

Components and Management of Lymphedema

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Lymphedema Signs and Symptoms

Lymphedema is a chronic, progressive condition caused by disruption of the lymphatic system that is common following cancer treatment. It is an abnormal accumulation of protein-rich fluid in the interstitial space.

Contributing Factors	Symptoms	Differential Diagnosis/Rule-Out
<ul style="list-style-type: none">SurgeryTaxane-based chemotherapyInfectionsRadiation therapyGenetic predispositionHigh BMILymph node dissectionAdvanced cancer stage	<ul style="list-style-type: none">Swelling in the region of treatmentRecurrent infections or cellulitisPain, heaviness, tightness, or tinglingReduction in Range of Motion and/or StrengthErythema, skin thickening, fibrosis and/or peau d' orange	<ul style="list-style-type: none">MalnutritionVenous InsufficiencyDVTChronic edema from heart, kidney, liver diseases causing progression to lymphedema

Lymphedema Screening

Relative Volume Change- 10% threshold for diagnosis

Absolute Volume Change- 2 cm change or > 200 ML change

Measuring:

- Circumferential measurements** using a Guillick II tape measure
- Volumeter** water displacement
- Perometry**
- Bioimpedance Spectroscopy (L-Dex)**. Detects extracellular fluid changes. Effective in identifying early lymphedema. Not accurate for later stage occurrences.

Lymphatic Imaging

- Lymphoscintigraphy**- evaluates lymphatic vessel count, lymph nodes, dermal backflow and collateral flow.
- Indocyanine Green lymphography (ICG-L)**- Maps superficial lymphatics in real time.



* For cancer-related lymphedema: Baseline and serial surveillance measurements obtained pre- and post –treatment facilitated early detection of lymphedema.

Lymphedema Staging



Stage 0	Stage 1	Stage 2a	Stage 2b	Stage 3
No overt swelling but lymphatic pathways have been disrupted	Mild pitting edema that resolves with elevation, no fibrosis, and <20% increase in excess limb volume	Moderate pitting edema that does not resolve with elevation, fibrosis development occurring, and 20-40% increase in excess limb volume	Non-pitting edema secondary to pronounced fibrosis and 20-40% increase in excess limb volume	Non-pitting edema with skin changes, progressive fibrosis, and >40% increase in excess limb volume

Contraindications for Lymphedema Treatment

- Absolute Contraindication**
- Active infection/cellulitis
 - Must be on antibiotics for at least 24 hours and improvements noted
 - Acute DVT
 - Until therapeutically anticoagulated
 - Uncontrolled Congestive Heart Failure
 - Arterial Insufficiency (ABI <.5)
 - Severe Renal Insufficiency

Relative Risk Factors

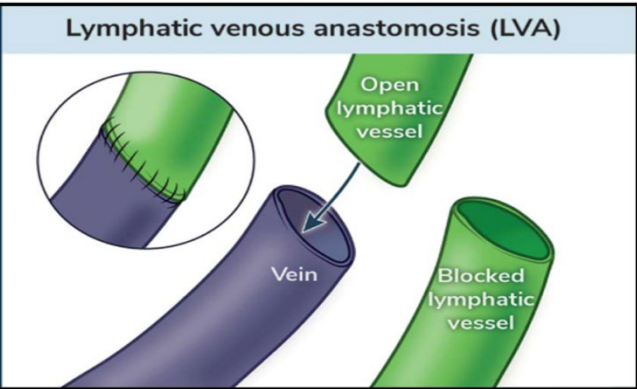
- Absent sensation in treatment area
- Treatment over areas of malignant tumors
- Fragile Skin
- Kidney, liver, or heart impairments (trend labs)

Surgical Interventions

Considered in high risk, advanced conditions, or limited responsiveness to conservative treatment. Treatment goals include reducing risk of infection, reducing size, and improving quality of life.

- Physiological Procedures:** Enhance the lymphatic systems ability to drain fluid.
- Lymphovenous anastomosis (LVA)** - Supermicrosurgery where lymphatic vessels are connected to veins.
 - Vascularized Lymph Node Transfer (VLNT)** - Healthy lymph nodes with blood supply are transplanted to the affected region to rebuild lymphatic drainage.

- Excisional/Debulking Surgeries:** Fibrofatty tissue is removed to reduce excess limb volume.
- Suction Assisted Lipectomy** - Indicated for late-stage lymphedema.
 - Combination surgery** such as debulking with lymph node transfer or debulking with lymphovenous anastomosis.



Skin Care

- Low pH soaps and pH-neutral lotions recommended to maintain skin integrity and reduce infections.
 - Daily skin inspections



Manual Lymphatic Drainage (MLD)

- Manual technique that increases lymphangion activity and reabsorption of protein enriched lymphatic fluid
- Gentle pressure that increases lymph formation and lymph vessel refilling.
- May increase normal lymphatic pumping rate from 6-10 times per minute to 60-100 times per minute



Complete Decongestive Therapy (CDT)

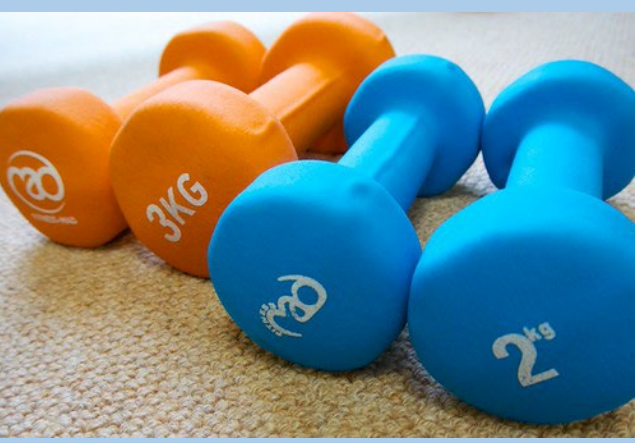


Compression

- Compression recommendations are based on lymphedema stage and patient's physical and cognitive ability.
- Gold Standard: Multi-layer Bandages (MLB)**
 - are low stretch compression bandages

Exercise

- improves venous and lymphatic return
- increases range of motion and strength
- improves bone density and assists with weight management.



Inpatient/Hospital Considerations

- MODIFIED APPROACH** to CDT due to patient medical status and/or time constraints
- Multi-layer bandages are considered the most effective compression; however, its use must be individualized based on patient's medical status, coordination with wound cares, caregiver training, and length of stay.
 - If multilayer bandages are not appropriate during the hospital stay; then management with tubular compression such as:
 - Tenoshape
 - Coban 2
 - Compression garments require a physician order (20-30mmHg or 30-40mmHg)

Do **NOT** recommend Tubigrip or TEDs for lymphedema compression!!!
Tubigrip does not provide graduated compression
“TEDS are for Bed”. Teds are an anti-embolism stocking and not appropriate to control lymphedema.

Maintenance

Lymphedema is a chronic, lifelong condition that requires ongoing maintenance involving CDT, even after reaching a plateau and discharging from therapy services.

Compression Garments help to maintain lymphedema:

- Elastic and Non-elastic compression garments are recommended for Stage 0 and 1 and in stage 3 and 4 after the lymphedema measurements have reached a plateau.
- Garment style and compression is based on ability to don/doff the garment, skin integrity, and lymphedema stage.
- Daytime and nighttime options
- Garments need to be reassessed and replaced every 6 months.