



A Toolkit:

The Management of Lymphedema

in Lower Extremities by

Subcutaneous Drainage

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Overview

What is Lymphedema?

Lymphedema is a buildup of lymph fluid in the subcutaneous tissues. Lymph fluid is comprised of water, fats, proteins, bacteria and waste products found outside of the cells. The lymphatic system, essentially an extension of the interstitial space (Clein, Pugachev, 2006), is an interrelated network of organs, lymph vessels and lymph nodes responsible for transporting lymph fluid from tissues in the body back to the bloodstream. This ongoing exchange of fluids helps maintain body fluid balance (Appollo, 2007). In addition, the lymphatic system plays a significant role within the immune system. The lymphatic capillaries under the skin made up of endothelial cells overlap each other rather than being connected, but are anchored to surrounding tissue. These anchors called filaments pull on the cells as tissue pressure changes, facilitating fluid passage into the vessels. The pressure changes are the result of muscle contractions, respiration, arterial pulsation and skin stretching (Appollo, 2007). Lymph fluid drains in only one direction, first through small surface vessels, then larger pre-collector vessels to collector vessels which drain into the lymph nodes, and eventually back into the bloodstream. These vessels contain valves ensuring one-directional flow (Mortimer, 1998).

What Causes Lymphedema?

Lymphedema can be primary or secondary. Secondary lymphedema is due to damage or obstruction to a specific part of the system. Examples include surgical procedures, such as removal of lymph nodes in breast cancer or pelvic surgery, and damage from radiation, trauma, infection, etc. Intrapelvic tumours may compress lymphatic structures or invade regional lymph nodes, causing obstruction and/or increased back pressure in the lymphatic system. Lymphedema is often the consequence

Primary Lymphedema is due to abnormalities related to birth-defects in the size, shape or number of lymphatics and if not appropriately managed can with time develop into a form of lymphedema known as Elephantiasis, in which the skin overlying the edema is very thick and rigid i.e elephant-like. However, elephantiasis can also be due to secondary lymphedema. In filariasis a small parasite found in tropical climates burrows into the lymph nodes, destroying them. Lymphedema is not the result of a DVT, and is usually not painful, although sufferers usually find the heaviness of the limb uncomfortable. Keep in mind that the occurrence of lymphedema may indicate the recurrence of carcinoma and appropriate investigation should be considered (Regional Pain and Symptom Management Consultants et al, 2006).

Assessment & Management of Specific Lower Extremity Lymphedema

Lower extremity lymphedema is often related to surgical damage post pelvic surgeries, fibrosis caused by radiation or actual obstruction by tumour growth. Surgical damage can sometimes improve over time, as the lymphatic system regenerates, however if treatment is combined with radiation, the chance of improvement is reduced as radiation can cause fibrous scarring, which in turn reduces the re-growth of the lymphatic ducts (Tiwari, et al 2003). It occurs in both men and women. The initial findings are usually pitting edema which is painless; however individuals certainly find the frustration related to mobility and re-positioning limitations, due to the weight of their limbs, and the disfigurement to be psychologically and emotionally painful. When the limb gets 'tight' (not necessarily fibrous) the pressure that is experienced is often referred to as being 'painful'. Lymph fluid leaking through the skin has been reported as being distressful, in particular individuals sharing the experience of feeling 'cold' related to the dressings being continuously wet and the burden of expecting others to change these dressings frequently to reduce this feeling (Faily, et al 2007). Over time this edema becomes fibrous at which time it is no longer pitting in nature. The skin tends to present in deep skin folds, eventually leading to thickening of the skin (Mars, 2007). An assessment for lymphedema includes determining a positive Stemmer's Sign, which is the finding that it is impossible to 'pick up' a skin fold over the top of the second toe. Eventually warty tags can develop, known as lichenification, which can lead to lymph fluid leaking, and the potential for becoming infected (Dean, M. 2006). It is very important to prevent infection as the protein-rich lymph fluid is an excellent medium for bacterial growth (Brewer et al., 2000). The probability of fungal complications is significant at this time.

There are a variety of possible treatments for lymphedema following extensive investigations such as lymphangiogram, lymphoscintigram, ultrasound, CT scan, and MRI. Some treatment options include surgery, and pharmacological interventions as well as conservative interventions. However, in the situation of end-stage palliative care; these options are not usually appropriate and conservative interventions aimed at symptom relief and comfort should be the focus.

Lymphedema Treatment Options for Patients Receiving Palliative Care

Some options to relieve symptoms are:

1. Elevate the affected lower extremity limb if possible, includes using scrotal support if affected
2. Provide meticulous skin care to reduce the chance of skin breakdown resulting in infection – treatment with anti-bacterial or anti-fungal medication is critical at early findings of infection
3. Compression, exercise (active or passive) and a special massage, called MLD (manual lymph drainage) can be very beneficial, in particular at the earlier stages of management
4. Pharmacologic treatments can also be considered, such as the use of diuretics.
5. Aqua Lymphatic Therapy – uses the principles of ALT (physical properties of water, self-massage and exercise (Tidhar, et al 2007)
6. Lower extremity subcutaneous lymphedema drainage

Subcutaneous Lymphedema Drainage in Lower Extremities

This option can be considered for patients receiving end-stage palliative care, who are experiencing discomfort and/or distress with severe lower extremity lymphedema. The first step should always be to discuss this option with the patient's palliative care physician or family physician. It is critical that knowledgeable support is available from the physician. It is also important to consider other symptom relief measures, some of which have been listed previously. An ET / wound specialist assessment can be valuable as well. In addition, an in-depth discussion with the client and/or family is very important in order to determine their interest in this treatment option, as well as the suitability of their edema. A thorough assessment must be completed, which includes an evaluation of the edema and its suitability for the lymphedema drainage procedure. This information is clearly documented in the policy and procedure for *Subcutaneous Lymphedema Drainage in Lower Extremities*.

Observation for the following Signs, Symptoms & Potential Complications are important:

1. Hypotension – there is potential for hypovolemia related to removal of larger amounts of lymph fluid, therefore monitor for and ask patient if he/she is experiencing dizziness, weakness, headaches, feelings of faintness, tachycardia, shortness of breath or confusion
2. Potential for decreased urine output
3. Monitor for S&S of hypoalbuminemia – paradoxically increasing edema (difficult to assess for during this treatment), muscle weakness, fatigue or cramps.
4. Monitor for S&S of infection – fever, inflammation and pain
5. Skin irritation and breakdown related to edema or drainage dressings

Responses to Findings:

It is important to report all signs & symptoms to the Palliative Care Physician for further treatment options. It is in keeping with end of life care, not to provide albumin infusions in attempts to correct depleted levels. This drainage procedure's primary focus is to maximize comfort for the client; therefore interventions must be evaluated in keeping with what provides the most comfort for the client. There is also the risk that the puncture sites will continue to drain once drainage system removed, therefore good skin care and appropriate bandaging is important. Post drainage there may be opportunities for leg wrapping and/or massage; therefore the usefulness of this needs to be discussed with the physician.

Evaluation

In view of the infrequent use of the *Subcutaneous Lymphedema Drainage in Lower Extremities* procedure and minimal published findings, the collection of outcomes related to the implementation of this procedure is very important. Please complete and forward to us the evaluation form that has been included in this kit. This will assist us in accumulating data: findings, successes and challenges related to this procedure, which we will be happy to share with you.

References

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