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Wound Management for Clients Living with Lymphedema

Neely Sullivan, PT, CLT-LANA

5/15/2020

- Presenter Disclosure: Financial: Neely Sullivan has received an honorarium for presenting this course. Non-financial: Neely Sullivan has no relevant non-financial relationships to disclose.
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Learning Outcomes

After this course, participants will be able to:

- Describe the background, anatomy, and physiology of the lymphatic system.
- Identify at least two differences between edema and lymphedema.
- Identify at least three risk factors and different types and stages of wounds commonly occurring in patients living with lymphedema.
- Describe at least two wound management interventions and discuss case examples of people living with lymphedema and/or wounds.

Background and Physiology of the Lymphatic System

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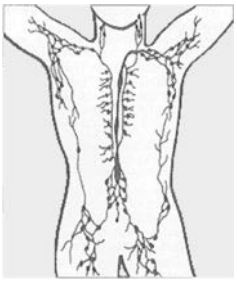
What is the Role of the Lymphatic System?

- A drainage system
  - Brings substances from the tissues back to the circulatory system



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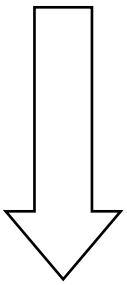
Lymphedema

"Accumulation of excessive lymph fluid and swelling of subcutaneous tissues due to obstruction, destruction, or hypoplasia of lymph vessels" -Casley-Smith

Lymphatic System Anatomy

- Initial lymph capillaries
- Pre-collectors
- Perforating pre-collectors
- Collectors
- Lymph nodes
- Trunks

Superficial



Deep

Normal Lymphatic System

- Anatomy:
  - Tissue Channels
  - Initial Lymphatics
  - Collectors
  - Lymph Nodes
  - Muscle Pump

Lymphatic system

PRIMAL PICTURES

Lymphatic System Anatomy

- Superficial Lymphatic System
  - Drains the lymphatic loads of the skin
  - 99% of the lymphedema cases seen in therapy involve the superficial system
- Deep Lymphatic System
  - Drains the lymphatic loads of everything but the skin: muscles, tendons, joints, inner organs

Normal Lymphatic System

- Function:
- Remove waste products
- Remove excess fluid
- Alert immune system
  - Macrophages
- Return fluid and plasma proteins to the blood

Physiology of the Lymphatic and Venous Systems

- Main function of the lymphatic and venous systems is fluid transport
- The lymphatic and venous systems play a role in fluid homeostasis

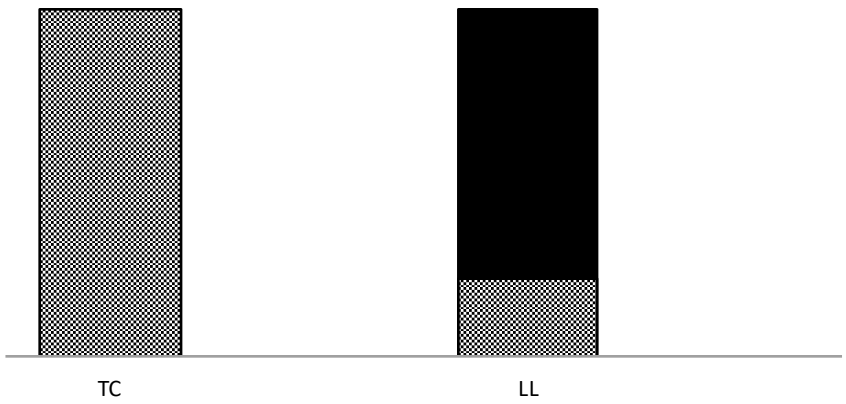
The Lymphatic System

- Transport Capacity (TC): the amount of lymph fluid the lymphatic system can transport when working at its maximum intensity
- Under normal conditions, the system works at ~10% of its transport capacity

The Lymphatic System

- Functional Reserve (FR): the difference between the TC and the amount of fluid transported at rest (aka “normal” LL)
- When the body experiences an increase in water and/or protein in the tissues, the lymph system “activates its Safety Factor” and taps into the FR to eliminate the excess

The Lymphatic System



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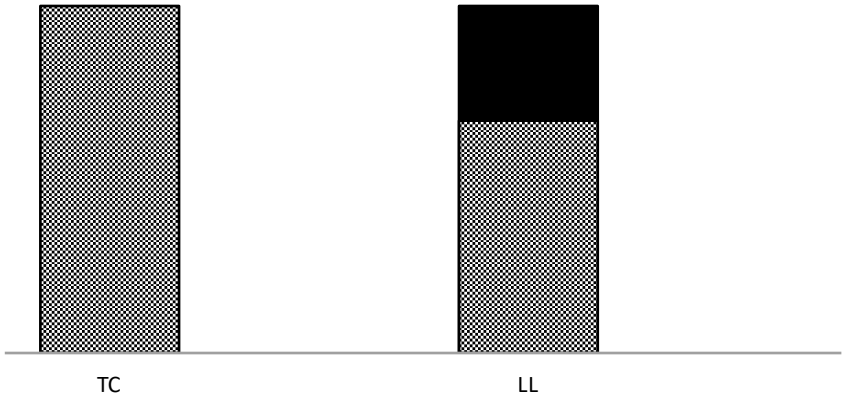
The Lymphatic System



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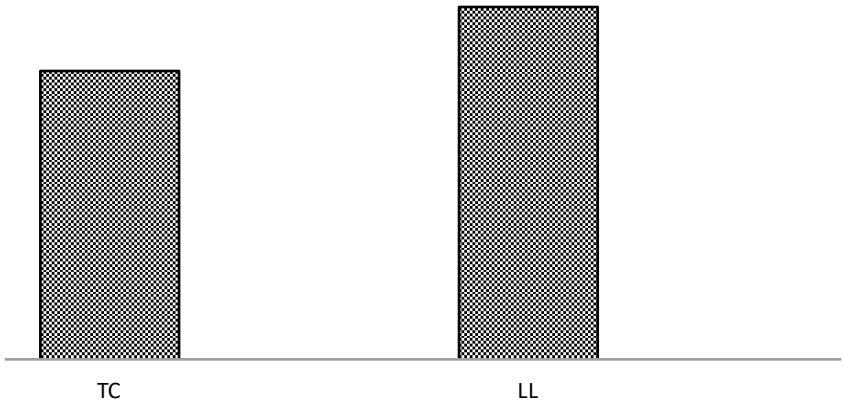
Lymphatic System Insufficiencies

- Dynamic Insufficiency
- Mechanical Insufficiency
- Combined Insufficiency

Dynamic Insufficiency

- Healthy lymphatic system is overwhelmed by an increase in lymphatic load
- This is NOT lymphedema
- High volume insufficiency
- Example: sprained ankle, CHF, immobility

Dynamic Insufficiency



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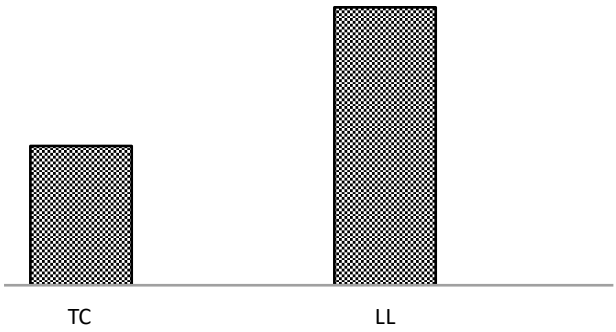
Mechanical Insufficiency

- Damaged lymphatic system cannot handle the lymphatic load
- Low volume insufficiency
- This is lymphedema
- Damage can be caused by surgery, infection, trauma, radiation or congenital abnormalities

Mechanical Insufficiency



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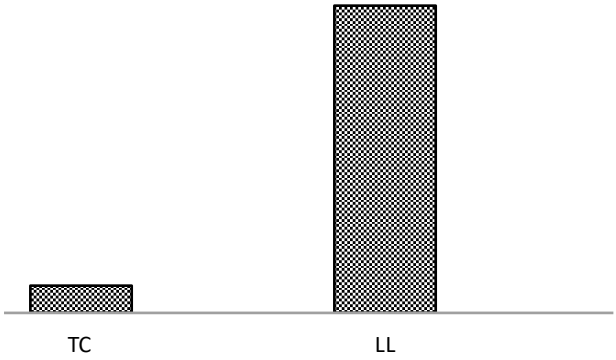
Combined Insufficiency



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Edema due to Lymphatic Insufficiency= Lymphedema

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Pathophysiology of Lymphedema

- Lymphedema occurs if the transport capacity drops below the normal amount of lymphatic load
- Results in the abnormal accumulation of water and protein in the subcutaneous tissue
- High protein fluid causes fibrosis and sclerosis of the tissue, disturbance of local metabolism, and increased risk of infection
- Lymphedema continues to progress if left untreated

Differential Diagnosis of Edema vs. Lymphedema

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Differential Diagnosis: General Edema vs. Lymphedema

- Lymphedema
  - Known risk factors for lymphedema
  - Clinical assessment consistent with lymphedema
  - Imaging of lymphatic system
- General Edema
  - Known risk factors for edema
  - Clinical assessment consistent with general edema
  - Imaging of arterial or venous system

Clinical Presentation of Acute Edema

- Rapid onset after a known injury
- Redness
- Warmth
- Painful to palpation or movement
- Localized

Clinical Presentation of Acute Edema

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Clinical Presentation of Chronic Edema

- Hard Turgor
- Skin Changes
  - Loss of hair growth
  - Loss of normal skin creases
  - Loss of tissue elasticity

Clinical Presentation of Chronic Edema

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Clinical Presentation of Venous Edema

- Slowly progressive
- Moderate warmth
- Dusky color or brownish staining of skin
- Achy pain as day progresses
- Normal contours of leg are lost

Clinical Presentation of Venous Edema

Image from Charlie Goldberg, MD – Used with Permission

S & S of Lymphedema

- Slight to severe pitting swelling
- Underlying fibrosis
- Tightness and heaviness in the limb
- Decreased mobility, loss of motion
- Tingling or numbness in limb
- Pain or tenderness in joints
- Frequent infections
- Skin discolorations
- Fungal infections
- Hair loss
- Papillomas
- Leakage of lymphrea
- Hardening of the skin
- Odor
- Wounds
- Unilateral, bilateral, trunk involvement
- Genital involvement
- Decreased Quality of Life

Classifications of Lymphedema

- Primary: malformation or dysplasia of the lymphatic system
- Secondary: caused by a known injury to the lymphatic system

Stages of Lymphedema

- Size does not define the stages
- The consistency of the tissues differentiates between stages
- The goal of treatment is to return patients to the latency stage (Stage 0)
- Patients will progress through the stages if left untreated

Stages of Lymphedema

- Stage 0: Pre-stage
- Stage I: Reversible Lymphedema
- Stage II: Spontaneously Irreversible
- Stage III: Lymphostatic Elephantiasis

Clinical Presentation of Lymphedema

- Slowly progressive
- Mild warmth
- Color changes are rare
- Usually painless
- Sensation of fullness or heaviness in limb
- Soft and pitting or hard upon palpation
- Asymmetrical in comparison of limbs

Clinical Presentation of Lymphedema

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Risk Factors for Developing Wounds for People Living with Lymphedema

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Lymphatic System's Impact on Wounds

- Lymphatic system is connected to both the circulatory and immune systems
- Necessary to maintain the balance of fluids between the circulatory system and the interstitium

Lymphatic System's Impact on Wounds

- A functioning lymphatic system is imperative for the appropriate healing response
- Prolonged edema can interfere with the healing process

Lymphedema and Wounds

- May present with a variety of skin lesions
- May be related to:
  - Dysfunctional lymph and vascular system
  - Coexisting comorbidities
  - Therapeutic procedures (surgery, radiation, etc.)

Classification of Wounds Associated with Lymphedema

- Classified according to:
  - Level of tissue involvement
  - State of the wound (acute or chronic)

Location of Wounds Associated with Lymphedema

- Location of lymphatics and coexisting morbidities contribute to risk for particular lesion types
  - Clients with LE lymphedema often co-present with venous insufficiency
  - Clients who have undergone mastectomy with concurrent radiotherapy are at risk for skin breakdown due to radiation burns

Risk Factors in Aging Skin

- Thinning and flattening of epidermis
- Decreased epidermal proliferation
- Loss of elastin fibers
- Atrophy of dermis
- Decreased vascularity of dermis

Risk Factors in Aging Skin

- Changes to/loss of collagen and elastic fibers
- Decreased oil and sweat glands
- Compromised vascular response
- Abnormal nerve endings
- Fragility

Predisposing Factors to Skin Breakdown

- Impaired mobility
- Incontinence
- Decreased sensation
- Inadequate hydration and/or nutrition
- Poor positioning
- Medical diagnoses

Standard of Care

- Optimized nutritional status
- Debridement by any means to remove devitalized tissue
- Maintenance of a clean, moist dressing
- Necessary treatment to resolve any infection that may be present

Why Should I Worry?

- Swollen tissue
- Weakened immune system
- These make fighting infection and closing a wound a challenge

Why is it Harder to Heal?

- Stagnating lymph fluid is an ideal breeding ground for germs
- Edema pushes the wound edges apart
- Lymph fluid is toxic to the wound by keeping nutrition and oxygen from the wound

Wounds with Lymphedema

- Chronic Swelling
- Tissue Hypoxia
- Decreased leukocyte function
- Decreased immune system
- Lymphrea or drainage of fluid
  - Bacteria
- Fibrosis
- Decreased Mobility
- Obesity

Wound Healing

- Mechanical forces
  - Pull wound edges
- Decreased gas exchange
  - Decreased oxygen
  - ↓ Collagen formation
  - ↓ Leukocytes
- Acid-Base Balance
- Infection risks
- Decreased Transport

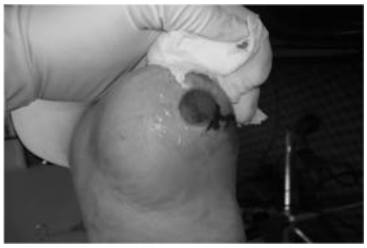

Image of heel ulcer by: Jonathan Moore / CC BY (https://creativecommons.org/licenses/by/3.0)

Types of Wounds Commonly Occurring in Clients Living with Lymphedema

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Wound Types: Pressure Injury

- Who?
  - Found in patients with multiple medical diagnoses, advanced age, impaired mobility, decreased mental status, poor nutritional status, incontinence, impaired circulation
- Location
  - Any bony prominence subjected to pressure, friction, or shear

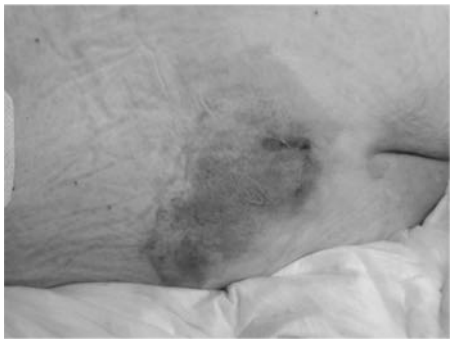
Wound Types: Pressure Injury

- Appearance:
  - Wound is usually well defined
  - There may be necrosis.
  - Undermining, tunneling or sinus tracts may be present
  - Wound may present as persistent discolored area of intact skin up to deep destruction and loss of tissue
- Exudate:
  - Can vary

Wound Types: Pressure Injury

- Pain
  - Can vary
- Healing
  - Must eliminate/reduce pressure, shear and friction and implement appropriate skin care for healing
  - Frequent repositioning of the patient (usually every 2 hours)

Pressure Injury: Stage 2



Wound Types: Diabetic Ulcers

- Who?
  - Found in patients with diabetes with peripheral neuropathy and/or PVD
- Location
  - Sites on the foot and lower limb subjected to repetitive pressure, friction, shear or trauma

Wound Types: Diabetic Ulcers

- Appearance
  - Wound is smooth and even
  - May be small at surface with large subcutaneous abscess
  - Characterized by callus around the ulcer and undermined edges
  - Shallow to deep
  - May have tracking and/or undermining

Wound Types: Diabetic Ulcers

- Appearance
  - Granular tissue
  - Often has deep necrotic area
  - May be dry
  - Cellulitis or osteomyelitis may be present
  - Neuropathic ulcers almost always accompanied by eschar and often accompanied by exposed tendons

Wound Types: Diabetic Ulcers

- Peri-wound
  - Surrounding skin is dry, thin
  - Frequently callused
  - Hyperkeratosis is common and indicates continued pressure
- Exudate
  - Low to moderate
  - Infected ulcer may have significant drainage

Wound Types: Diabetic Ulcers

- Sensory changes
  - No sensation
  - Neuropathic ulcers are accompanied by numbness
- Healing
  - Compliance with diet, glucose regulation, exercise
    - and foot care/wear
  - Aggressive revascularization and appropriate antibiotics may be needed
  - Custom shoes will reduce pressure
  - Off loading pressure

Wound Types: Diabetic Ulcers

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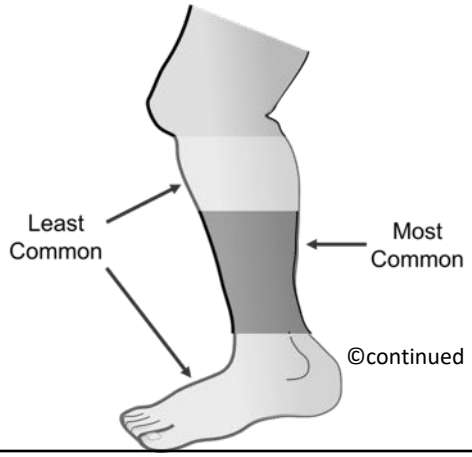
Wound Types: Venous Insufficiency Ulcers

- Who?
  - Found in patients with valve incompetence in perforating veins, history of DVT, failed calf pump, history of venous ulcers or family history of ulcers, obesity, age, pregnancy
- Location
  - May occur anywhere between the knee and ankle

Consequences of Venous Insufficiency on Lymphatic System

- Lymphatic capillary networks are damaged among those living with venous insufficiency with skin changes
- Complete decongestive therapy should have beneficial effects
- Edema management should play a key role in the management of chronic, non-healing wounds

Common Locations of Venous Insufficiency Ulcers



Wound Types: Venous Insufficiency Ulcers

- Appearance
  - Frequently ruddy, red, granular tissue
  - Wounds tend to be large with irregular shape
  - Calcification in wound base is common
  - Superficial necrosis may occur suddenly with healthy appearing granulation tissue underneath
- Exudate
  - Moderate to heavy

Wound Types: Venous Insufficiency Ulcers

- Peri-wound
  - Surrounding skin is pigmented,
  - Edematous
  - Macerated
- Pain
  - Can Vary
  - Ulcers around malleoli are typically the most painful
  - Pain improves with leg elevation

Wound Types: Venous Insufficiency Ulcers

- Healing
  - Epithelialization often fails despite good granulation
  - Average time to healing is 53 weeks depending on:
    - Degree of venous insufficiency
    - Extent of lipodermatosclerosis
    - Presence of cardiovascular disease
      - Use of a compression system can be beneficial and is considered a Standard of Care for venous ulcers

Wound Types: Venous Insufficiency Ulcers

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Wound Types: Radiation Related Skin Changes

- Who?
  - Found in clients experiencing skin reactions to radiation
- Where?
  - Skin breakdown is related to the dose, dosing schedule, location, total treatment area, radiation type, and individual skin differences

Wound Types: Radiation Related Skin Changes

- Appearance
  - Erythema
  - Dry desquamation
  - Moist desquamation
  - Necrosis
- Exudate
  - Occurs with moist desquamation
  - Can vary

Wound Types: Radiation Related Skin Changes

- Peri-wound
  - Depends on the depth of the damage to the epidermis
  - Dry, scaly skin
  - Discoloration
  - Erythema
- Pain
  - Can vary

Wound Types: Radiation Related Skin Changes

- Healing
  - Keep areas prone to excessive moisture dry (ex. Axilla, perineal, etc.)
  - Padding may be used to wick away moisture and prevent injury due to frictional forces
  - Use mild soap and basic skin cream
  - Dry skin should be addressed
  - Drainage should be addressed

Wound Types: Radiation Related Skin Changes

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Wound Management Interventions for People Living with Lymphedema

5/15/2020

Why Work Together?

- Changes in reimbursement
- Limitation in coverage amounts
- Greater focus on outcomes
- Need for dedicated multidisciplinary approach to ensure successful outcomes and economical delivery of care

Wound Care Team

- Patient
- Physician
- Nurse
- Physical Therapist
- Occupational Therapist
- Speech Therapist
- Dietician
- Others

Rehabilitation Therapeutic Approach

- Reduction or clearance of the swollen tissues
- Vascular status should be determined
- Dressing techniques with sufficient fluid handling characteristics
- Manual techniques
- Compression wrapping
- Maintenance with a compression garment
- Exercises that stimulate muscle pumps

Wound Interventions: Lymphedema Management

- Contraindications
  - Acute DVT (within 6 months)
  - Acute infection or untreated infection
  - Untreated CHF
  - Renal dysfunction
  - Untreated malignancy
  - Arterial insufficiency
    - Ankle Brachial Index (ABI)
      - < 0.8: 30–40 mmHg at most
      - > 0.5 to < 0.8: 23–30 mmHg at most
      - < 0.5: Compression should be avoided

Complete Decongestive Therapy (CDT)

- Phases of CDT
- Components of CDT

Phases of CDT

- 2 stages of CDT:
  - Phase I or the Intensive Phase
  - Phase II or the Improvement Phase

Intensive Phase: Phase I

- Patient seen daily
- Consists of skin care, manual lymph drainage, compression therapy, decongestive exercises, and education
- Goal: Decongest the involved extremity
- Ends when measurements plateau (2 weeks without significant change)

Improvement Phase: Phase II

- Self-management
- Goal: Improve and maintain Phase I accomplishments
- Individuals will wear garments during the day and may bandage or use a bandage alternative at night
- Individual will continue with exercises and skin care and may perform self-MLD or have a caregiver perform MLD
- Patient compliance is key
- This phase lasts a LIFETIME

Components of CDT

- Skin Care
- Manual Lymph Drainage (MLD)
- Compression
- Exercise

Absolute vs. Relative Contraindications to Treatment of Edema and Lymphedema

- Absolute Contraindications
  - Do not treat
- Relative Contraindications
  - Treat with caution

Absolute Contraindications

- Acute infection
- Renal failure
- Cardiac edema
- Acute bronchitis
- Acute DVT

Relative Contraindications

- Malignancies
- Bronchial asthma
- Hypertension

Absolute Contraindications: Compression

- Cardiac edema
- Arterial diseases
- RSD (CRPS)
- Acute infections
- Spasticity

CHF and Compression Therapy

- Possible if there is no acute pulmonary edema
- Possible once treatment started with cardio stimulatory medications and diuretics

Relative Contraindications: Compression

- Hypertension
- Cardiac arrhythmias
- Paresis/paralysis
- CHF
- Malignant lymphedema

Manual Lymph Drainage (MLD)

- Increases formation and uptake of lymph fluid
- Mobilizes lymph fluid
- Improves activity of the lymph vessels
- Re-routes lymph flow to healthy areas

Image by Kai Miano from Pixabay

What are the effects of MLD?

- Increases lymph production
- Stimulates lymphangiomotoricity
- Reverses the flow of lymph
- Creates a suction effect on distal collectors
- Increases the general parasympathetic effect
- Fibrinolytic effect
- Increases venous return
- Analgesic effect

Principles of MLD

- Treat the healthy quadrant before addressing the involved extremity
- Intensity of the stroke: only enough pressure to stretch the skin
- Sequence of the stroke: working phase and resting phase
- Duration of the stroke: at least 1 sec during the working phase
- Direction of the stroke: depends on direction of lymph flow

Compression

- The elastic fibers in the skin are damaged in individuals with lymphedema
- The skin may never regain its elasticity
- Tissue pressure in people with lymphedema is permanently decreased
- External support through compression is essential to prevent fluid re-accumulation

What are the Effects of Compression?

- Reduces filtration
- Increases reabsorption
- Improves efficiency of joint and muscle pump
- Prevents re-accumulation of fluid
- Maintains results achieved during MLD
- Helps break-down scar tissue
- Provides support for tissues that have lost elasticity

What are the Effects of Compression?

- Increases the pressure
- Improves venous and lymphatic return
- Improves the effectiveness of the muscle and joint pumps during activity
- Breaks down lymphostatic fibrosis

Compression

- Type of compression utilized in treatment depends on the phase of treatment (Phase I or II)
  - Short-stretch bandages
  - Garments
  - Combination of both
  - Bandage alternative

Compression

- Applies the Law of LaPlace
  - If the radius of a cylinder increases, the tension needs to increase as well to achieve the same pressure

Compression

- According to the Law of LaPlace, if consistent compression is applied to a cone-shaped extremity from distal to proximal, a natural compression gradient will occur
- Use padding materials to make extremities as close to a cone or cylinder-shape as possible
- Pressure will be greatest at the ankle and least at the proximal thigh

Definitions of Bandage Stretch

- No-stretch: 0%
- Low stretch: up to 90% stretch
- Medium stretch: 90-140% stretch
- High stretch: >140% stretch

Why use Short Stretch Bandages?

- Short Stretch
  - High working pressure
  - Low resting pressure
  - Stretch to 60-70% of total length
- Long Stretch (ACE)
  - LOW working pressure
  - HIGH resting pressure
  - Stretch up to 170% of total length

Mechanisms of Action

- Improvement in the venous pump
- Increase in lymphatic reabsorption
- Improvement in lymphatic microcirculation Increase in cutaneous microcirculation
- Shift of fluid
- Breakdown of fibrosclerotic tissue

Compression Bandaging



Compression Garments

- Phase II Compression
  - Garment worn during the day only
  - Bandage or bandage alternative at night PRN
  - Various styles, colors, fabrics to choose from
  - Can be custom or pre-fab (off the shelf)
  - Most vendors will correct their own errors but may not correct yours
  - Should be replaced every 4-6 months

Skin Care and Precautions

- Skin care is aimed at preventing infections through skin breaks
  - Keep skin clean and well moisturized
  - Maintain the acid mantle to reduce bacterial, fungal, and other infections
- Precautions to avoid triggers:
  - Prevent skin breaks
  - Wear protective clothing or gear
  - Avoid temperature extremes
  - Don't over-exert or perform repetitive activities
  - Beware of constriction, dependent positions, etc.
- Do not wait until the last day to start talking about this with your patients, continually reinforce this throughout treatment

Skin Care

- Good skin care reduces the risk of infection
- Patients should learn to recognize the signs and symptoms of acute infection

Skin Care- Cellulitis

- Signs and Symptoms include:
  - Red
  - Hot to touch
  - Pain
  - Fever
- If these are present, do not treat

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Skin Care- Fungal Infections

- Once medications are started it is ok to begin treating
- Therapists can work proximal to fungal areas
- Avoid touching the affected area
- Can spread fungal spores
- Wear gloves

Skin Care

- Cleanse
  - Gentle, non-drying soap
- Moisturize
  - Low pH lotion (e.g., Eucerin, Curel)
- Inspect
  - Daily skin checks
- Prevent
  - Carry antibiotic ointment, wear insect repellant, wear gloves with dirty tasks

What are the Effects of Exercise?

General

- ↓ stress and depression
- ↑ immune system response
- ↑ cardiovascular health
- ↑ Posture and stability
- Assist with weight management
- Supports cognition

Special to Lymphedema

- Increase lymph uptake by the vessels
- Increase the pumping of the vessels and the nodes
- Improve joint mobility, which can increase joint pumping
- Strengthen muscles to prevent damage from fluid accumulation
- Aquatics or Compression required

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Exercise with Compression

- Superficial lymphatic system is located beneath the skin and above the fascia
- Bandages/garments increase the pressure inside the tissue
- The increased tissue pressure enables the muscles to act as an internal pumping mechanism
- Muscles contract against the bandages/garments

What are the Effects of Exercise with Compression?

- Improves lymph circulation
- Increases venous return
- Optimizes joint and muscle pump
- Increases lymphangiomotoricity
- Deep breathing increases volume of fluid returned to the L venous angle via the thoracic duct

Exercise

- UE Exercise
  - Pump fist
  - Wrist flex/ext
  - Elbow flex/ext
  - Shoulder ROM (self-range, flex/abd)
  - Abdominal breathing
- LE Exercise
  - Walking x 10 min
  - Abdom breathing
  - AP
  - Knee flex/ext
  - Hip ab/add

Beneficial Exercises

- Lower Extremity
  - Walking
  - Easy biking
  - Easy skating
  - Swimming/water aerobics
  - Yoga
- Upper Extremity
  - Walking
  - Water aerobics
  - Stair master
  - Yoga

Intensity

- Activity can be easily sustained, allowing the individual to simultaneously engage in conversation
  - Allows the individual to reach a steady state and continue the activity for a given period of time
- Strenuous exercise will cause fatigue and the individual will be less likely to continue the exercise

Lymphedema Considerations with Other Therapeutic Interventions

- MUST avoid fatigue
- No theraband on involved extremity
- No hot or cold therapy to involved extremity
- Watch repetition of activities
- Be cautious with manual therapy
- Perform central activities prior to peripheral
- Encourage patient to wear garments/compression during therapy
- Encourage aquatics, deep breathing, gentle stretching
- Stay hydrated
- If they have questions, contact a certified therapist

Does CDT Work?

After one treatment with CDT. Pt was bandaged for 3 days.

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The Interdisciplinary Approach

- Assessment
- Care planning
- Intervention
- On-going management

Areas of Focus for the Team

- Edema reduction
- Patient's medical condition
- Adequate nutrition and hydration
- Promoting mobility
- Appropriate positioning
- Utilization of prescribed pressure relieving devices
- Implementing an appropriate re-positioning schedule

Additional Wound Management Interventions

- Positioning
- Mobility
- Function
- Direct wound care
- Pulsed ultrasound
- Electrical stimulation

Wound Interventions: Dressings

- Dressing
  - Many different options
    - Primary dressing: one that is placed directly on the wound to perform a function
    - Secondary dressing: one used to hold the primary in place
  - Dressing selection may change during the course of treatment

Reimbursement

- Insurance reimbursement varies dependent upon:
  - Provider
  - Practice setting
- Providers should clarify with insurance companies about reimbursement policies
- Clients should be aware of their insurance coverage

Why is Documentation Necessary?

- Serves as proof of effective therapy
- Records the client progress
- Documentation values also determine the beginning and end of different phases of treatment

Documentation

- Reduction in edema
- Changes in surrounding tissue
- Functional abilities versus limitations
- Changes in tissue composition
- Changes in length, width or depth of wound
- Progression of wound from one phase of healing to the next
- If it is not documented, it did not happen and you may not receive reimbursement!

Goals

- "Decrease edema in periwound R anterior calf"
  - INADEQUATE: No timeframe, not specific. What function?
- "Decrease edema in periwound R anterior calf as evidenced by decrease in periwound (from 4 cm at 12 o'clock to 2 cm at 12 o'clock) to allow client to amb 100 feet without pain"
  - ADEQUATE: Specific w/ respect to measurement & functional task/impact

Case Example of Lymphedema and Wound Interventions

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Treatment Sessions

- Remove bandages, undress
- Cleanse limb and inspect skin and/or wound
- Moisturizing the skin
- Application of primary wound dressing, as necessary
- Take measurements if appropriate
- Perform MLD
- Reapply bandages
- Instruct in therapeutic exercise

Treatment Sessions

- Typical treatment session for unilateral involvement takes 1 hour (90min – 2 hrs for bilateral)
- Continue to instruct in self-management
- Pace treatment sessions based on patient's ability to learn
- Discharge exercise program to home when independent
- Obtain compression garment when measurements plateau and wound is healed
- Check fit of garment

Frequency and Duration

- During Phase I clients are seen daily
- Duration of Phase I is usually 3-4 weeks
- In Phase II the client does not come to the clinic

Average Duration of Treatment

- Uncomplicated upper extremity
  - 2-3 weeks
  - 10 treatments
- Uncomplicated lower extremity
  - 3-4 weeks
  - 15 treatments

Education

- Focus on instructing in one aspect of treatment at a time
  - Start with bandaging.
  - Home exercise program
  - Skin care/risk-reducing behaviors
  - MLD

Photo courtesy of Dr Linda Khong, PhD. LK Lymphoedema Centre, Perth, Australia-Used with Permission

Education

- Focus on instructing in one aspect of treatment at a time
  - Start with bandaging.
  - Home exercise program
  - Skin care/risk-reducing behaviors
  - MLD

When Does CDT Fail?

- Phase I
- Lack of compliance
- Improper treatment
- Malignant lymphedema
- Associated conditions
- Severity of symptoms

When Does CDT Fail?

- Phase II
- Lack of compliance
- Lack of hygiene
- Reoccurrence of cancer
- Associated conditions
- Severe lymphostatic fibrosis

Success with CDT

Images from Kazu Suzuki, DPM, CWS—used with permission

Success with CDT

Images from Cara Schmidt– Used with Permission

Thank You

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