TED Stockings

In surgical patients, how effective are TED stockings compared to not using TED stockings in preventing DVT?

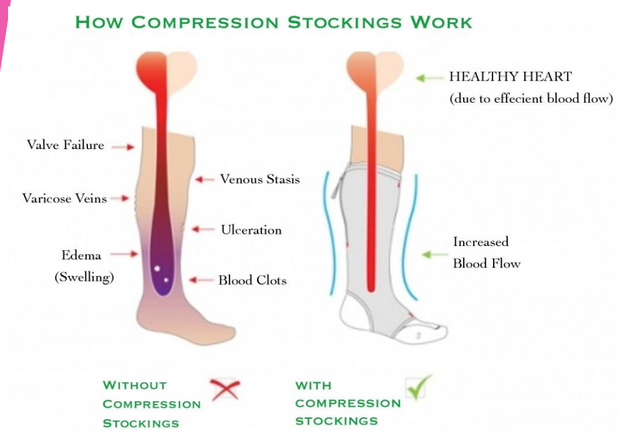
Introduction:

Deep Vein Thrombosis (DVT) Pathophysiology:
When blood flow is reduced to the limbs and blood becomes static there is no oxygenation to the venous valves and therefore the endothelium in the veins becomes hypoxic. The hypoxic tissue then attracts cells that start the clotting cascade to form a clot in the blood vessel. Typically this affects the lower limbs by clots forming in the iliac and femoral veins, however it can also occur in the arms. If left untreated the clot can cause ischemia and necrosis to the tissue distal to it, as well as becoming a dislodged embolism that travels through the bloodstream. The two biggest risk factors for developing a DVT include: 1) laying or sitting still for long periods of time and 2) inappropriate clotting disorders due to illness or medications.
(Lewis, Dirkson, Heitkemper, Bucher & Camera, 2014)

Graduated Compression Stockings or TED stockings:
TED stockings are thought to promote venous return by applying graduated compression from the feet upwards. This lessens the chance of a DVT being able to form.
(Lewis et al., 2014)

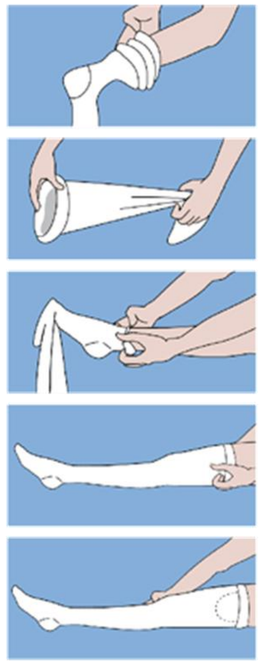
Why it is Important:
TED stockings help to reduce the risk of forming a DVT, especially in the hospital setting where patients stay still for long periods of time.
(Covidien, n.d.)

Contraindications to Consider:
If the patient has the following, they will not be able to use TED stockings:
·Any local leg condition where stockings would interfere (dermatitis, immediate post-operative to the lower limbs, gangrene or a recent skin graft).
· Severe arteriosclerosis.
· Massive edema of legs or pulmonary edema from congestive heart failure.
·Extreme deformity of leg.
(Covidien, n.d.)



(Brampton Foot Clinic, n.d.)

Application:



1. Insert hand into stocking as far as the heel pocket
2. Grasp center of heel pocket and turn stocking inside out to heel area
3. Carefully position stocking over foot and heel. Be sure heel is centered in the heel pocket.
4. Begin pulling body of stocking up around the ankle and calf. The stitch change should fall between 1 and 2 inches below the bend of the knee.
5. As thigh portion of stocking is applied, start rotating stocking inward so the gusset is centered over the femoral vein. The gusset is placed slightly towards inside of leg and top band should rest in gluteal fold. Smooth out any excess material. Pull toe section forward to smooth ankle and instep.

(Mountainside Medical Equipment, n.d.)

Tips to remember:

- Do not gather them like a material like a “donut”
- Toe hole is must be under the patient’s toes
- Smooth side goes against the skin
- Seam on thigh gusset remains on the outside
- Not to be rolled down, cut or altered, ↑ risk of VTE
- Remove once per shift and assess skin & peripheral perfusion

Research:

In a systematic review of 19 randomized controlled trials, 8 trials compared wearing graduated compression stockings to no stockings and 10 trials compared stockings with the use of another method to using the method without stockings. These methods include using Dextran 70, aspirin, heparin, and mechanical sequential compression.

Out of the 19 trials, 6 included patients undergoing orthopaedic surgery, 9 with patients undergoing general surgery and 1 trial consisted of medical patients. Compression stockings were applied on the day before or the day of the surgery and would be worn until the patients were fully mobile or discharged.

The treatment group included patients who used compression stockings and those who had compression stockings with another method of DVT prophylaxis. The control group consisted of those who did not use compression stockings and patients who used another method of DVT prophylaxis instead. In the treatment group, 126 out of 1391 patients developed DVT and 282 out of 1354 patients developed DVT in the control group. There was a 9% incidence of DVT in the treatment group compared to a 21% incidence of DVT in the control group.

Implications for practice: Graduated compression stockings effectively reduce the risk of developing DVT in surgical patients. It is recommended that compression stockings be considered for all surgical patients at risk for DVT unless it is contraindicated (Sachdeva, Dalton, Amaragiri & Lees, 2014).

In one randomized controlled clinical trial of 200 abdominal surgery patients, the use of graduated compression stockings has reduced the occurrences of DVT by 57% using the I-fibrinogen test as Laryea and Champagne reported in 2013.

In another study of graduated compression stockings involving 70 major abdominal surgery patients applying graduated compression stockings on one leg and applying no graduated compression stockings on the other leg as control, DVT was identified using the I-fibrinogen test. These patients presented 7 cases of bilateral DVTs, 19 cases of unilateral DVTs in the leg without graduated compression stockings, and merely one case of DVT with the graduated compression stockings (Laryea & Champagne, 2013)..

It is worth noting that the exact graduated compression stocking mechanism of action is not perfectly comprehended, according to Laryea and Champagne (2013). Nevertheless, research has so far indicated the quantifiable effectiveness in providing these stockings for patients undergoing surgery along with pharmacologic methods to best prevent DVT, which is associated with the most common preventable hospital deaths caused by Pulmonary embolism (Laryea & Champagne, 2013).

Conclusion:

To answer our research question of how TED or graduated compression stockings can reduce the risk of DVT in surgical patients we must look at the research that has shown the difference of wearing the stockings compared to not wearing them. The studies show that patients who use TED stockings, prophylactically, are up to 57% less likely to develop a DVT post-surgery. The stockings are thought to reduce the instances of developing a DVT by applying gradual pressure increasing from the feet upwards. The consequences of a DVT can be dire so it is important to use TED stockings post-surgery on all patients that meet the parameters of use. It is important to also note that TEDs should be used in conjunction with other prophylactic measures and not to be applied if there is any sign of a DVT already present.

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