



# LYMPHEDEMA

## The Elephant in the Room

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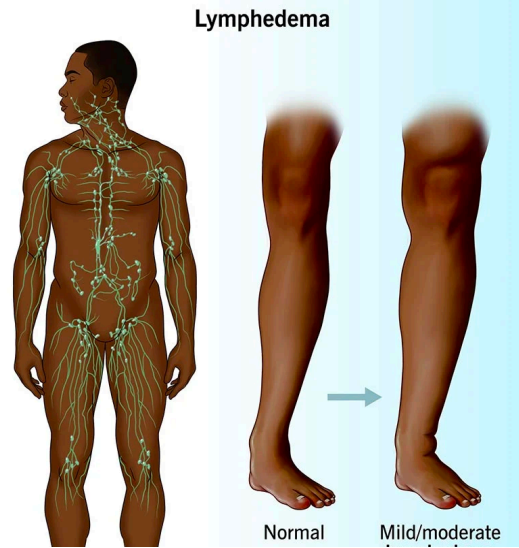
## Objectives

- Define lymphedema
- Classification of lymphedema
- Discuss etiology
- Discuss lymphedema presentation
- Work up for lymphedema
- Management of lymphedema

# LYMPHEDEMA

## Definition

- The abnormal accumulation of interstitial fluid and fibroadipose tissue resulting from injury, infection, or congenital abnormalities of the lymphatic system.



# LYMPHEDEMA

## Classification

- Primary
  - Direct cause of lymphedema may not be known and can develop at any time during life
- Secondary
  - Result of another condition or treatment of another condition
  - Much more common than primary

## PRIMARY LYMPHEDEMA

- Congenital lymphedema
  - Present at birth or within first year of life
  - May be familial or sporadic
  - More common in females
- Lymphedema praecox
  - Most common PRIMARY cause
  - Most often during puberty
  - 4:1 ratio female to male
- Lymphedema tarda
  - Least common
  - Occurs after age 35



## SECONDARY LYMPHEDEMA

### Cancer or Cancer Treatment

- Melanoma, GU, or gynecologic tumors
  - Think pelvic lymph node disruption
- Incidence of lymphedema related to cancer in LE 20%
- Incidence increase with use of radiation therapy following lymph node removal
- Direct nodal invasion with melanoma can cause lymphedema as well
- Kaposi sarcoma can involve cells lining lymphatic channels
  - AIDS or solid organ transplant
- Upper extremity melanoma and breast cancer



## SECONDARY LYMPHEDEMA

### Infection

- Post operative infection following LND
- Cellulitis
- **Filariasis**
  - Most common cause worldwide
  - Affects over 120 million



## SECONDARY LYMPHEDEMA

### Trauma

- Traumatic injuries can also disrupt lymphatic system
  - Cause of 10% of post traumatic edema
- Degloving injuries
- Multiple fractures
- Compartment syndrome



## SECONDARY LYMPHEDEMA

### Orthopedic Surgery

- Post surgical edema
- Total hip and total knee
- Disruption of lymphatic channels



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## SECONDARY LYMPHEDEMA

### Chronic Venous Insufficiency

- Can be challenging to differentiate from lymphedema but can also lead to lymphedema
- Mixed CVI and lymphedema is common and known as phlebolymphe~~ma~~edema
- CVI leads to excess fluid load at tissue level overwhelming lymphatic system which can ultimately lead to lymphedema



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## SECONDARY LYMPHEDEMA

### OBESITY

- Most common referral we get in our office for lymphedema
- BMI > 50 is independent risk factor for lymphedema
- Etiology unclear but thought to involve increased production of adipose tissue and retention of fluid in these tissues



## LYMPHEDEMA PRESENTATION

### History

- Age of onset
- Affected areas
- Progression of symptoms
  - Restricted motion?
- Trauma?
- Medical/surgical history



## LYMPHEDEMA PRESENTATION

### Examination

- Skin turgor
- Contralateral limb exam if unilateral
- Can you pinch or pick up fold of skin base of 1st toe (Stemmer sign)
  - Negative does not rule out lymphedema
- Pitting edema?
  - Not present with advanced lymphedema; involves fat deposition
- Buffalo hump
  - Edema extending onto foot
- Skin overgrowth, subcutaneous fibrosis
- Toe edema



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## LYMPHEDEMA

### Staging

- International Society of Lymphology
- Stage 0
  - Subclinical, pt may have some sensation of swelling
- Stage 1
  - Accumulation of fluid high in protein (unlike venous edema)
  - Limb elevation may reduce edema
- Stage 2
  - More solid organ changes
  - Elevation alone rarely works
  - Skin may have pitting
- Stage 3
  - Fibrosis and adipose deposition limit pitting
  - Acanthosis may occur
  - Skin thickens
  - Warty growth



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Stage 1	Stage 2	Stage 3	Stage 4
			
<p><b>Asymptomatic</b>, in which the lymphatic system experiences abnormal flow but no fluid build-up</p>	<p><b>Swelling</b>, due to an accumulation of lymph fluid that may subside when elevated</p>	<p><b>Permanent swelling that cannot be relieved through elevation</b>, accompanied by changes in the skin (fibrosis)</p>	<p><b>Lymphostatic elephantiasis</b>, or the deformation of a limb due to extensive swelling, skin thickening and scarring</p>

## LYMPHEDEMA

### Work up

- Venous ultrasound
  - Evaluate for DVT and venous reflux disease
- CT or MRI
  - Enlarged LNs that can obstruct flow
  - Increased interstitial fluid
  - Skin thickening
  - Increased fat density
- Lymphatic imagining
  - Important if patients undergoing surgical management



## LYMPHEDEMA MANAGEMENT

### Conservative Therapy

- Skin care
- Weight management
- Compression therapy
- Physical Therapy
- Pneumatic compression devices



## LYMPHEDEMA MANAGMENT

### Skin Care

- Protein rich fluid from lymphedema triggers inflammation
  - Dry skin
  - Decreased elasticity
  - More susceptible to infection/cellulitis
  - Ulcerations
- Good skin moisturizer maintains skin health
- Early treatment with antibiotics for suspected infections



## LYMPHEDEMA MANAGEMENT

### Compression Therapy

- KEY modality in treatment of limb edema
  - Decrease interstitial fluid production and accumulation
- Multilayer compression bandages
- Compression garments
- Major dependence on patient compliance
- Provides the GREATEST volume reduction in limbs especially in early stages
- Once edema decreases, new size compression may be required



## LYMPHEDEMA MANAGEMENT

### Physical Therapy

- Complete decongestive therapy
- Manual lymphatic drainage
  - Filling of cutaneous lymphatics
  - Improves expansion and contraction of lymphatic channels, trying to restore normal physiologic function
- Exercises taught to augment lymphatic flow
- IMMEDIATE placement of compression garments to maintain volume contraction
- CDT achieves on average 31-73% volume reduction



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## LYMPHEDEMA MANAGEMENT

### Pneumatic Compression

- Can be used to augment CDT and compression therapy
- Works to encourage drainage through the lymphatic channels
  - Ideally with inflation and deflation in rhythmic progressive fashion
- STILL NEED COMPRESSION AFTER IPC



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## LYMPHEDEMA MANAGEMENT

### **Surgical Management**

- Microsurgery major component with anastomoses of lymphatic channels
- Typically reserved for Stage 3
- Lymphaticovenous anastomosis
  - Bypasses diseased lymphatic system into venous drainage system
- Free lymph node transfer
- Reductive surgery
  - Liposuction
  - Excision of adipose and tissue
  - Direct excision of tissue up to deep fascia
    - Skin graft
    - Maintain dermis
    - Direct closure

## LYMPHEDEMA

### Take Home Messages

- Numerous causes for lymphedema exist and a thorough history is necessary
- Symptoms include swelling, skin changes, restricted motion
- Conservative therapy is key and can be initiated by anyone
  - Weight loss
  - Skin care
  - COMPRESSION
  - PT referral to lymphedema specialist (we have one in our system)
- DVT study and venous reflux study



# QUESTIONS?



