-knee stocking if there is only swelling in the calf and ankle, and above-knee stocking if there is also swelling in the thigh.
- Stockings should be worn during the day, when a patient is up on his/her feet. They do not need to be worn at night. They should be worn for several months, if not years. If swelling has disappeared after a few weeks or months with the use of the stockings I tell the patient to stop wearing the stockings for a day and see what happens. If swelling recurs then the stockings should be worn again. If there is no more swelling then one may observe what happens after not wearing the stockings for 2, then 3, and then more days. If there is no more swelling, then stockings are not needed any more.

**References:**

1. Kahn SR et al: Predictors of the post-thrombotic syndrome during long-term treatment of proximal deep vein thrombosis. *J Thromb Haemost.* 2005;3:718-23.
2. Elman EE, Kahn SR: The post-thrombotic syndrome after upper extremity deep venous thrombosis in adults: A systematic review. *Thromb Res*; July 5, 2005.