


Lymphedema 20/20


Lymphedema and Lipedema Treatment Updates

Guenter Klose, CLT-LANA
MLD/CDT Cert. Instructor
Jobst-Elvarex Advanced Class

1



What's ahead

1. Talking Compression with your Patients (video)
2. Lymphedema Precautions/Risk Reduction Practices.
3. Modern MLD or No MLD; time to change old practice?
4. Best Practice for lymphedema.
5. Taking a new look at lipedema.
6. All edemas are NOT lymphedema!
7. Starling's law, its revision and the glycocalyx;
A new look at the fluid dynamics on the capillary wall 

2

REGISTER NOW for courses!
Online Course Login

Lymphedema Certification and Online Education Home Schedule Courses + Therapist Directory About Us + Contact Resources +

Jobst Lecture 2020 klosetraining.com/jobstlecture2020

Guenter's Presentation

Lymphedema 20/20: Lymphedema and Lipedema Treatment Updates

Revised Starling / Glycocalyx

Endothelial Glycocalyx and the Revised Starling Principle. E. Crockett. Pulmonary Vascular Research Institute Chronicle, 1(2): 41-46. 2014.

Like a Slippery Fish, a Little Slime Is a Good Thing: The Glycocalyx Revealed. C. Biddle. AANA Journal, 81(6): 473-480. 2013.

Microvascular Fluid Exchange and the Revised Starling Principle. J. Levick and C. Michel. Cardiovascular Research, 87: 198-210. 2010.

KLC 2019: Linda Hodgkins



Ulises Baltazar - Glycocalyx



3

<https://klosetraining.com/resources/klose-videos/>

Talking Compression With Your patient

John Holland
FOUNDER, Compression garment fitter, Co-owner, & vice president
Absolute Medical, Inc.
May 3rd 2019

4

Lymphedema Precautions



6

Lymphedema Precautions

VOLUME 33 | NUMBER 7 | JUNE 1, 2015
JOURNAL OF CLINICAL ONCOLOGY ORIGINAL REPORT

Impact of Ipsilateral Blood Draws, Injections, Blood Pressure Measurements, and Air Travel on the Risk of Lymphedema for Patients Treated for Breast Cancer

Chen A, Dwyer L, Wang J, et al. *J Clin Oncol*. 2015;33(7):945-951. doi:10.1200/JCO.2014.561111

ABSTRACT

Purpose: The goal of this study was to investigate if blood pressure measurements, injections, air travel, or air travel in a car of patients treated for breast cancer and if ipsilateral blood draws, injections, blood pressure measurements, and air travel were associated with lymphedema.

Patients and Methods: Between 2007 and 2011, patients undergoing breast cancer treatment were followed up for 12 months. Ipsilateral blood draws, injections, blood pressure measurements, and air travel were recorded. The number of ipsilateral blood draws, injections, blood pressure measurements, and air travel were recorded. The association between ipsilateral blood draws, injections, blood pressure measurements, and air travel and lymphedema was investigated.

Results: In 2011 measurements, there was no significant association between ipsilateral blood draws, injections, blood pressure measurements, and air travel and lymphedema. In 2012 measurements, there was a significant association between ipsilateral blood draws, injections, blood pressure measurements, and air travel and lymphedema.

Conclusion: This study suggests that although ipsilateral blood draws, injections, blood pressure measurements, and air travel were associated with lymphedema, the association was not significant.

INTRODUCTION

Chronic and latent infections strongly affect patients with breast cancer and lead to lymphedema, infections, blood pressure readings, and travel to the airside care during and after treatment to reduce the risk of developing lymphedema (LLE).¹⁻³ There are also published reports on patients who bring to attention, LLE, lymphedema, surgery, and treatment, and comprehensive data demonstrating

VOLUME 33 | NUMBER 7 | JUNE 1, 2015
JOURNAL OF CLINICAL ONCOLOGY SYNDROME GRAND ROUNDS

Lymphedema Precautions: Time to Abandon Old Practices?

Sougi-Ando and Tera T, et al. *Ann Surg Oncol*. 2015;22(6):1611-1617. doi:10.1245/s12283-015-1000-0

ABSTRACT

Purpose: The purpose of this study was to investigate if blood pressure measurements, injections, air travel, or air travel in a car of patients treated for breast cancer and if ipsilateral blood draws, injections, blood pressure measurements, and air travel were associated with lymphedema.

Patients and Methods: Between 2007 and 2011, patients undergoing breast cancer treatment were followed up for 12 months. Ipsilateral blood draws, injections, blood pressure measurements, and air travel were recorded. The number of ipsilateral blood draws, injections, blood pressure measurements, and air travel were recorded. The association between ipsilateral blood draws, injections, blood pressure measurements, and air travel and lymphedema was investigated.

Results: In 2011 measurements, there was no significant association between ipsilateral blood draws, injections, blood pressure measurements, and air travel and lymphedema. In 2012 measurements, there was a significant association between ipsilateral blood draws, injections, blood pressure measurements, and air travel and lymphedema.

Conclusion: This study suggests that although ipsilateral blood draws, injections, blood pressure measurements, and air travel were associated with lymphedema, the association was not significant.

INTRODUCTION

Chronic and latent infections strongly affect patients with breast cancer and lead to lymphedema, infections, blood pressure readings, and travel to the airside care during and after treatment to reduce the risk of developing lymphedema (LLE).¹⁻³ There are also published reports on patients who bring to attention, LLE, lymphedema, surgery, and treatment, and comprehensive data demonstrating

Myths Associated with Lymphedema

Arin K. Greene, MD
 Lymphedema: Presentation, Diagnosis and Treatment
 Springer 2015

Preventing Lymphedema: Separating Fact From Fiction

Babak Mehrara, MD
 LE&RN Channel on YouTube

7



National Lymphedema Network Conference Boston, October 2019

Saturday, October 26, 2019		
7:00	Registration	Grand Ballroom Foyer
Pre-conference Sessions		
	Private Practice - The Essentials for Success	Douglas
	S.T.R.I.D.E.™: Professional Guide to Compression Garment Selection in Clinical Practice	Faneuil
	Lymphedema Therapy in the Home Setting	Carlton
	Head & Neck Lymphedema Management: Be at the Top of Your Practice	Lewis
	Advanced Scar Tissue Technique Lab: Enhance Lymph Drainage	Burroughs
	Differential Diagnosis of Vascular Impairments and Associated Edema Management	Marina I
	Wound Care in Nutshell	Marina II
	Integrating Elastic Taping - A Comprehensive Lab	Marina III
11:00	medi sponsored welcome reception	Grand Ballroom
General Assembly		
12:45	Welcome	Grand Ballroom
	Precautionary Measures for Lymphedema	Harbor Ballroom
1:15	Presenting the Evidence	Harbor Ballroom
	Round Table with Panel of Experts	Harbor Ballroom
	Full Conference Engagement	Harbor Ballroom
3:15	Tactile Sponsored Break in Exhibit Hall	Grand Ballroom
General Assembly		
	Lymphedema Diagnosis & Definition	Harbor Ballroom
3:45	The Language of Lymphedema	Alexa Esclano
4:00	Multi-causal Lymphedema	Kathleen Francis
4:20	Universal Agreement on Definition & Diagnosis of Lymphedema	Cheryl Brunelle
4:40	Lymphedema Screening Tool - Full Conference Engagement	Jeanette Zucker
4:55	Q&A	Jeanette Zucker
	Movement & Exercise for Lymphedema	Jeanette Zucker

Saturday, 1:15
Precautionary Measures for Lymphedema
Presenting the Evidence
Round Table with Panel of Experts

Jeanette Zucker, DPT
Alphonse Taghian, MD



8

Painful lymphedema afflicts millions of patients after cancer surgery

By Ranit Mishori
Special to The Washington Post
Monday, November 8, 2010, 2:40 PM



It's the r
breast c
"cancer
that sne

The Washington Post
Democracy Dies in Darkness

Special garments ease an agonizing ailment for women. But insurance may not pay.

By Carmen Heredia Rodriguez



The Washington Post Democracy Dies in Darkness

Yes, breast cancer survivors, you can lift weights, get manicures and garden

By Susan Berger

July 6, 2019 at 10:30 a.m. MDT


For more than 25 years, many breast cancer survivors were given a lifelong, life-changing warning: Do not lift anything over five pounds, avoid getting manicures, taking saunas or even gardening since it might lead to a painful complication called lymphedema, which can cause irreversible swelling in the arm and often hardening of skin.



9

LYMPHEDEMA PRECAUTIONS

lymphnet.org/position-papers



Position Statement of the National Lymphedema Network
 Risk Reduction Practices
 Revised May 2019

TOPIC: Lymphedema Risk Reduction Practices

Lymphedema is the accumulation of protein-rich fluid in tissues with inadequate lymphatic drainage. It is not known why some people with the same risk factors develop lymphedema and others do not. An underlying predisposition to developing lymphedema may be a contributing factor. Scientific evidence is lacking regarding risk reduction practices. Thus, how to reduce the risk of developing lymphedema, or how to minimize those of lymphedema.

Many recommendations for risk reduction are common sense approaches based on the body's anatomy and physiology. Because of individual variation in anatomy and because lymphedema may be caused by many different factors, each person with lymphedema or at risk for lymphedema needs to have their risk-reduction practices individualized. What works for one person may not work for another.

Based on practical experience, there are some reasonable actions and precautions to be taken for individuals with or at risk for lymphedema. Lymphedema is a progressive condition without a cure; caution should be exercised to reduce the risk of developing or reoccurring lymphedema.

This position paper provides information to assist the person with or at risk for lymphedema to make the best possible and most informed choices about risk-reduction practices.

If you are not clear about your own risks, meet with a treatment provider who is knowledgeable about lymphedema to discuss your personal strategies for risk reduction.

This paper differentiates people with a confirmed diagnosis of lymphedema from people at risk of lymphedema. People at risk of lymphedema are individuals who have not yet displayed the signs and symptoms of lymphedema but have a known weakness of their lymphatic system. This includes people who have undergone removal of lymph nodes or radiation therapy, which increases the risk for developing lymphedema. At-risk individuals have altered lymphatic function that may impact the body's ability to take up excess fluids in the tissue.

People with a confirmed diagnosis of lymphedema should consider the following actions and precautions:

- Medical check-ups:** Have regular follow-ups by professionals with training in lymphedema. The follow-up schedule should be based on your individual situation and determined by your lymphedema care provider.
- Reporting changes:** Report to your health care provider any change in your lymphedema, such as increase in size, change in sensation, color, temperature, or skin condition. If your weight or size of lymphedema body part change, seek assistance from a lymphedema professional to determine if a new course of therapy or new garment is needed.
- Body weight:** Obesity is known to be a major risk factor for lymphedema. A person with lymphedema should maintain a normal body weight and seek professional help to lose weight if your weight is above standard recommended guidelines. In one study, lymphedema treatment was most effective if combined with weight loss. People who do not know their recommended weight for age and height should seek information from a health care provider.

NLN • 116 N. Montgomery Street, Suite 200 • San Francisco, CA 94105
 Tel: (415) 398-2844 • Fax: (415) 405-3013
 Website: 1.800.641.2228 • Email: info@lymphnet.org • Online: www.lymphnet.org

NLN's Risk Reduction Practices

Healthy Habits for Patients at Risk for Lymphedema

Healthy Lifestyle:
A healthy diet and exercise are important for overall good health.

- Maintain optimal weight through a healthy diet and exercise to significantly lower risk of lymphedema.
- Checically build up the duration and intensity of any activity or exercise. Exercise the "Golden Rule: 10 minutes."
- Take frequent rest periods during activity to allow for recovery.
- Obtain the risk-reduction strategy and allow activity for change in risk: shock, trauma, infection, insect bites, or trauma.

Skin Care:
Take care that your skin is in good condition.

- Keep your at-risk body part clean and dry.
- Apply moisturizer daily to prevent chapping/drying of skin.
- Pay attention to nail care and do not cut cuticles.
- Protect exposed skin with sunscreen and insect repellent.
- Use care with soaps to avoid rashes and skin irritation.

Medical Check-ups:
Find a certified lymphedema therapist (CLT).¹

- Review your individual situation, get assessed for lymphedema and discuss risk factors with your CLT.
- Get your CLT or healthcare professional's compression garments for all treated and untreated limbs are appropriate for you.
- If a compression garment is recommended, make sure it is properly fitted and you understand the wear, care, and replacement guidelines.
- Get a follow-up schedule based on your needs with your CLT.
- Report any changes in your at-risk body part to your CLT.

Infection Education:
Know the signs of infection and what to do if you suspect you have one.

- Signs of infection: red, hot, itchy, swollen skin, increased pain, temperature, increased swelling, fever or flu-like symptoms.
- If any of these symptoms occur, contact your healthcare professional immediately for early treatment of possible infection.
- If a position or position to your skin occurs, wash it with soap and water, apply topical antibiotics, and observe for signs of infection.
- Keep an aches that set with you when treating.

TRY TO AVOID POSSIBLE TRIGGERS

Injury or Trauma

Minor trauma, such as bumping, bruising, or surgery, may cause skin injury, the swelling, bruising, or surgery, may cause skin injury.

- Try to avoid puncturing (eg, splinters and sharp objects).

Limb Constriction

Wearing tight jewelry and clothing that may cause skin injury, the swelling, bruising, or surgery, may cause skin injury.

- Try to avoid tight pressure on the at-risk limb.

Extreme Temperatures

Avoid exposure to extreme heat, which can cause skin irritation, the swelling, bruising, or surgery, may cause skin injury.


- Try to avoid extreme heat exposure to feet, particularly hot tubs and saunas.

Prolonged Inactivity

Avoid prolonged standing or sitting for long periods.

- Move frequently throughout the day.
- Use proper foot brace and insole.

Please Note: These guidelines are meant to help reduce your risk of developing lymphedema and are NOT prevention guidelines. Research has shown that the majority of those who develop lymphedema have no known risk factors. This information should only be used for educational purposes and is not intended to replace the advice of your healthcare professional. The full text of the NLN's risk-reduction practices position paper is available at: www.lymphnet.org/position-papers. To receive the NLN's other position papers and the CLT if you are interested.



NLN's Healthy Habits chart

10



Modern MLD or No MLD; time to change old practice?

12



HOME ABOUT ▾ REGISTER ▾ COURSE INFO ▾ CONTACT US NEW! "LYMPHIE LARA" SIGN IN 🔍 🛒


WHAT HAS CHANGED?

Manual Lymphatic Drainage training has dramatically changed over the past few years. Why? Because lymphatic medicine and research has changed! What we thought to be true in the past is different than what we know now. New ICG Fluoroscopy imaging of live lymphatics and published research in the past few years has begged significant changes in lymphedema educational curriculum:

- *Starling's Law Debunked!
- *Endothelial Glycocalyx Layer structure and function explained
- *New state of the evidence for Modern MLD (finally! the scientific proof we need)
- *Why all edema is lymphedema, and why it matters
- *How to improve functional outcomes for TKA and other orthopedic applications
- *Customize MLD for each individual patient!
- *Your best route may drain proximal to distal on the extremity. Find out how and why.
- *Use new research on lymphosomal mapping, and manual assessments, as your guide to customization
- *Training in the new era of Lymphatic & Integumentary Rehabilitation - why it all comes back to rehab and active movement!

This evidence based, **Modern MLD Certification** course will challenge your mindset and open new doors for more effective results using all your treatment techniques.


Really?



13


NEAR-INFRARED FLUORESCENCE IMAGING

Time= 0 s



Before MLD

Time= 25.109 s



Start MLD

Before MLD During MLD

E.M. Sevvick-Muraca

14

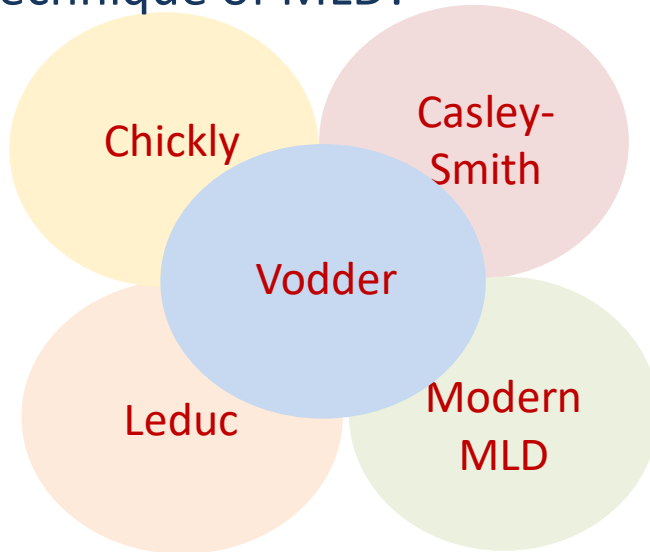


15



16

There is no universal agreement about the correct technique of MLD!



17

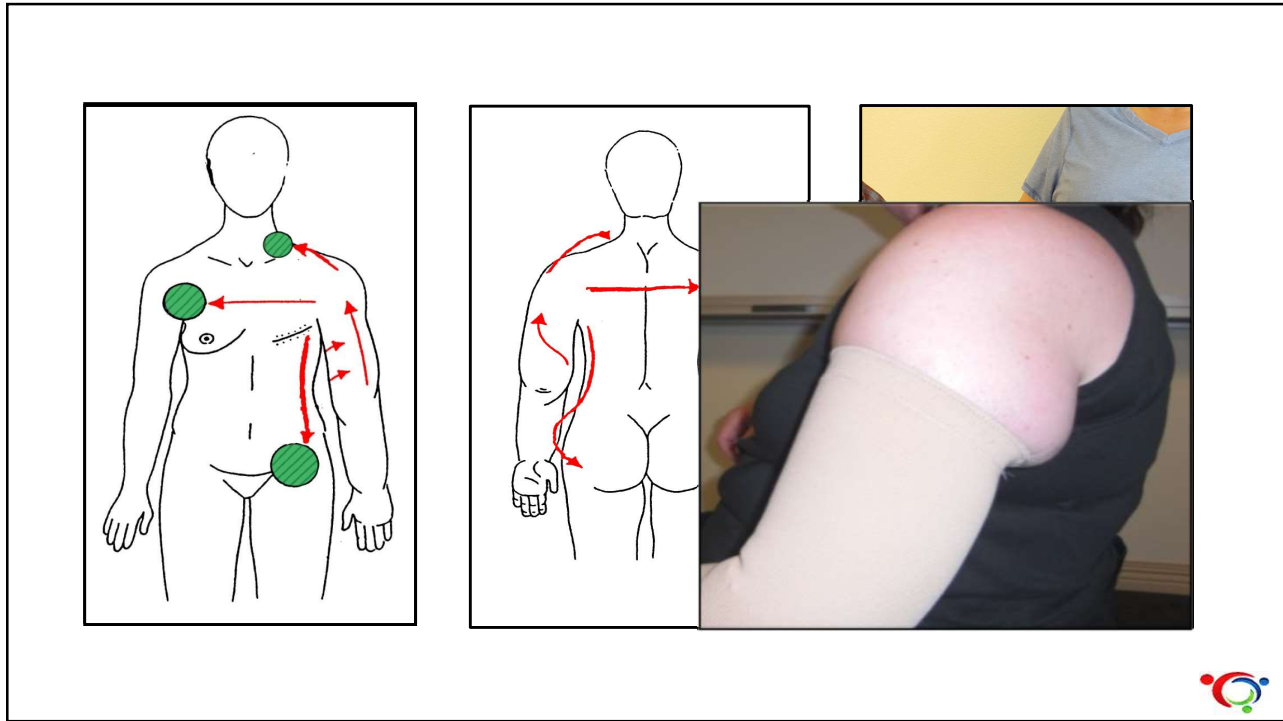
The quality of MLD varies a great deal from one practitioner to the next:



- Training received
- Therapist passion/enthusiasm
- Time constraints
- Reimbursement issues
- Productivity pressure
- Scheduling issues

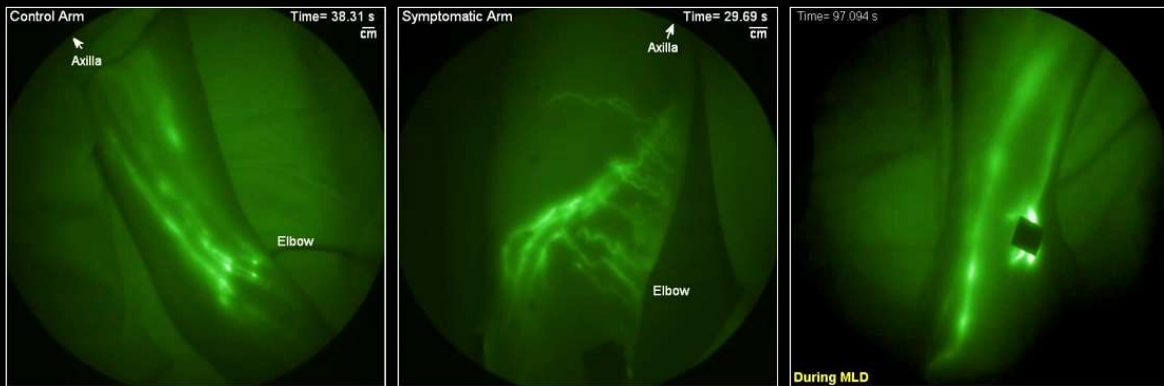


18



19

The Role of ICG Fluorescence Lymphography in MLD



20

TECHNICAL ADVANCE

Open Access

A new indocyanine green fluorescence lymphography protocol for identification of the lymphatic drainage pathway for patients with breast cancer-related lymphoedema

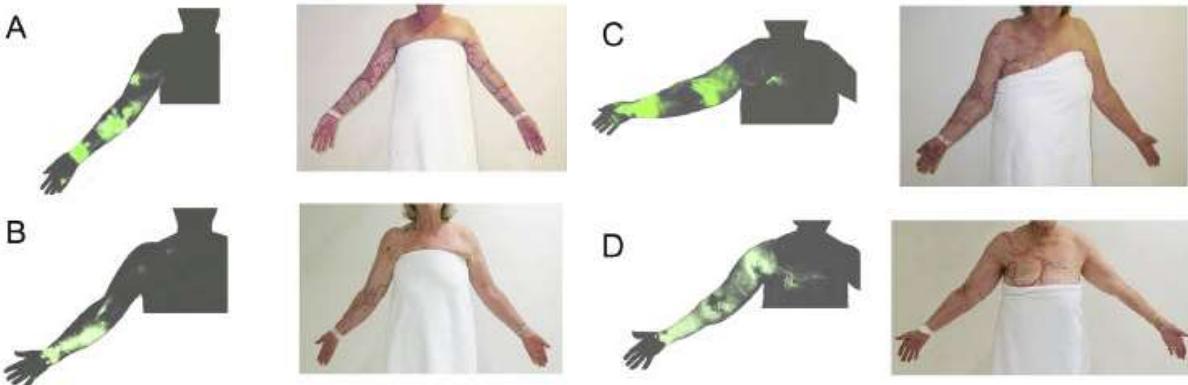
Hiroo Suami^{1*}, Asha Heydon-White¹, Helen Mackie^{1,2}, Sharon Czerniec¹, Louise Koelmeyer¹ and John Boyages¹



Comparison of ICG lymphography, tracing photo and lymphoscintigraphy in the same patient



21



Patterns of drainage pathways in ICG lymphography images (left) and tracing photos (right): A: ipsilateral axilla, B: clavicular, C: parasternal, and D: contralateral axilla



22

Development of ICG Lymphography Staging

Indocyanine green lymphography staging scale



Stage	0	1	2	3	4	5
Patent lymphatic vessels	++++	+++	++	+	0	0
Dermal backflow	0	+	++	+++	++++ finger/toe	0
Lymphatic vessel contractility	++++	+++	++	+	0	0

Chang DW, Suami H, Skoracki R. *Plast. Reconstructive Surgery*, 2013

Nguyen AT, Suami H, et al. *Journal of Surgical Oncology*, 2016



23

The Role of IGL to Guide Therapy - Hiroo Suami, MD - Harvard LE Symposium 2018

MQ Health
MACQUARIE UNIVERSITY
HEALTH SCIENCES CENTRE

Breast cancer (N=103)

LYMPHATIC DRAINAGE REGIONS

	MDA stage	No.	ICG drainage regions				
			Ipsilateral axilla	Clavicular	Parasternal	Contralateral axilla	Ipsilateral Inguinal
	1	19	95%	21%	5%	0%	0%
	2	46	61%	52%	7%	2%	0%
	3	20	70%	55%	5%	5%	0%
	4	18	50%	17%	17%	17%	0%
	Total	103	67%	41%	8%	5%	0%

❖ Unspecified: 2 cases in stage 4

Hiroo Suami, MD – Harvard Symposium 2018

AUPEP - AUSTRALIAN LYMPHOEDEMA EDUCATION, RESEARCH AND TREATMENT
 12:12 / 20:16

24

ICG Fluorescence Lymphography in Guiding Therapy - Hiroo Suami, MD - Harvard Symposium

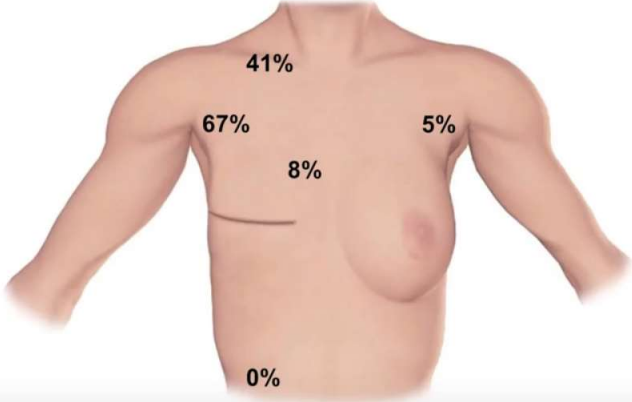
Breast cancer (N=103)

LYMPHATIC DRAINAGE REGIONS

Axillary surgery:

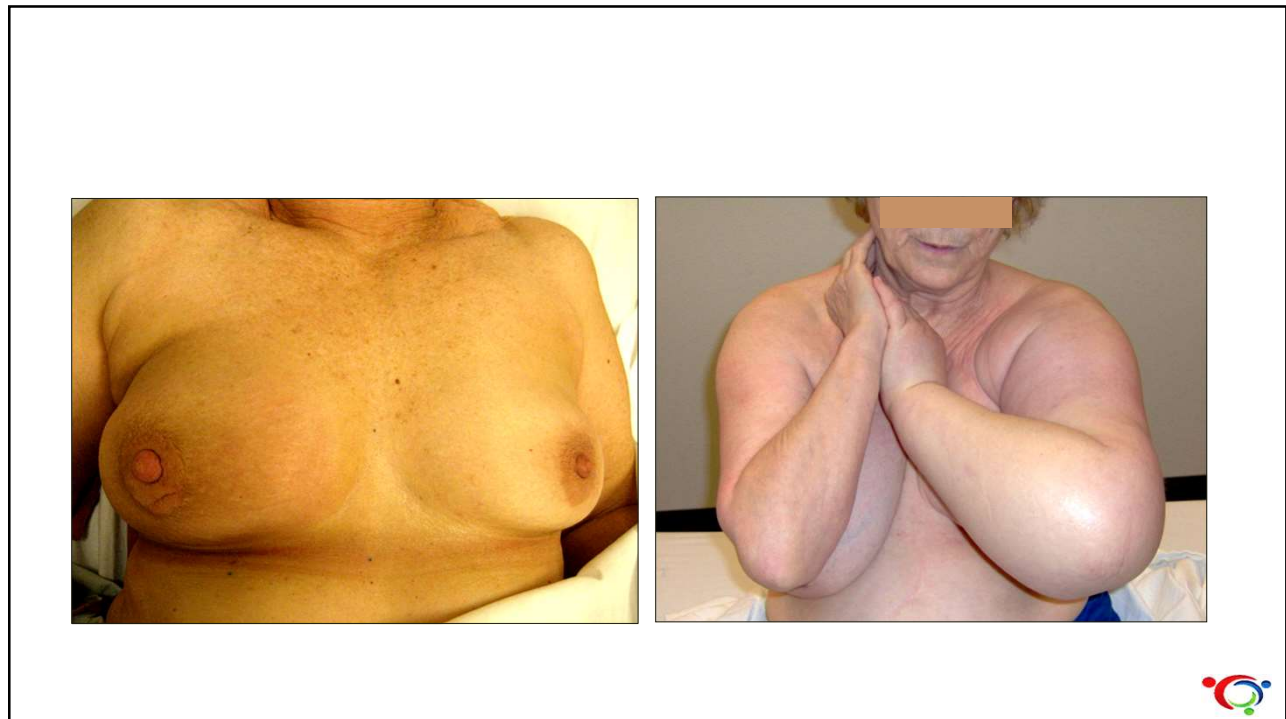
- Axillary dissection: 99
- Sentinel node biopsy: 2
- Unknown: 2

Hiroo Suami, MD
Harvard Symposium 2018



ALERT - AUSTRALIAN LYMPHOEDEMA EDUCATION, RESEARCH AND TREATMENT | Scroll for details | 11:52 / 20:16 | CC BY-NC-ND

25



26

Patient with Primary Lymphedema



On intake (1996)



2018



14 yrs. later



27

PATIENT WITH PRIMARY LYMPHEDEMA ON INTAKE (BEFORE CDT)



28

PATIENT WITH PRIMARY LYMPHEDEMA



On intake



4 months later

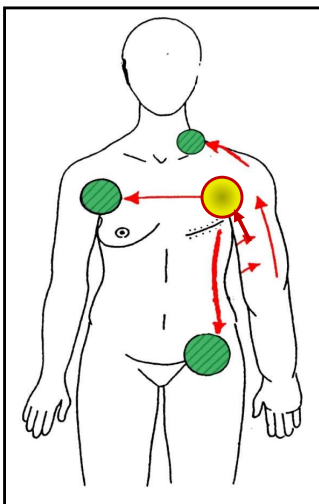


1 year later



29

ICG-guided MLD



Data presented at the 2019 KLC, Denver

- 67% of women after axillary dissection still drain to the ipsilateral axilla.
- In MDA stage 2-4 UE patients with hand edema, the dorsum may drain through the palm.
- MLD may be performed more gently and faster in case of patent lymph vessels/drainage.
- MLD should be performed more firmly and slower in areas of dermal backflow.

Louise Koelmeyer, BAppSc (OT)
ALA Accredited Practitioner



30

BJC
British Journal of Cancer

www.nature.com/bjc

ARTICLE
Clinical Study

Manual lymphatic drainage adds no further volume reduction to Complete Decongestive Therapy on breast cancer-related lymphoedema: a multicentre, randomised, single-blind trial

Mette Tambour¹, Marianne Holt², Anette Speyer³, Robin Christensen^{4,5} and Bibi Gram⁶

BACKGROUND: We investigated the comparability of Complete Decongestive Therapy (CDT) with or without Manual Lymphatic Drainage (MLD) in the management of arm lymphoedema. **METHODS:** Patients randomised into either treatment in a 2x2 factorial design. The primary outcome was volume reduction after 4 weeks. The secondary outcomes were volume reduction after 7 weeks, heaviness and tension, and health status. **RESULTS:** Despite difficulties enrolling the planned number of patients, 100 patients (50 in each group) completed the trial. In both groups, the volume of the arm increased over time. The mean (SE) changes at month 7 were -6.8%(1.2) and -5.7%(1.2) for the CDT and CDT+MLD groups, respectively. There were no significant differences with respect to any of the secondary outcomes. **CONCLUSION:** Manual lymphatic drainage adds no further volume reduction to CDT. *British Journal of Cancer* (2018) 119:1215-1222; <https://doi.org/10.1038/s41416-018-0288-2>

INTERNATIONAL CONSENSUS


BEST PRACTICE FOR THE MANAGEMENT OF LYMPHOEDEMA

...there is no doubt that they (MLD & SLD) are of immense value in providing psychological and symptomatic benefits.




31


MLD ALONE IS **NOT** THE TREATMENT FOR LYMPHEDEMA!



Patient has been treated with MLD for 10 years



After 3 weeks of CDT (4x/week)



32

Best Practice for Lymphedema; Effective CDT

The Inconvenient Truth



34

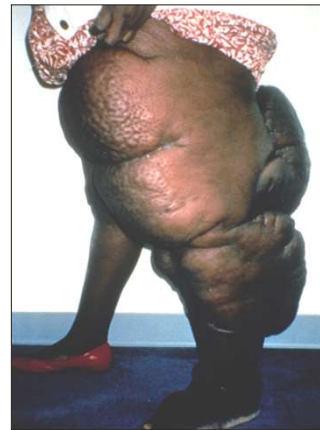
There is no cookie cutter approach
to the treatment of lymphedema!



Stage 1



Stage 2



Stage 3



35

How long does a CDT session need to be to be effective?

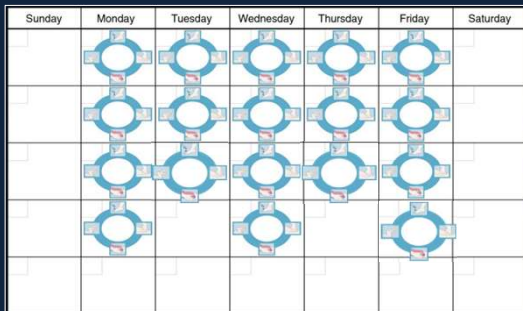


Levels of Evidence for Therapy Question	
Level of Evidence	Type of Study
1a	Systematic reviews of randomized controlled trials (RCTs)
1b	Individual RCTs with narrow confidence interval
2a	Systematic reviews of cohort studies
2b	Individual cohort studies and low-quality RCTs
3a	Systematic reviews of case-control studies
3b	Case-control studies
4	Case series and poor quality cohort and case-control studies
5	Expert opinion

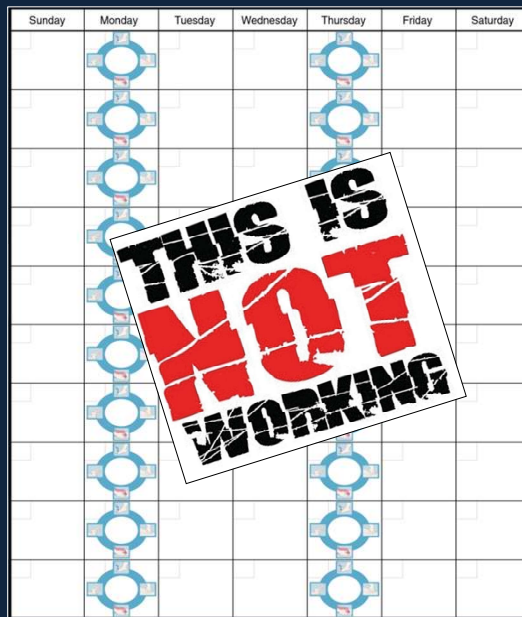


37

Effective CDT Phase 1 Schedule





Ineffective CDT Phase 1 Schedule



39

	Lymphedema Clinic	Hospital
Number of visits per week	5	2
Average total number of visits	13	17
Overall reduction and adherence	+++	+

40

Watch Linda's keynote presentation at:
klosetraining.com/jobstlecture2020



Lymphedema Program Growth through Standardization:
Going Back to the Future

The Hartford Treatment Model
 Linda Hodgkins MS OTR/L CLT-LANA



41

So, what about:

- My patients don't want to come 5x/week...
- It's not practical for them...
- My Patients don't want to be bandaged...
- My patients can't afford _____.



44

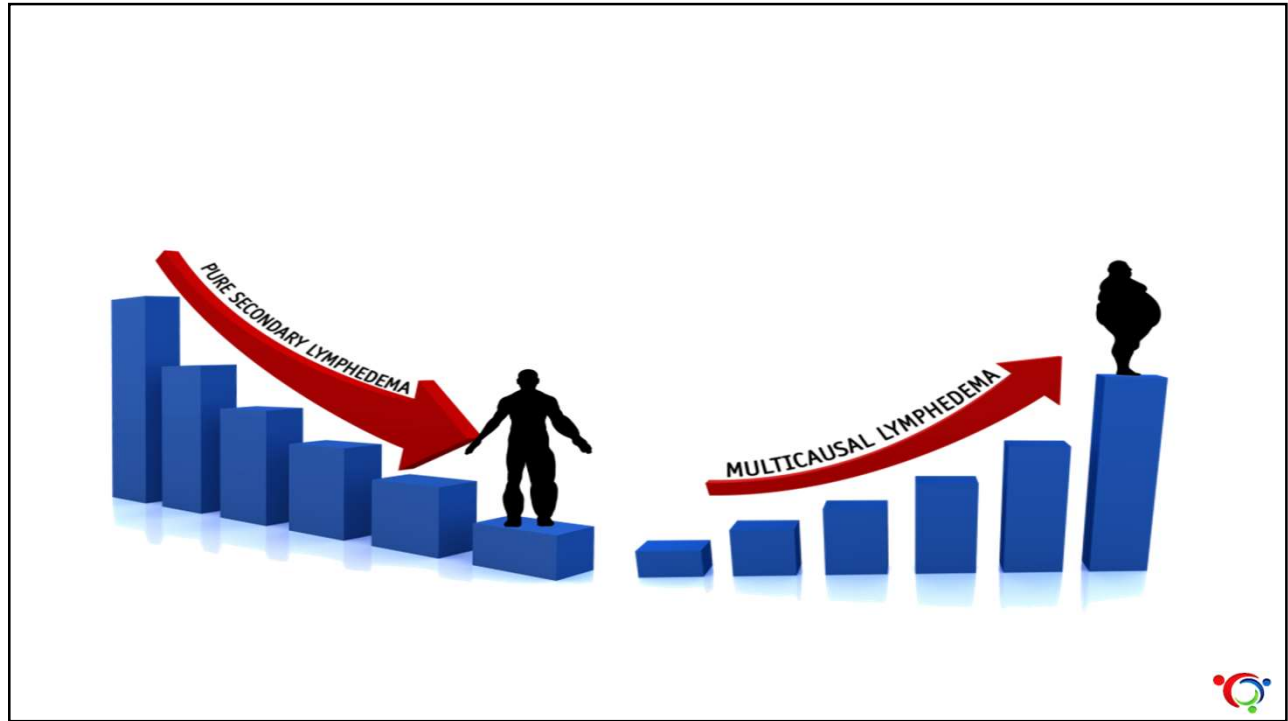


Patients need to check the credentials
and experience of their therapist!

What does their lymphedema program
consist of?



45



47

Obesity-Induced Lymphedema



48

Patient after Bariatric Surgery, Before, During and After CDT



See full story: Living with Lymphedema: Stephanie's Story
on YouTube & KloseTraining.com



49



Taking a new look at Lipedema



51

Classic description of Lipedema



- Symmetrical swelling of both legs
- Affects mainly women
- Hypersensitivity of the increased subcutaneous tissue
- Develops hematoma very easily
- Adipose tissue is resistant to diet and exercise
- Knee pain is a feature of lipedema
- Orthostatic edema
- May turn into lipo-lymphedema
- Onset during puberty, sometimes after pregnancy



52

Stages of Lipedema

Stage I	Skin surface normal, nodular (small) fatty tissue structure	
Stage II	Skin surface uneven (peau d'orange), nodular (big) fatty tissue structure	
Stage III	Lobular deformation due to increase fatty tissue	(Child 2010)



53

Part 5 Available February 2020

Lipoedema – myths and facts Part 1
 T. Bertsch¹, G. Erbacher^{1,2}
¹Földi Klinik Hinterzarten – Europäischen Zentrum für Lymphologie, ²Dipl. Psychologin, Psychologische Psychotherapeuten, Superviseurin (Bz)

Lipoedema – myths and facts Part 2
 T. Bertsch¹, G. Erbacher^{1,2}
¹Földi Klinik Hinterzarten – Europäischen Zentrum für Lymphologie, ²Dipl. Psychologin, Psychologische Psychotherapeuten, Superviseurin (Bz)

Lipoedema – myths and facts Part 3
 T. Bertsch¹, G. Erbacher^{1,2}
¹Földi Klinik Hinterzarten – Europäischen Zentrum für Lymphologie, ²Dipl. Psychologin, Psychologische Psychotherapeuten, Superviseurin (Bz)

Lipoedema – Myths and Facts Part 4
 Lipoedem – Mythen und Fakten Teil 4
 Authors: Tobias Bertsch¹, Gabriele Erbacher¹, Nestor Torio-Padrón²
 Affiliations: 1 Földi Klinik Hinterzarten, Europäisches Zentrum für Lymphologie; 2 Praxisklinik für Plastische Chirurgie Freiburg
 Key words: Lipoedema, liposuction, scientific evidence, obesity
 Schlüsselwörter: Lipoedem, Liposuktion, wissenschaftliche Evidenz, Adipositas
 received 05.08.2018; accepted 09.08.2018
 Bibliography: DOI: <https://doi.org/10.1055/s-0005-5497>
 Phlebologie 2019; 48: 47-56
 © Phlebologie Verlagsgesellschaft mbH

T. Bertsch, MD
G. Erbacher, Dipl. Psychologin
Földi Klinik, Hinterzarten, Germany


Phlebologie 2018

54

Consensus European Lipedema Forum (2019)
The term Lipedema is misleading and incorrect!

*There is **no** scientific evidence that:*

- lipedema is an “edema problem”
- MLD is reducing the patients’ complaints due to its drainage effects.
- lipedema is a progressive disease.
- weight loss is not effective.
- lipedema causes lymphedema.
- 11% of the female population suffer from lipedema.
- the onset of Lipedema is during puberty.

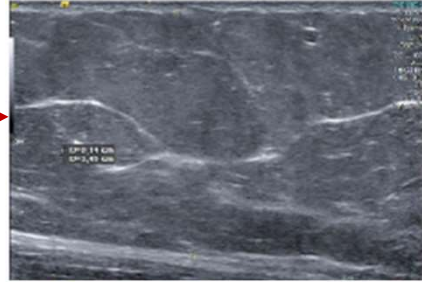


55

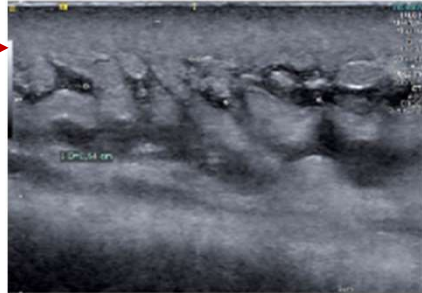
Lipedema is not an “edema problem”



Patient with lymphedema of the distal lower leg and forefoot and lipedema restricted to the thigh and proximal lower leg



Proximal thigh of the patient with typical ultrasound image of lipedema with unremarkable dermis, thickened subcutaneous tissue, and **no evidence of fluid in the soft tissues**

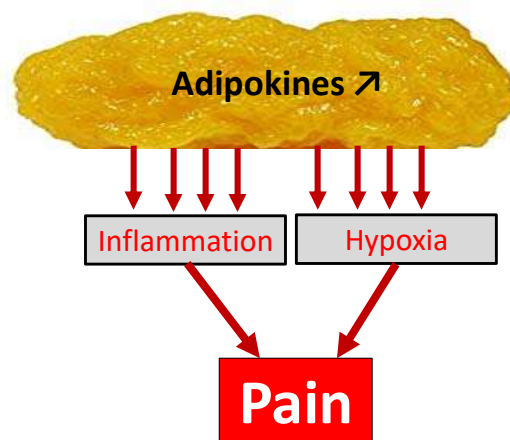


Distal right leg of same patient with typical ultrasound image of **stage 2 lymphedema with partial separation of soft tissues, thickened subcutaneous tissue and fluid in the tissues (small arrows)**



56

Causes of the Lipedema Pain



57



MLD or no MLD?

Reduce edema – No

Improve subjective complaints – Yes

How about compression therapy?

Reduce edema – No

Decrease inflammation – Yes

Improve microcirculation (hypoxia) – Yes

Decrease subcutaneous pain – Yes

Night compression – No



58



MLD or no MLD?

Reduce edema – No

Improve subjective complaints – Yes

How about compression therapy?

Reduce edema – No

Decrease inflammation – Yes

Improve microcirculation (hypoxia) – Yes

Decrease subcutaneous pain – Yes

Night compression – No



59



“Compression therapy has always been and still is an important element of Best Practice in the treatment of patients with lipedema!”



60



MLD or no MLD?

Reduce **lymphedema** – Yes

Improve tissue health – Yes

How about compression therapy?

Reduce **lymphedema** – Yes

decrease inflammation – Yes

Improve microcirculation (hypoxia) – Yes

Decrease subcutaneous pain – Yes

Night compression – lower leg to knee



61

Figure 6.
STAGE III LIPEDEMA WITH LARGE DEFORMING FAT
DEPOSITS; NOTE SIZE DIFFERENCE BETWEEN UPPER
AND LOWER BODY



How about MLD and Compression?

Reduce lymphedema

Improve tissue health

Yes, but in the context of
a multimodal
(multidisciplinary)
approach

Five night compression



YES



62

Obesity and Lipedema

- Being overweight or obese is an aggravating factor of lipedema
- The majority of lipedema patients are obese (80-88%)^{REF}
- Majority of patients try “diet and exercise” and experience a yo-yo effect
- Obese patients with lipedema often experience a lack of fitness and mobility
- Obesity/weight gain must addressed



63

Weight loss is effective!



Lipedema patient (122 kg, 168 cm, BMI 43) before sleeve gastrectomy.

Same patient 11 months after bariatric surgery. Weight now 74 kg, BMI 26.



64

Weight loss is effective.



A: Patient with lipedema and predominately distal leg edema.

B: Same patient 1 year later, after a gastric bypass.
C: Excess skin with subcutaneous fat.



66

“Lipedema is not usually a progressive disorder! Instead, patients with lipedema experience weight gain (obesity) which can lead to exacerbation of the lipedema.”

“The majority of our (Földi Clinic) lipedema patients are also obese. Very frequently, patients with lipedema experience weight increase that occurs due to regular “dieting” and the subsequent “yo-yo effect”.



67

“With lipedema, the advice to lose weight conventionally is particularly pernicious. **95%** of all people who lose weight with the usual commercial and non-commercial diets regain the weight within 3 years.”^{REF}

“Studies at the University of Hohenheim have shown that women (in contrast to men) regain a disproportionate amount of weight in the lower body after weight loss.^{REF} In other words: every medical recommendation to a lipedema patient to lose weight increases the risk of exacerbating the lipedema.”



68

Weight Management

- Short term diets must be avoided by all means.
- The concept of energy balance has to be taught.
- Patients must be educated about the pro- and anti-inflammatory effects of their dietary habits and food choices.
- For long-term weight stabilization support and coaching are mandatory.



69

Measures to Reduce Hyperinsulinemia

- Maintain sufficiently long intervals between meals (4-6 hrs. daytime and at least 12 hrs. nighttime).
- Strictly avoid constant “grazing” (especially sweets).
- Avoid foods containing refined carbohydrates or sugar.
- Eat “real food’ instead of processed foods.
- Consume healthy fats and avoid industrial trans-fats.



70

Stabilize and Exercise



71

Bariatric Surgical Approach

- Recommended for patients with lipedema and a BMI of ≥ 40
- May be considered for patients with lipedema and a BMI of 35-40

Note: In any case, the bariatric procedure must be part of a multimodal treatment concept.



72

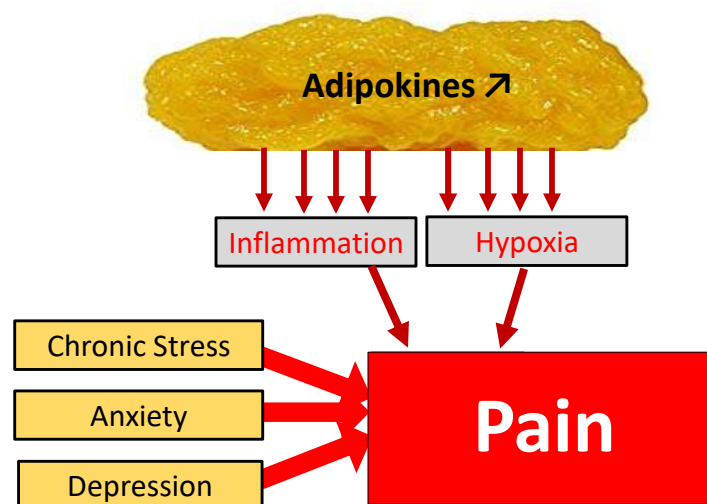
Psychology in Lipedema

- Psychological issues are an additional aspect of lipedema
- The impact of psychological stress is underestimated!
- Psychological vulnerability contributes to the amount of pain perception
- Eating disorders are often present and need to be treated
- Lack of self-acceptance because of current beauty ideal
- **Conclusion:** Psychological assessment is a must!



73

Causes of the Lipedema Pain



74

Liposuction

Not every patient with lipedema will benefit from liposuction!

Liposuction may be considered if:

- Symptoms persist despite at least 12 month of conservative treatment as presented above
- The patient has considerable functional disability
- The patient's weight has been stable for at least 12 month
- A preoperative psychological assessment is available



75

Self-management The "Math of Motivation"

Motivation is an essential ingredient for changing behavior.

The Motivational Matrix:

$$\text{Motivation} = \text{importance}^1 \times \text{self-efficacy}^2$$

Any amount of knowledge multiplied by zero motivation will not change a thing!

¹ Importance of the goal

² The belief in one's own ability to achieve the goal



76



All edemas are **NOT** lymphedema!



78

HOME ABOUT ▾ REGISTER ▾ COURSE INFO ▾ CONTACT US NEW! "LYMPHIE LARA" SIGN IN 🔍 🛒 0

WHAT HAS CHANGED?

Manual Lymphatic Drainage training has dramatically changed over the past few years. Why? Because lymphatic medicine and research has changed! What we thought to be true in the past is different than what we know now. New ICG Fluoroscopy imaging of live lymphatics and published research in the past few years has begged significant changes in lymphedema educational curriculum:

- *Starling's Law Debunked!
- *Endothelial Glycocalyx Layer structure and function explained
- *New state of the evidence for Modern MLD (finally! the scientific proof we need)
- *Why all edema is lymphedema, and why it matters
- *How to improve functional outcomes for TKA and other orthopedic applications
- *Customize MLD for each individual patient!
- *Your best route may drain proximal to distal on the extremity. Find out how and why.
- *Use new research on lymphosomal mapping, and manual assessments, as your guide to customization
- *Training in the new era of Lymphatic & Integumentary Rehabilitation - why it all comes back to rehab and active movement!

This evidence based, **Modern MLD Certification** course will challenge your mindset and open new doors for more effective results using all your treatment techniques.

Really?


79

Not all edemas are lymphedema!

Patient with CHF edema

Same patient before and after diuretic treatment

Patient with edema from hypoproteinemia



80

A new paradigm for diagnosis and treatment of edemas
The endothelial glycocalyx layer
Advancements in the link between swelling and the lymphatic system

By Heather Heltick and Robyn Birk

Introduction
Although edema can result from a variety of conditions, medications or other contributing factors, it is now understood that all edema is lymphedema through a spectrum of lymphatic insufficiency. This article will highlight the latest evidence supporting this paradigm shift by looking at the new understanding of hemodynamics at the Endothelial Glycocalyx Layer, and the associated links between the lymphatic and integumentary systems. Further, it will explain how this information is relevant to clinical practice to help you differentially diagnose and manage lower extremity edema.

New lymphedema paradigm
One of the most significant recent changes regarding lymphedema is a more refined explanation of fluid hemodynamics impacting our historical understanding of Starling's Law. Previously, it was thought that 90% of fluid moving from the blood to the interstitium was reabsorbed back into the venous end of the capillary, yet the lymphatic system was only responsible for managing 10% of the fluid load. The new paradigm of the Endothelial Glycocalyx Layer (EGL) as the

gatekeeper of fluid filtration from blood capillaries explains how there is only diminishing net fluid filtration across the blood capillary bed and no reabsorption at the venous end; 100% of all interstitial fluid is reabsorbed by the lymphatic capillaries alone during homeostasis¹.


Acting as a complex molecular sieve, the EGL precisely regulates fluid and protein movement through the capillary wall into the tissues^{2,3}. Conversely, the EGL also prevents movement of proteins and fluid back into the venous side of the capillaries, even when interstitial hydrostatic pressure is increased, or tissue oncotic pressures remains higher within the blood capillaries. Thus, all fluid and proteins exiting the blood capillaries must be removed from the interstitium by the lymphatic capillaries alone. This has led to the new understanding that all edemas are on a lymphedema continuum and represent relative lymphatic insufficiency or failure⁴. The system is either temporarily overwhelmed (transient lymphedema/dynamic insufficiency) or the system is abnormally developed, damaged or permanently impaired leading to the disease of chronic lymphedema (mechanical lymphatic failure).

Lymphedema pathophysiology
The lymphatic system is analogous to the body's sewer or recycling system. It is responsible for maintaining fluid homeostasis by managing interstitial fluid and mobilizing waste products (proteins, senescent cells, macromolecules, etc.). The lymphatic system is also tasked with the absorption and transportation of lipids and fatty acids to the circulatory system, and transporting antigens, antigen-presenting cells and other immune cells to the lymph nodes where adaptive immunity is stimulated. Collectively, all components within the fluid transported by the lymphatic system are called the "lymphatic load".


Pathophysiologically, chronic lymphatic dysfunction or failure presents unique changes affecting the integumentary system. When the lymphatic load is not properly processed by the lymphatic system from the interstitial tissues, a pathophysiological state of chronic edema ensues. Free radicals trapped within the tissues denature proteins and oxidize cell membranes attracting macrophages to the area that differentiate into macrophages. These macrophages take in proteins through pinocytosis, which activates the macrophages to release cytokines. This, in turn, activates fibroblasts, which are stimulated to produce excess collagen^{5,6}. Excess collagen formation causes connective tissue proliferation and fibrosis resulting in the thickened, fibrotic skin and satellite projections (papular nodules and verrucous) commonly seen with chronic lymphedema⁶. Additionally, other fibroblasts differentiate into adipocytes⁷. If treatment is not implemented, the chronic inflammatory process persists and the clinical presentation eventually can result in enlargement of the body part, thickened and fibrotic, dermal and subcutaneous tissues, and other significant integumentary changes⁸.

within the blood capillaries. Thus, all fluid and proteins exiting the blood capillaries must be removed from the interstitium by the lymphatic capillaries alone. **This has led to the new understanding that all edemas are on a lymphedema continuum** and represent relative lymphatic insufficiency or failure^{1,7}. The system is either temporarily overwhelmed (transient lymphedema/dynamic insufficiency) or the system is abnormally developed, damaged or permanently impaired leading to the disease of chronic lymphedema (mechanical lymphatic failure).

10 Lymphedemathways.ca Winter 2019/20



81



Michael Földi

**The Lymphedema Chaos:
A Lancet**

Etel Földi, M.D.*
Michael Földi, M.D.*
Leo Clodius, M.D.†

Pathophysiology of lymphedema is not an enigma. It is caused by a low-output failure of the lymph vascular system in combination with an inadequate scavenging of stagnating plasma protein by macrophages. Axillary venous diseases alone never cause chronic postmastectomy edema. In the diagnosis of lymphedema, invasive methods (i.e., direct lymphography and venography) are not only unnecessary but are potentially harmful and do not give any information of therapeutic relevance. Lymphedema of the limbs without reflux of lymph or chyle is not a surgical disease. It can be treated successfully by the skillful application of specific physiotherapeutic measures free of any side effect. The results of this therapy can be maintained if the patient's compliance is good.

Földi E, Földi M, Clodius L: The lymphedema chaos: a lancet. Ann Plast Surg 22:105, 1989

1989


All edemas are on
the lymphatic
continuum!

In this article we discuss some recently published conflicting opinions concerning the pathophysiology and therapy of lymphedema and present a plea for the conservative treatment of this "perplexing and poorly understood clinical entity" [21].


Physiology and Pathophysiology of the Lymph Vascular System

To understand lymphedema, the concept of the insufficiency of the lymph vascular system [13] has to be defined. The lymph vascular system is insufficient if its transport capacity is lower than the lymphatic load. The expression "transport capacity" is defined by the highest possible lymph flow per unit of time. We have proposed to distinguish three forms of lymph vascular insufficiency. Not conceiving or misunderstanding these three forms is a prime source of lymphedema chaos.


One form of lymph vascular insufficiency is called dynamic insufficiency. It arises if the lymphatic load exceeds the lymphatic transport capacity. In this case, the lymphatics are anatomically and functionally normal but overwhelmed. The main propulsive force of the lymph is generated by the contractions of the lymphangions (segments of lymphatics bordered by a



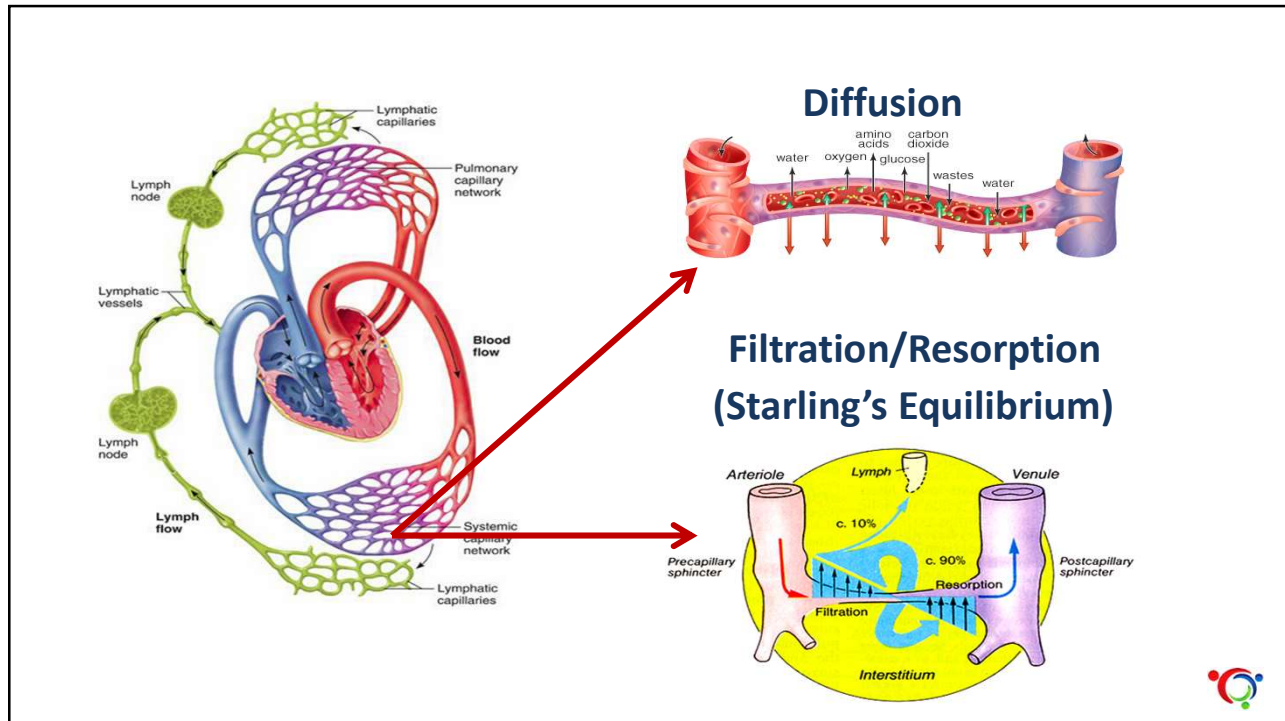
82



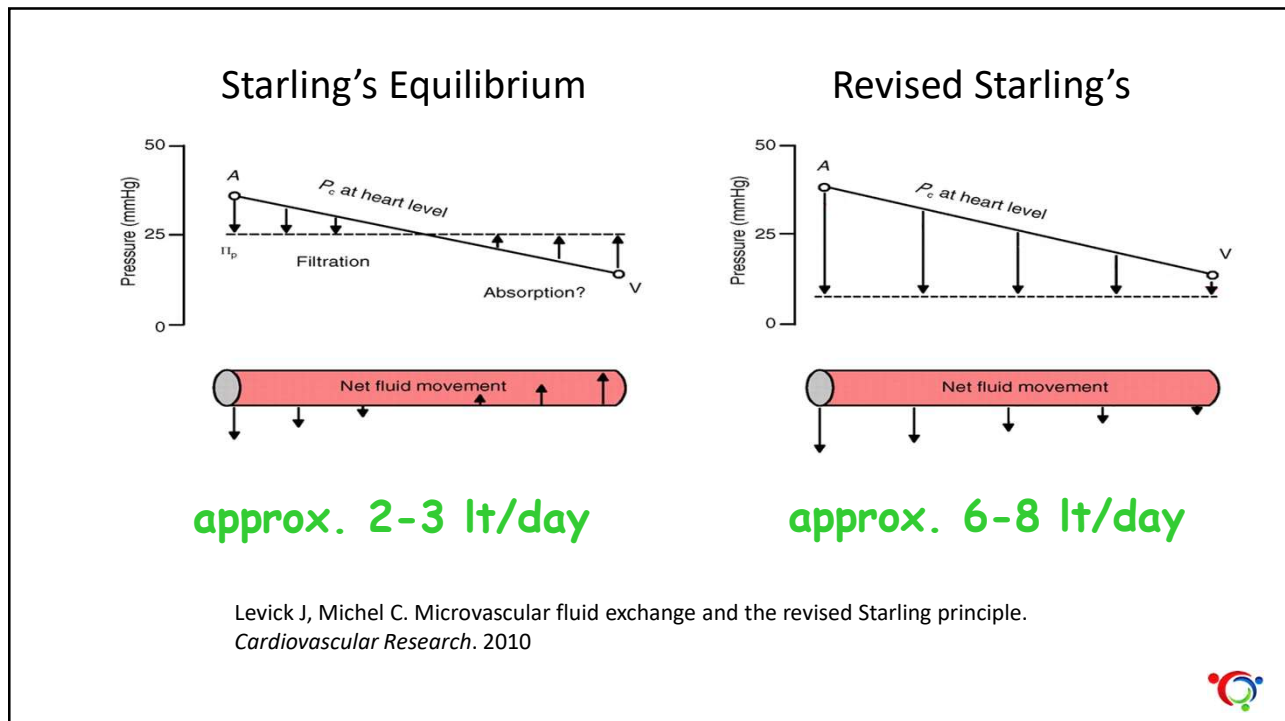
Starling's Law, its Revision and the Glycocalyx;
A new look at the fluid dynamics on the capillary
wall.



84

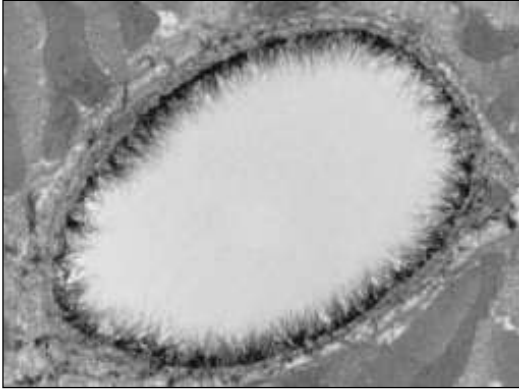


85

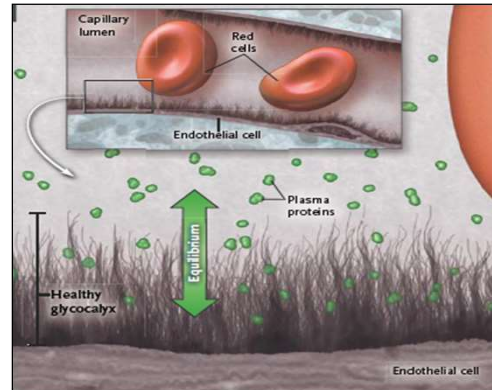


86

The Glycocalyx



Reitsma S, Slaaf D, Vink H, et al: "The endothelial glycocalyx: composition, functions and visualization" Arch-Eur J Physiol 2007



Mayburgh JA, Mythen MG: "Resuscitation Fluid" N Engl J Med 2013;369:13



87

The Glycocalyx

Total surface 4000-7000m² (0.98-1.7 acres)
Negative net charge

Ulises Baltazar
MD, FACS, CLT

Watch Dr. Baltazar's presentation at:
klosetraining.com/jobstlecture2020

88



INTERNATIONAL
LYMPHOEDEMA
FRAMEWORK

October 1-3, 2020
Copenhagen



90



National Lymphedema Network

San Diego, CA
October 23-25, 2020



91

Thank you!

