

1st Annual MSKCC Cancer Rehabilitation Symposium


Multi-Dimensional Use of Lymphedema Techniques for the Medically Complex Patient

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June 1, 2013




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Objectives

- Discuss Complete Decongestive Therapy (CDT) treatment for lymphedema inpatients
- Briefly discuss educational resources MSK provides to patients at risk for lymphedema
- Explain how lymphedema concepts and techniques have been utilized, modified, and applied to assist with goals of care for patients with various diagnoses
- Review goals and guidelines for each of these approaches
- Examine common challenges



Goals of Service

<p>1. Provide effective CDT to patients referred with lymphedema</p>	<p>2. Facilitate achievement of plan of care goals for patients with other diagnosis such as:</p> <ul style="list-style-type: none"> ▪ Renal insufficiency ▪ Capillary leak syndrome ▪ Hypoalbuminemia ▪ Amyloidosis <ul style="list-style-type: none"> ▪ Autonomic instability ▪ Nephrotic dysfunction
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Goals of Service

<p>3. To provide effective treatment for patients with planned large vessel removal/ligation (Inferior vena cava, Sarcoma) utilizing a team approach to pre-operative garment fitting and follow-up</p>	<p>4. To provide education to at-risk populations via:</p> <ul style="list-style-type: none"> ▪ Lower extremity lymphedema prevention group ▪ Breast surgery rehabilitation group (BSRG)
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International Society of Lymphology (ISL) Lymphoedema Staging¹

Stage 0

- A subclinical state where swelling is not evident despite impaired lymph transport. This stage may exist for months or years before edema becomes evident.

Stage I

- This represents early onset of the condition where there is accumulation of tissue fluid that subsides with limb elevation. The edema may be pitting at this stage.

Stage II

- Limb elevation alone rarely reduces swelling and pitting is manifest.

Late Stage II





- There may or may not be pitting as tissue fibrosis is more evident.

Stage III

- The tissue is hard (fibrotic) and pitting is absent. Skin changes such as thickening, hyperpigmentation, increased skin folds, fat deposits and warty overgrowths develop.




Lymphedema Team




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Lymphedema Team

- Incorporate CDT
- Challenges
- Advantages




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Lymphedema Team


- Precautions
 - Hemoglobin
 - Albumin
 - Platelets
 - Blood Urea Nitrogen (BUN)
 - Creatine
 - Brain Natriuretic Peptide (BNP)
- Supplies




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Educational Programs at Memorial Sloan-Kettering Cancer Center

Lower Extremity Lymphedema Prevention Group
Breast Surgery Rehabilitation Group



Evidence Based Education



Preventative Measures for Lymphedema:
Separating Fact from Fiction²

Evidence Supporting

Strong:


- Participation in a supervised exercise regimen both in patients with lymphedema and in those at risk for developing lymphedema

Good:

- Maintaining normal body weight or avoiding weight gain in patients who are at risk for developing lymphedema

Limited:

- Venipuncture should be avoided in patients with a history of lymph node surgery
- Preventative measures regarding limb constriction, elevation, heat and cold, and air travel and use of compression garments when flying



Summary of Evidence²

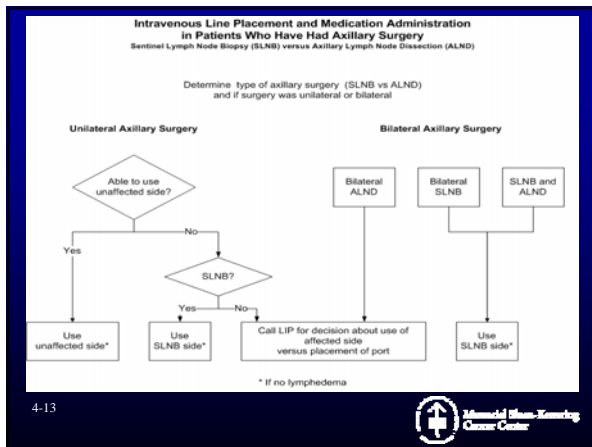
- Risk Factors
 - Greater body weight
 - Higher BMI
 - Infection or injury in the ipsilateral arm since surgery
- Education
 - All patients should be educated about lymphedema based on the individual risk associated with the surgical procedure, not the amount of nodes removed
- Resistance Training³
 - No limit on the resistance level (gradual /progressive)
 - Not contraindicated



MSKCC Axillary Procedure Guidelines⁴⁻¹³

- Objective
 - To guide clinical practice and patient education on lymphedema risk associated with upper extremity axillary surgery
- Strength of Evidence
 - Level A (randomized controlled trial/meta-analysis)






4-13



Summary of Evidence⁴⁻¹³

<ul style="list-style-type: none"> ▪ Arm Morbidity -SLNB <ALND ▪ Quality of Life -SLNB>ALND ▪ SLNB -No correlation between # of nodes removed and change in UE circumference or incidence of lymphedema 	<ul style="list-style-type: none"> Increased Risk of Lymphedema? -(+) Mastectomy Larger Extent of ALND -(+) XRT -Presence of (+) axillary nodes Who Develops Lymphedema? -SLNB 0-7% -ALND 15-25%
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How We Teach




LE Lymphedema Prevention Group

- This program is appropriate for patients who have undergone a pelvic lymph node sampling/dissection
- We review:
 - Differences Between Edema and Lymphedema
 - Risk Factors
 - Early signs of Lymphedema
 - Exercise Guidelines
 - Compression
 - Skin Care
 - Precautions




Breast Surgery Rehabilitation Group

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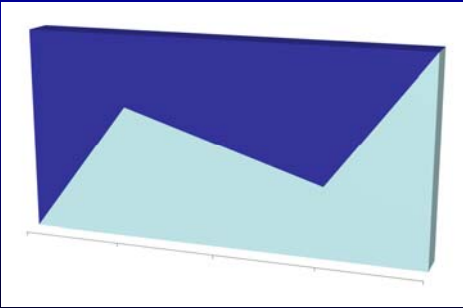
Edema Specific Protocols

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PALLIATIVE CARE

ACTIVE TREATMENT




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Referral Criteria

- Patients with **SYMPTOMATIC** autonomic and nephrotic dysfunction in the setting of amyloidosis **WITH OR WITHOUT THE PRESENCE OF EDEMA**
- Nephrotic range proteinuria (>3gm/24hours)
- Urine output > or equal to 150cc/day
- Patients with hypoalbuminemia (< or equal to 3.5g/dl serum albumin)
- Patients with decreased fluid mobilization as determined by the primary medical team




Referral Criteria

- Patients with volume overload or capillary leak syndrome
- Patients with **SYMPTOMATIC** orthostatic hypotension
- Patients potentially avoiding dialysis intervention
- Intact cognition, communication, and sensation
- Medically stable to participate in compressive therapy sessions



Exclusion Criteria

- Anuric (<150cc urine/day)
- Impaired cognition, communication, or sensation
- Cellulitis, arterial ulcerations, moderate to severe PVD as documented by ankle brachial index (ABI), and skin macerations
- Not medically stable to participate in compressive therapy sessions



Considerations of Rehabilitation Parameters

- Standard lymphedema precautions and contraindications **DO NOT NECESSARILY** apply
- Hematologic, renal, and cardiac functions **ARE NOT NECESSARILY** contraindications for bandaging
- Sound clinical judgment on a case-by-case basis
- Communication with physician critical



Bandaging Guidelines

- Patient comfort and adaptation
- The highest level of compression tolerated is ideal, 20-30mmHg
- Placement?
- Progressed to a 24-hour wearing schedule




Large Vessel Resection/Ligation



Large Vessel Resection/Ligation

Background:

- Retroperitoneal sarcomas
- Significant compression/compromise
- Often, re-collateralization of the vasculature has already begun




Large Vessel Resection/Ligation

Referral Criteria:


- Large vessel ligation/resection
- Sarcoma with or without LND or biopsy
- Melanoma with or without LND or biopsy

Our Role:

- Pre-operative measurements
- Post-op edema service consult for bandaging and MLD
- Referral for outpatient therapy



Measuring for Compression Stockings



Measure widest thigh

Measure widest calf

Measure smallest circumference proximal to malleoli

Patient Name:	MRN:
Thigh	
Calf	
Ankle	


Please circle patient's size and write script accordingly for Juzo or Jobst garments. Contact Jean Kotkiewicz, kotkiewj@mskcc.org, or Ron Lee, lee12@mskcc.org with questions.

JOBST size chart for 15-20, 20-30, and 30-40mmHg compression stockings

SIZE	ANKLE	CALF	THIGH
S	18-21cm	28-35cm	40-45cm
M	21-25cm	30-42cm	46-70cm
L	25-29cm	32-46cm	54-78cm
XL	29-33cm	34-50cm	60-84cm

JUZO size chart for 20-30 and 30-40mmHg compression stockings


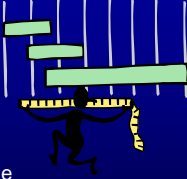
SIZE	ANKLE	CALF	THIGH
I	18-21cm	29-38cm	41-49cm
H	21-24cm	31-43cm	50-68cm
III	24-27cm	37-49cm	54-75cm
IV	27-31cm	41-53cm	57-79cm
V	31-35cm	46-58cm	62-85cm



Large Vessel Resection/Ligation

Objective Measures to Determine Improvement:

- Patient Adherence With Schedule
- Maintenance of Measurements at Follow Up
- Long-Term Garment Use




Amyloidosis

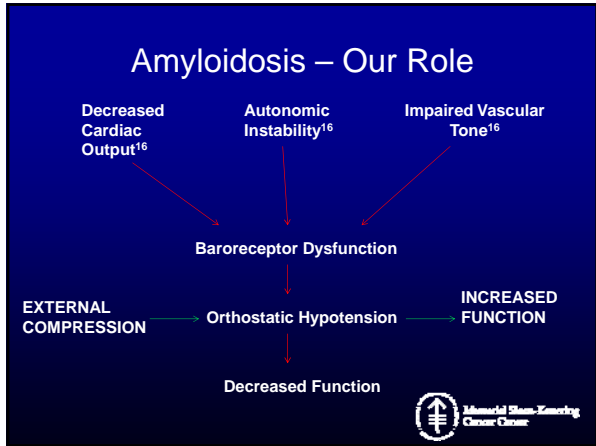


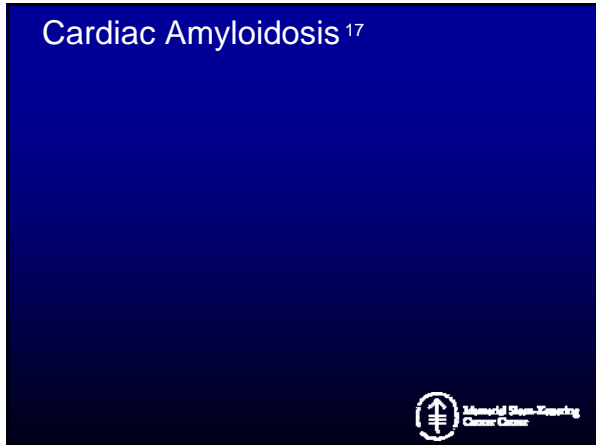
Amyloidosis

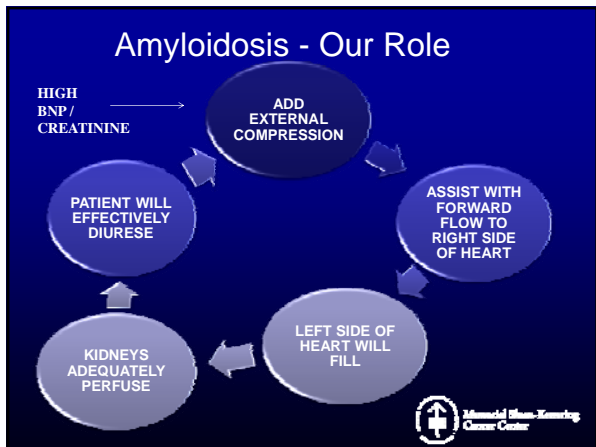
Background:

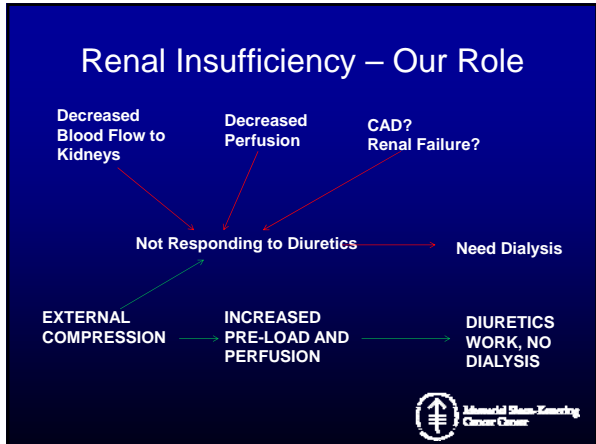
- Extracellular deposition of amyloid in one or more organs:
 - Heart, Kidneys, Nervous System, Liver, Soft Tissue
- Chemotherapy and Stem-Cell Transplant
- Nephrotic Dysfunction¹⁵
 - Proteinuria
 - Lose protein through urine
- Brain Natriuretic Peptide (BNP)











- ### Renal Insufficiency
- Objective Measures to Determine Improvement:
- Stabilized Blood Pressure
 - Decrease in Weight
 - Decrease in Creatinine
 - Decrease in BUN
 - Overall Improvement in Kidney Function
 - Acceptable Urine Output
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- ### Example: Orders Received
- | | |
|--|--|
| <p>AMYLOID</p> <ul style="list-style-type: none"> • Transfusion dependent Myelodysplastic Syndrome (MDS) • Allogenic Transplant • Iron Overload • Liver Dysfunction • Restrictive Cardiomyopathy | <p>RENAL INSUFFICIENCY</p> <ul style="list-style-type: none"> • Cannot Diurese • Kidneys Suffer • No Intravascular Fluid • Low Albumin • No "forward flow" |
|--|--|
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Capillary Leak Syndrome



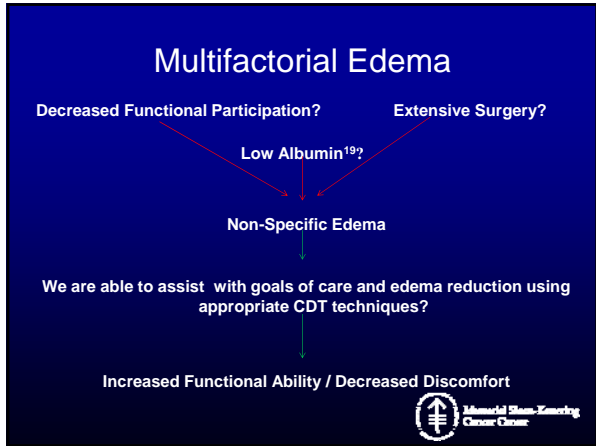
Capillary Leak Syndrome

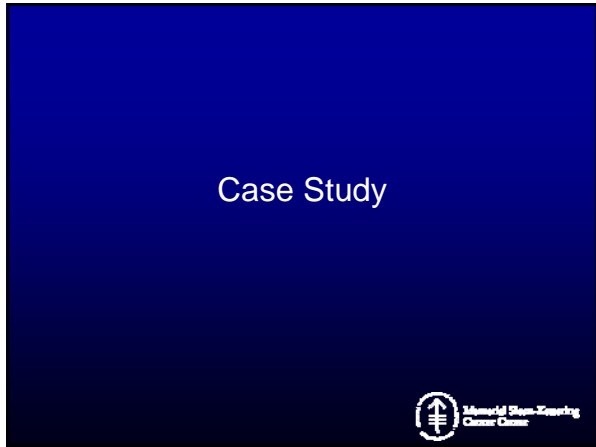
- Growth Factors
- Change in Capillary Wall Pressure
- Very Rare
- No Known Cause
- Sudden Drop in Blood Pressure
- **Watch Platelets**

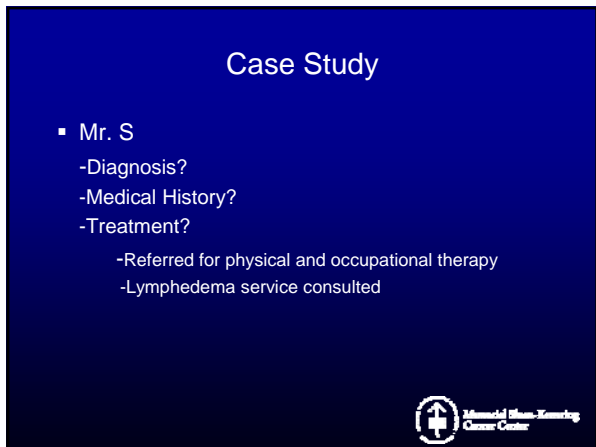


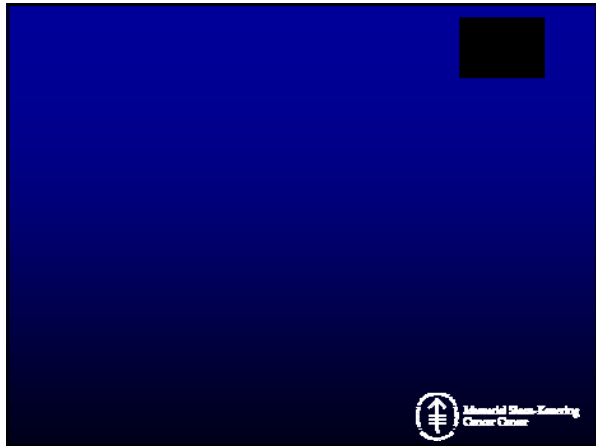
Multifactorial Edema

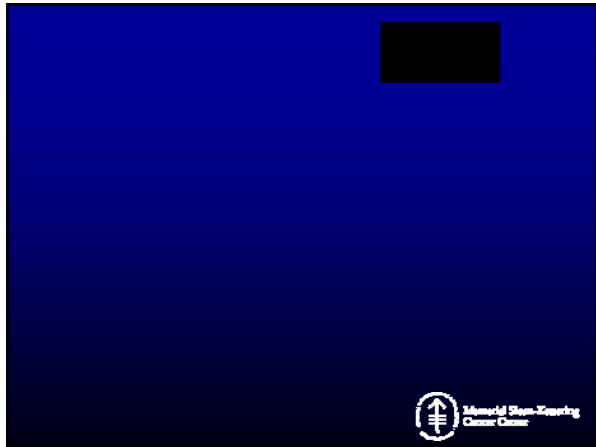


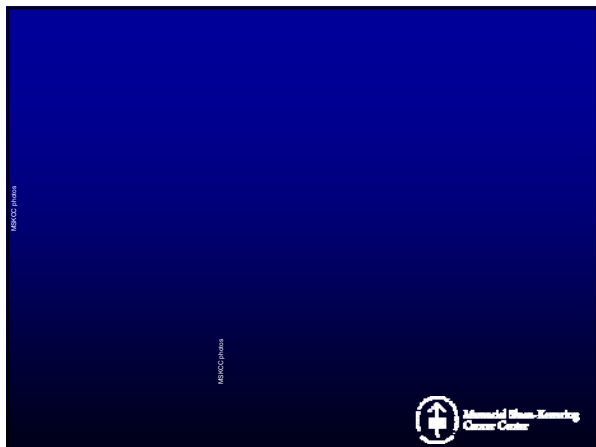


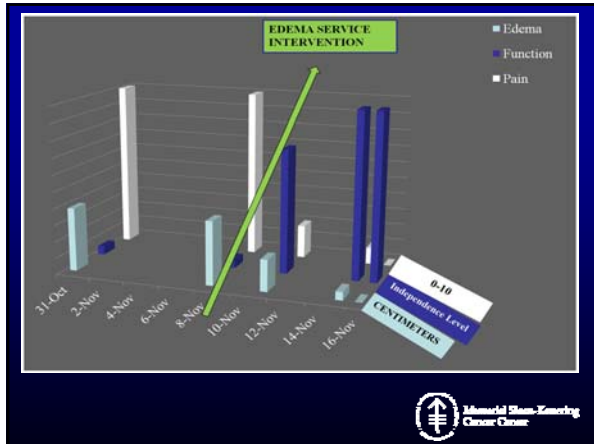












Most Common Inpatient Lymphedema/Edema Challenges?

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Scrotal Edema/ Lymphedema

Difficult to bandage in real life



- Slides off with movement
- Risk of tourniquet
- Increased time
- Patient cannot duplicate
- Decreased compliance after urination
- Easily soiled
- Moisture levels
- Skin integrity

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Solutions




Solutions




Labia Edema/ Lymphedema


- Not possible to bandage in real life
 - Difficult area in general
 - Easily soiled
 - Moisture levels
 - May slide with movement
 - Decreased compliance after urination
 - Skin integrity
 - Abdominal compression may not be tolerated



Solutions



Solutions




Solutions



Hard to Treat Areas

- Chest
- Head
- Neck
- Chin
- Side of Breast
- Side of Abdomen
- Dorsum of Foot
- Dorsum of Hand
- Brachioradialis
- Lateral Thigh
- Side of Trunk
- Under Eye Area





Solutions

- Swell Spots/ Foam Chips
- Be Creative
- Add to any Area
- Cut / Modify
- Sew to Garment for More Security


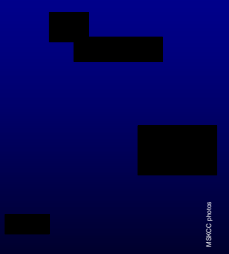


Head and Neck Lymphedema




Solutions

- Swell spots to fabricated garments
- Elastic
- Wound care netting


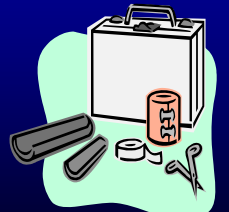


Solutions



Wounds or Weeping Edema

- Wound Care Service Consult?
- What is moisture level?
- Location?
- Pain?
- Goals of Care?
- Prognosis?



Solutions - Define It First

<p>Arterial</p> <ul style="list-style-type: none"> • Punched out lesion • DRY • Usually lateral leg • NO COMPRESSION <p style="text-align: center;">↓</p> <p style="text-align: center;">Hydrocolloid</p>	<p>Venous</p> <ul style="list-style-type: none"> • Irregular borders • WET, increased drainage • Usually medial leg • ONLY COMPRESS BASED ON ABI SCALE²⁰⁻²¹ <p style="text-align: center;">↓</p> <p style="text-align: center;">Alginate</p>
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Review of Objectives


- Discuss CDT treatment for lymphedema inpatients
- Briefly discuss educational resources MSKCC provides to patients at risk for lymphedema
- Explain how lymphedema concepts and techniques have been utilized, modified, and applied to assist with goals of care for patients with various diagnoses
- Review goals and guidelines for each of these approaches
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QUESTIONS?

Thank you