

Operative Lymphmikrochirurgie

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Grabs



SPITALREGION
RHEINTAL
WERDENBERG
SARGANSERLAND

Lymphödem

- Primäres vs Sekundäres Ödem
- Diagnostik
- Klassische Behandlungsoptionen
- Lymphmikrochirurgie

Primäres Lymphödem

- 97% sporadisch/nicht vererbt
- Embryonale Fehlentwicklung



→ Keine Indikation für Lymphmikrochirurgie

Sekundäres Lymphödem

- Parasitär
- Tumorerkrankung und Therapie
- Posttraumatisch/Postinfektiös

Sekundäres Lymphödem

- Parasitär
- Tumorerkrankung und Therapie
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Wuchereria bancrofti

- 90 Millionen weltweit
 - Wurminfektion der Lymphbahn
- Lymphstase



Sekundäres Lymphödem

- Parasitär
- Tumorerkrankung und Therapie
- Posttraumatisch/Postinfektiös

Lymphom

Iatrogen

- Lymphknotendissektionen
- Radiatio

Adipositas

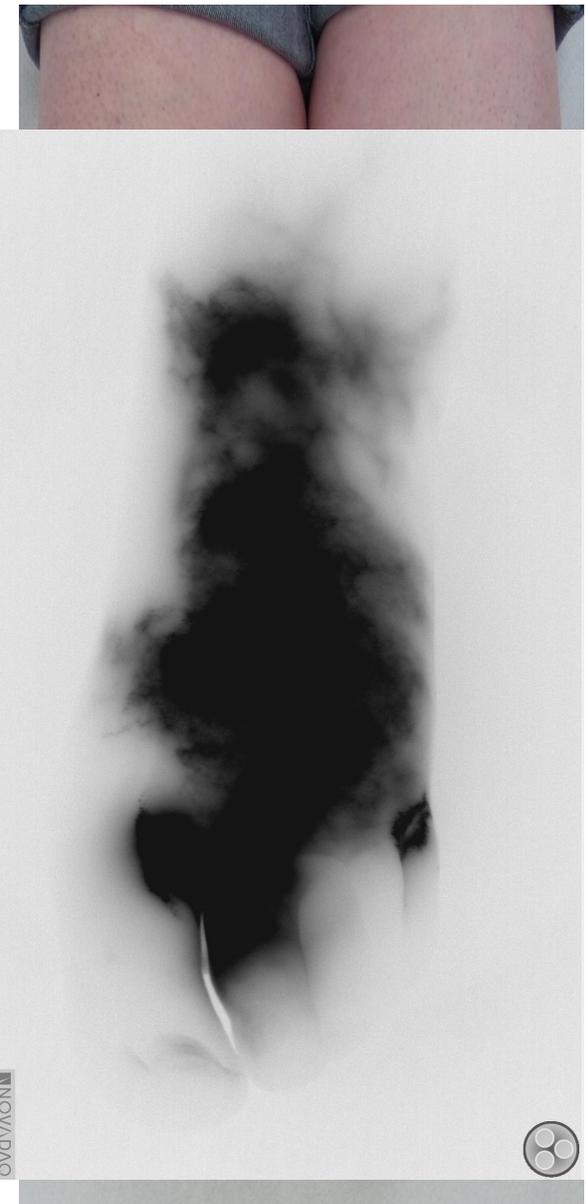


Sekundäres Lymphödem

- Parasitär
- Tumorerkrankung und Therapie
- Posttraumatisch/Postinfektiös

Bagatellverletzung

Weichteilinfektionen



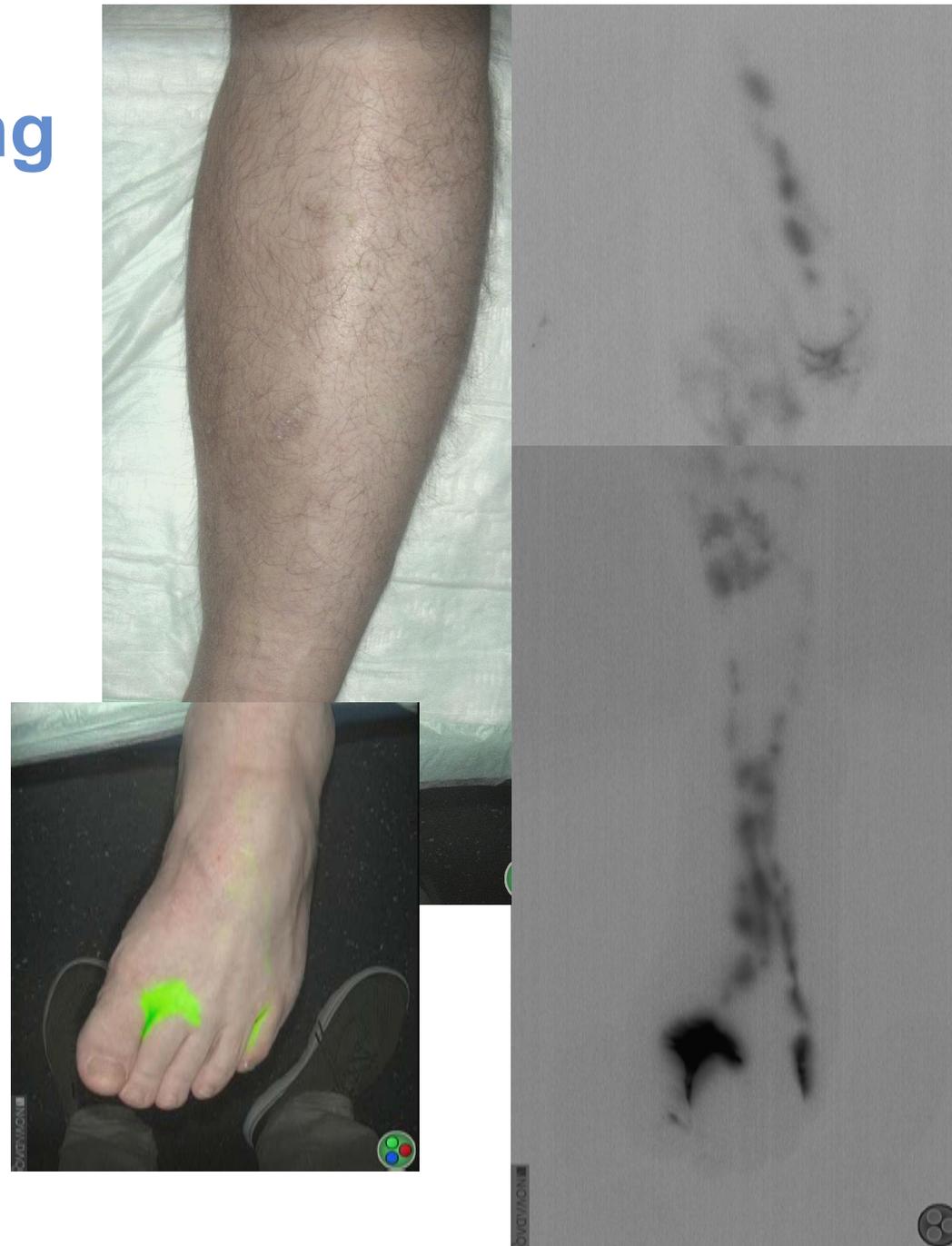
Diagnostik/Bildgebung

- Bioimpedanzmessung
- Volumetrie
- Lymphszintigrafie (fitered Tc99)
- MR (Honeycombing)
- ICG (Indocyanin Green)



Diagnostik/Bildgebung

- ICG
- „Live“ /Timing
- Sehr sensitiv



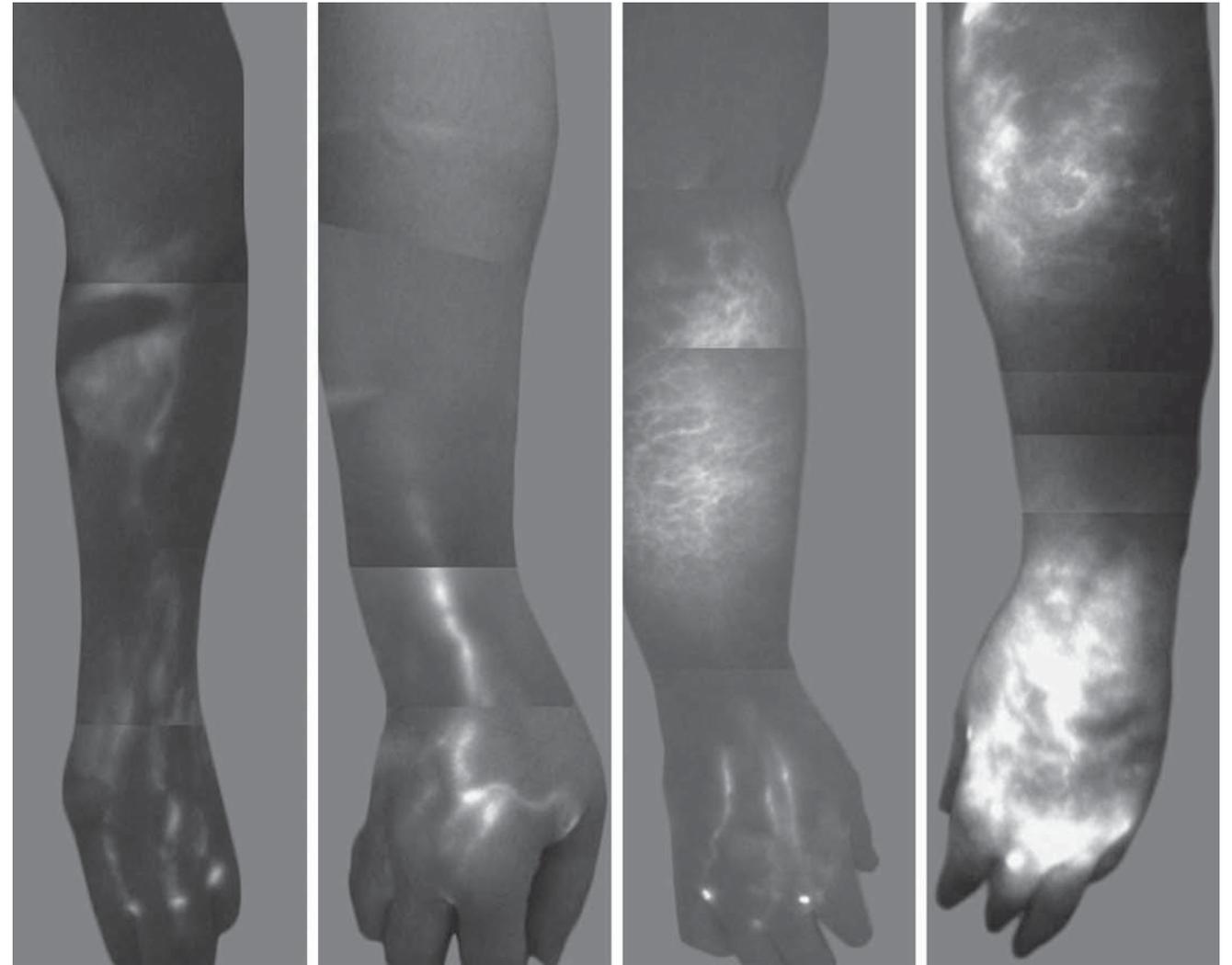
Staging

Stage 0 (latent):	Stage 1 (reversible):	Stage 2 (irreversible):	Stage 3 (lymphostatic elephantiasis):
<p>Swelling is not evident despite impaired lymph transport and may exist for months or years before oedema becomes evident.</p>	<p>Early onset of the condition. Accumulation of tissue fluid that subsides with limb elevation. Oedema may be pitting at this stage (no fibrosis)</p>	<p>Limb elevation alone rarely reduces swelling, and pitting is manifest with protein rich oedema fluid. Late stage 2: There may or may not be pitting as tissue fibrosis is more evident.</p>	<p>Accumulation of protein rich edema fluid. Tissue is hard (fibrotic) and pitting is absent. Skin changes, such as thickening, hyperpigmentation, increased skin folds, fat deposits and warty overgrowths develop.</p>

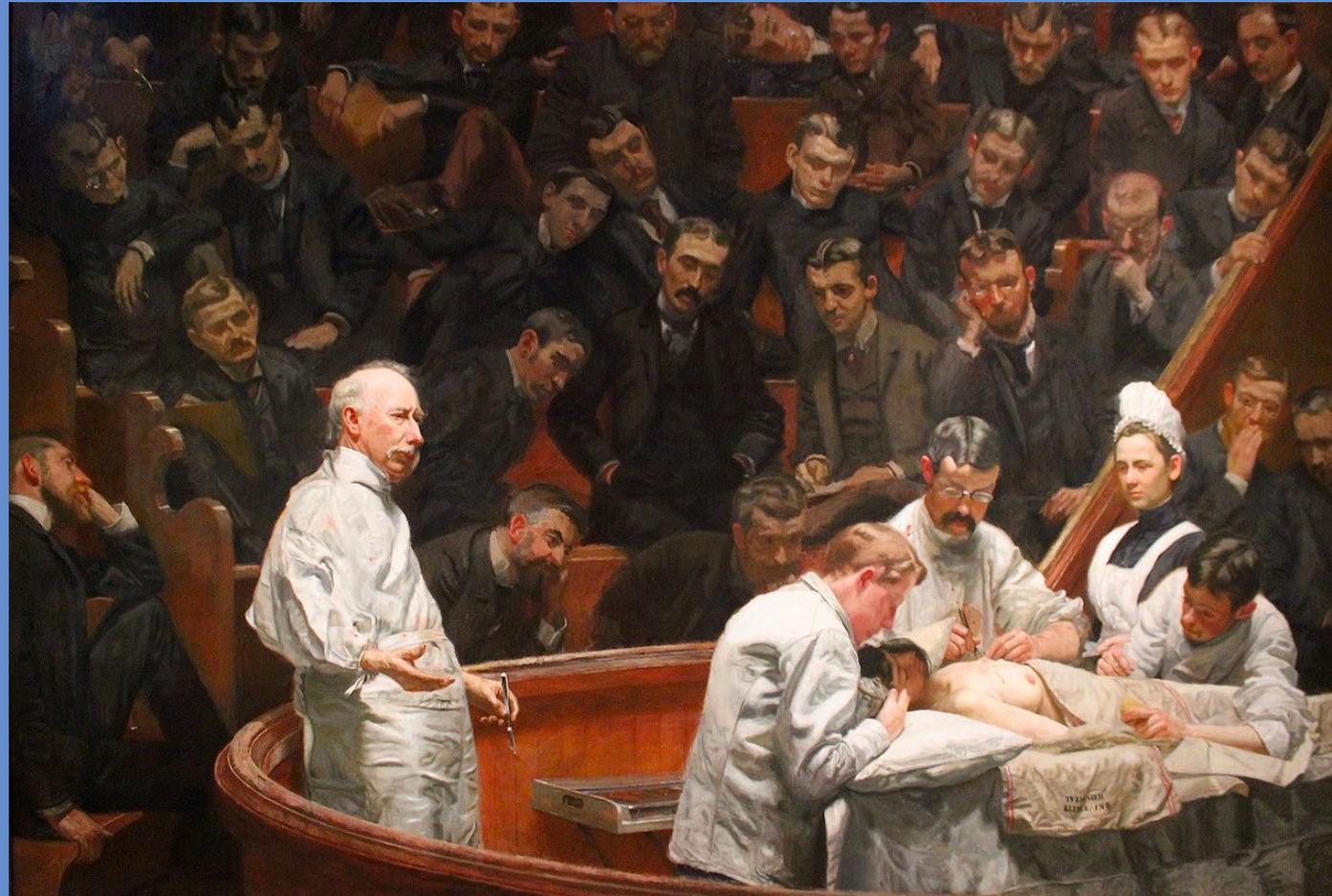
ICG Staging

MD Anderson Classification I-IV

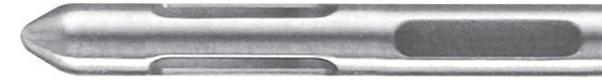
- Lymphgefäße
- Dermal Backflow/Star Dust



Chirurgische Therapieoptionen



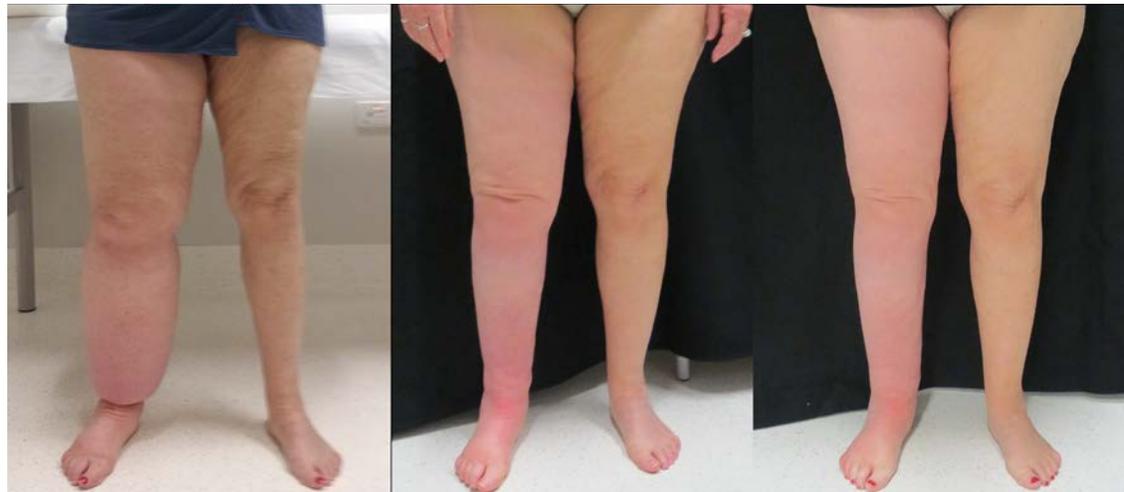
Chirurgisch ablativ - Liposuction



Liposuction for Advanced Lymphedema: A Multidisciplinary Approach for Complete Reduction of Arm and Leg Swelling

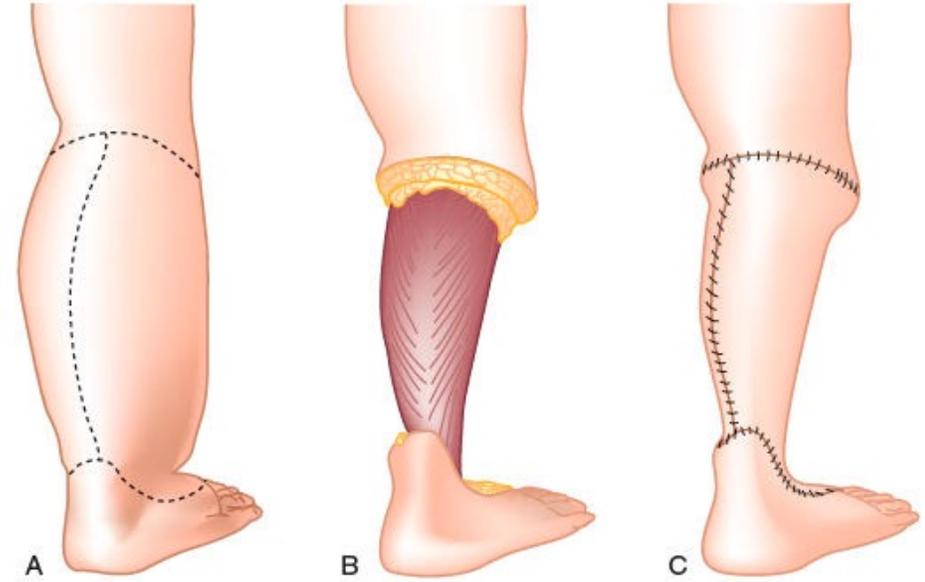
John Boyages, MBBS (Syd) (Hons), FRANZCR, PhD^{1,2}, Katrina Kastanias, BSci (Health and Exercise)¹, Louise A. Koelmeyer, B App Sc (OT)¹, Caleb J. Winch, B Psych (Hons)¹, Thomas C. Lam, MBBS, FRCS (Ed), FRACS¹, Kerry A. Sherman, PhD³, David Alex Munnoch, MBChB, FRCSEd (Plast)^{1,4}, Håkan Brorson, MD, PhD⁵, Quan D. Ngo, MBBS, MS, FRACS¹, Asha Heydon-White, B Physio⁶, John S. Magnussen, PhD, MBBS, FRANZCR⁷, and Helen Mackie, MBBS^{1,8}

Results. Mean presurgical limb volume difference was 45.1 % (arm 44.2 %; leg 47.3 %). This difference reduced to 3.8 % (arm 3.6 %; leg 4.3 %) by 6 months postsurgery,



Chirurgisch ablativ

- (Modified) Charles` Procedure



Mikrochirurgie

- Nicht nur symptomatische Behandlung
- Physiologische Wiederherstellung
- Erstbeschreibung 1970er Jahren
- Auch in Kombination mit ablativen Verfahren

- Lymphovenous Anastomosis (LVA)
- Vascular Lymph Node Transfer (VLNT)
- Vascularized Lymph Vessel Transfer (VLVT)

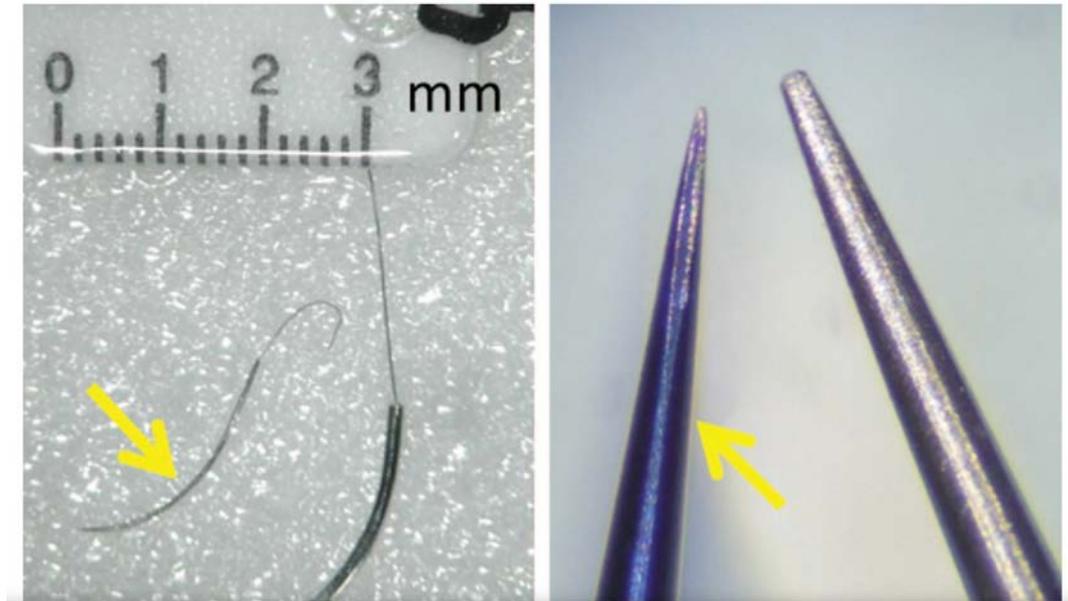


Fig. 2. (Left) Tip of new forceps, 0.06 mm (yellow arrow); tip of old forceps, 0.15 mm (black small arrow). (Right) A 0.05-mm surgical needle (12-0 nylon), which is the thinnest available in the world (yellow arrow). Traditional surgical needle, 10-0 nylon (black small arrow). Less

LVA – Lymphovenous anastomosis

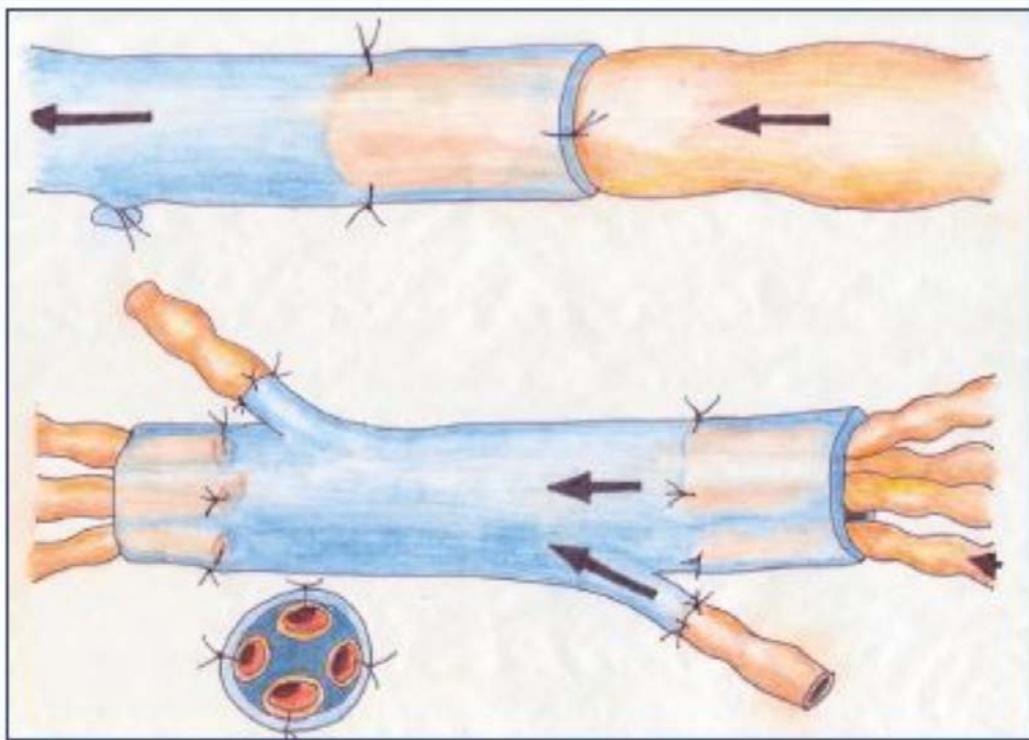
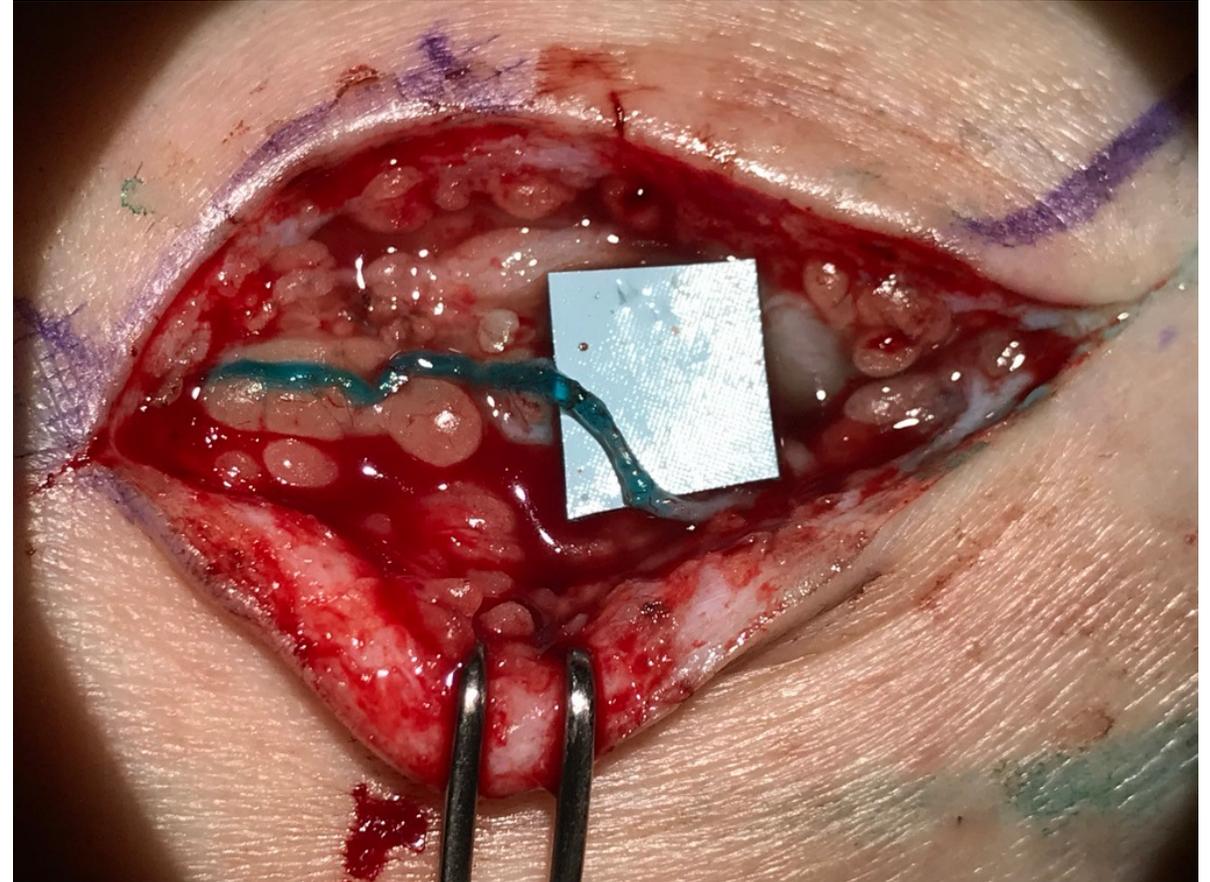
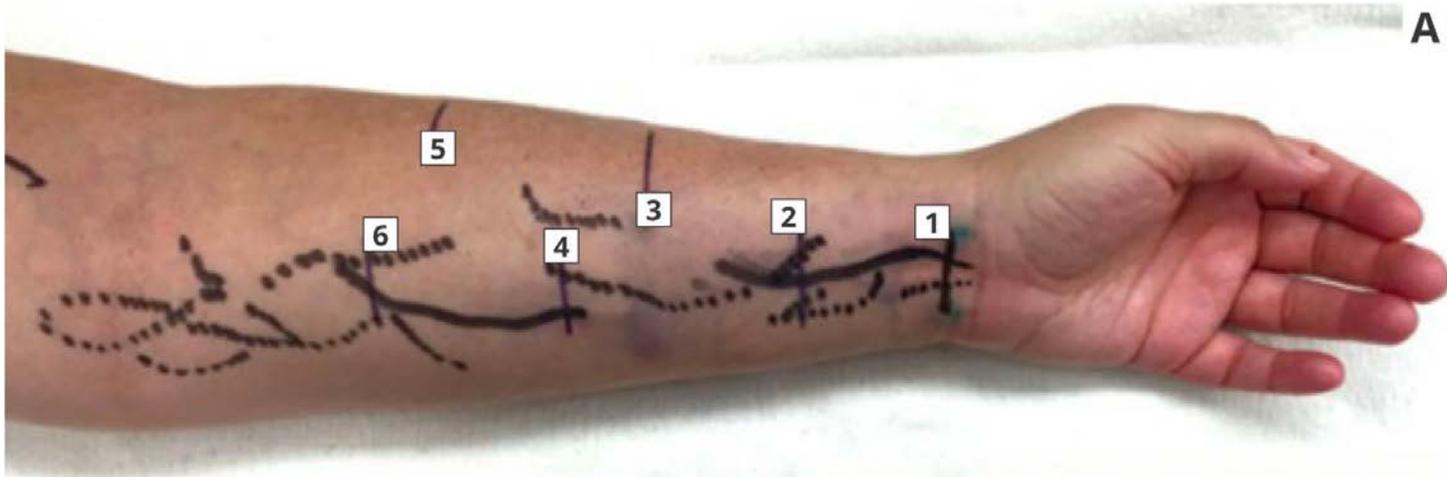


Figure 1. Lymphovenous anastomosis.

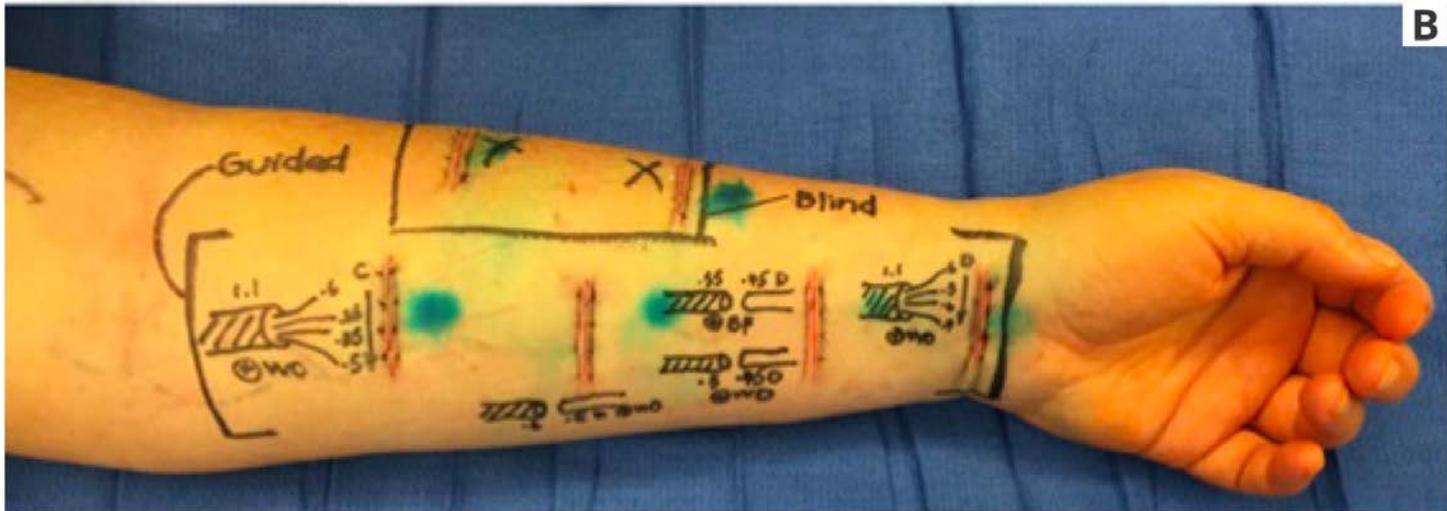
Panel A. Microsurgical technique of direct anastomosis in end-to-end and end-to-side fashion for lymphatic vessels-to-vein anastomosis at the groin. Panel B. End-to-end and end-to-side techniques for lymph node-to-vein anastomosis, another form of lymphovenous anastomosis.



LVA – Planung



A



B



„Supermicrosurgery“ – mit grosser Wirkung

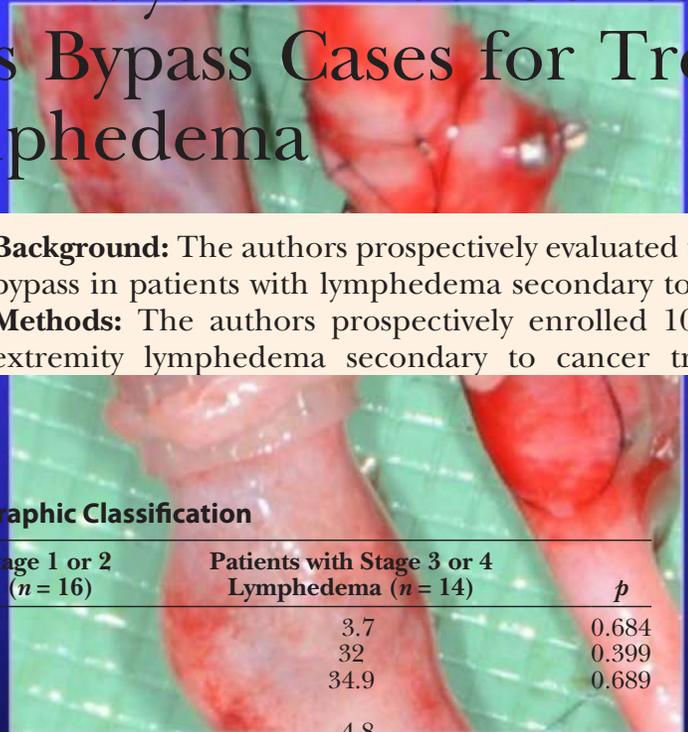
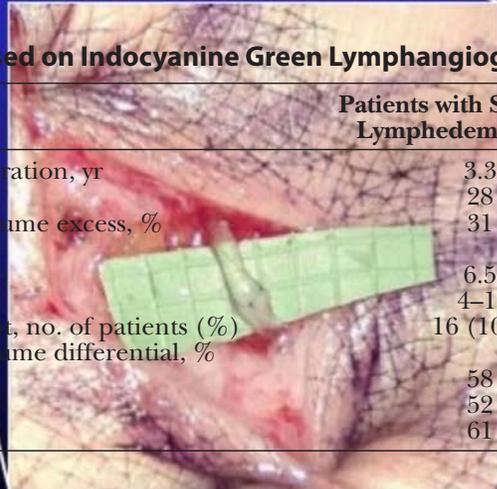
A Prospective Analysis of 100 Consecutive Lymphovenous Bypass Cases for Treatment of Extremity Lymphedema

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Hiroo Suami, M.D., Ph.D.
Roman Skoracki, M.D.
Houston, Texas

Background: The authors prospectively evaluated the efficacy of lymphovenous bypass in patients with lymphedema secondary to cancer treatment.
Methods: The authors prospectively enrolled 100 consecutive patients with extremity lymphedema secondary to cancer treatment. Sixty-five patients

Table 2. Results Based on Indocyanine Green Lymphangiographic Classification

Characteristic	Patients with Stage 1 or 2 Lymphedema (n = 16)	Patients with Stage 3 or 4 Lymphedema (n = 14)	p
Mean lymphedema duration, yr	3.3	3.7	0.684
Mean BMI	28	32	0.399
Mean preoperative volume excess, %	31	34.9	0.689
No. of bypasses			
Mean	6.5	4.8	
Range	4-12	2-7	0.044
Symptom improvement, no. of patients (%)	16 (100)	12 (86)	0.480
Mean reduction in volume differential, %			
At 3 mo	58	52	0.059
At 6 mo	52	55	0.005
At 12 mo	61	57	0.008



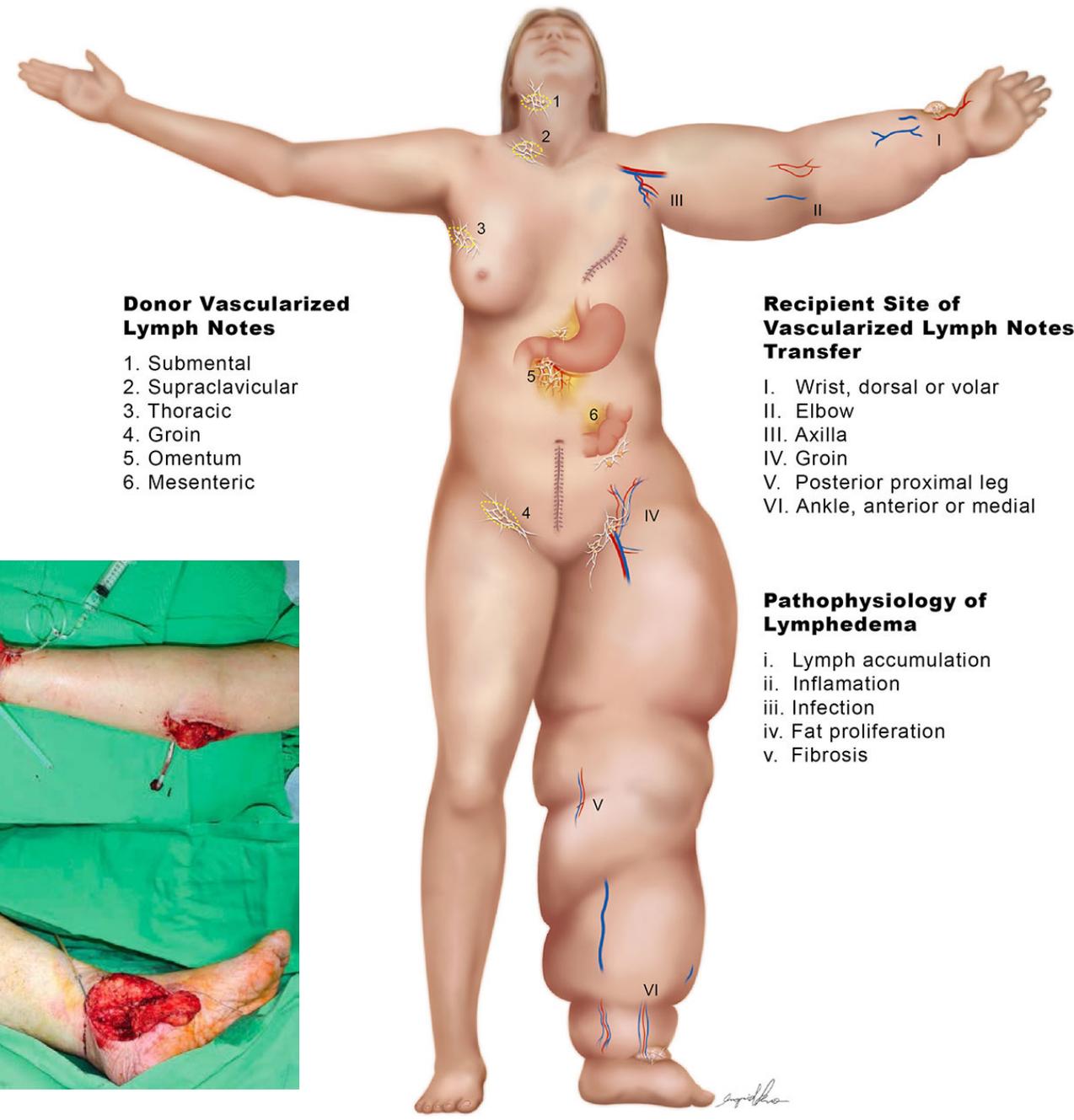
“normal” microsurgery
1 square = 1mm



Fig. 4. Quantitative volumetric analysis at 3, 6, and 12 months after bypass.

VLNT – Vascular Lymph Node Transfer

- Wirkungsmechanismus unklar
- Hebemorbidität
- Stage 3-4



Donor Vascularized Lymph Nodes

1. Submental
2. Supraclavicular
3. Thoracic
4. Groin
5. Omentum
6. Mesenteric

Recipient Site of Vascularized Lymph Notes Transfer

- I. Wrist, dorsal or volar
- II. Elbow
- III. Axilla
- IV. Groin
- V. Posterior proximal leg
- VI. Ankle, anterior or medial

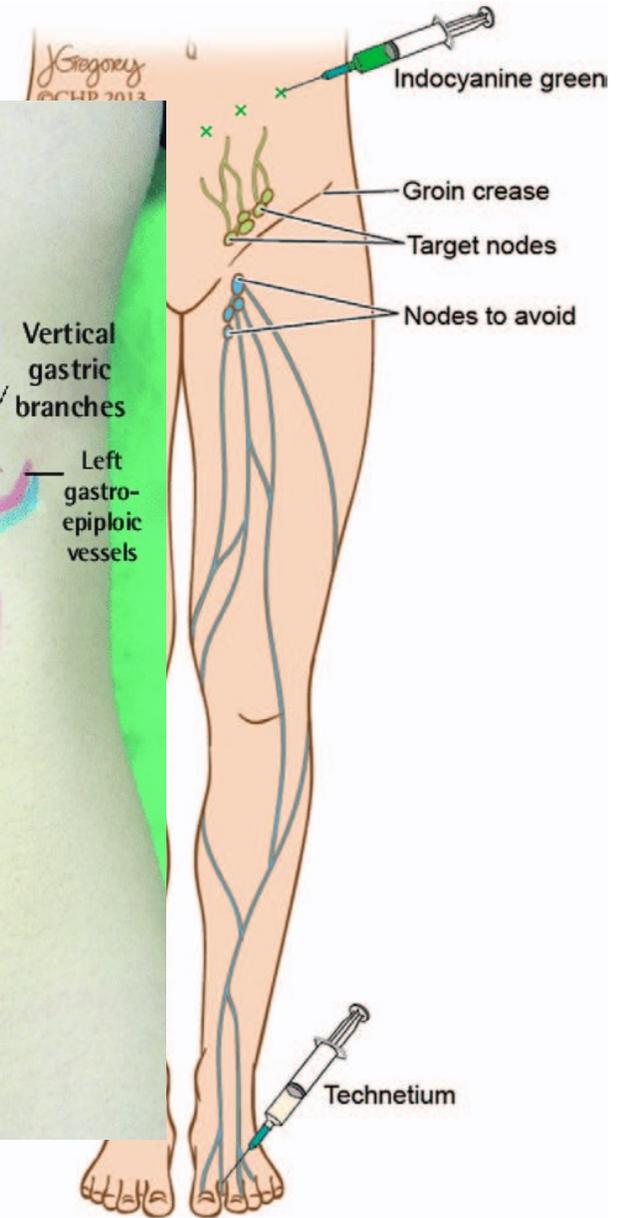
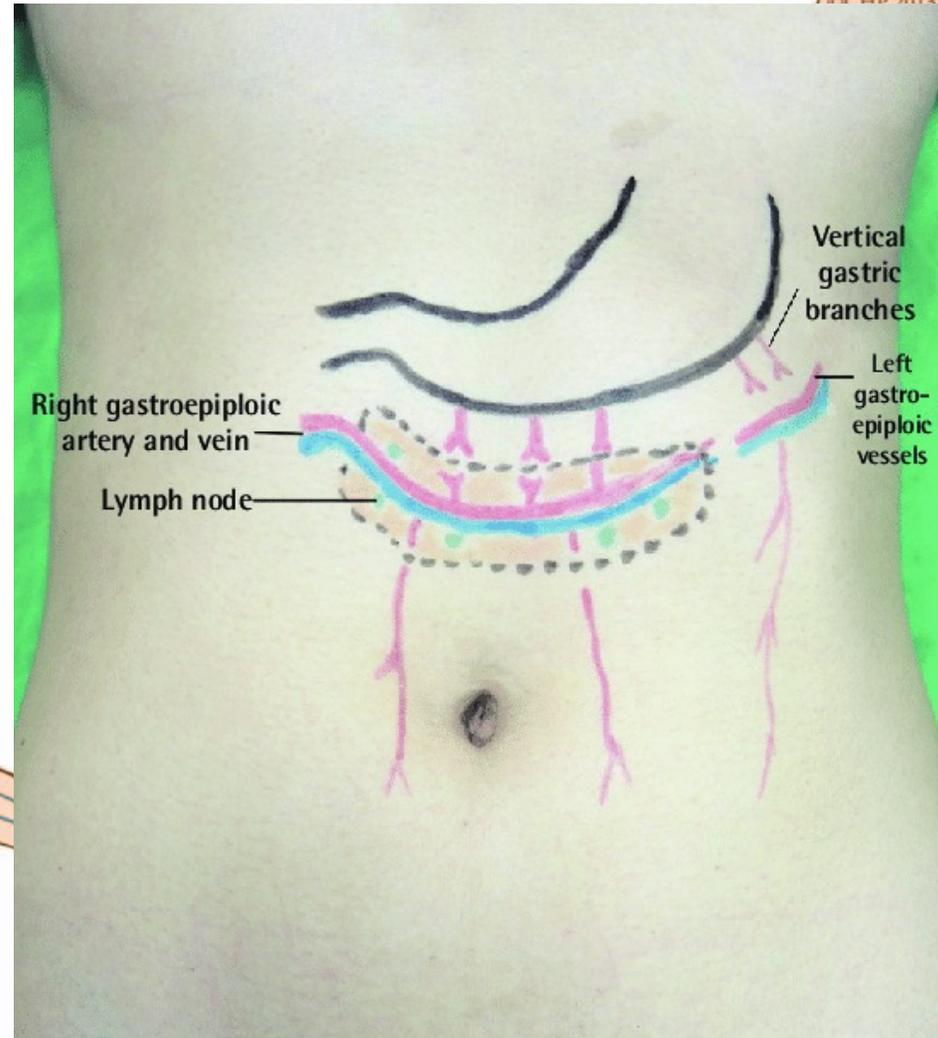
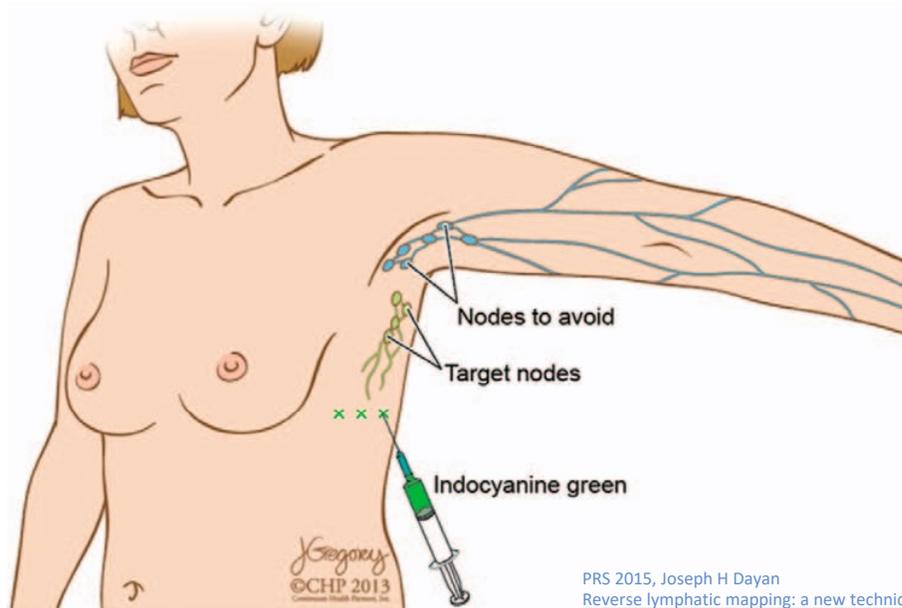
Pathophysiology of Lymphedema

- i. Lymph accumulation
- ii. Inflammation
- iii. Infection
- iv. Fat proliferation
- v. Fibrosis



Hebemorbidität

- Omentum
- Reverse Mapping



VLVT – Vascularized Lymphvessel Transfer

Vascularized Lymph Vessel Transfer for Extremity Lymphedema - Is Transfer of Lymph Node Still Necessary?

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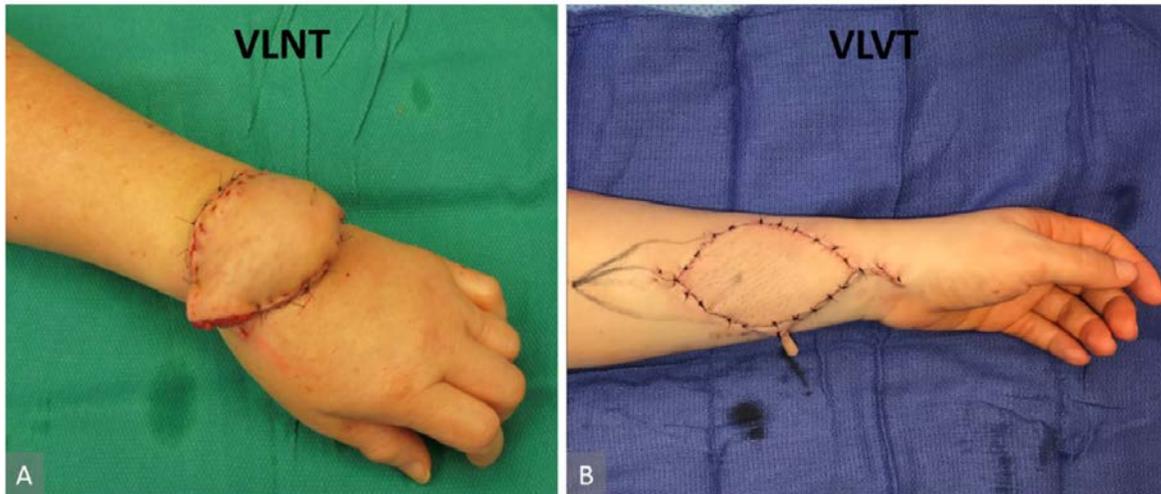
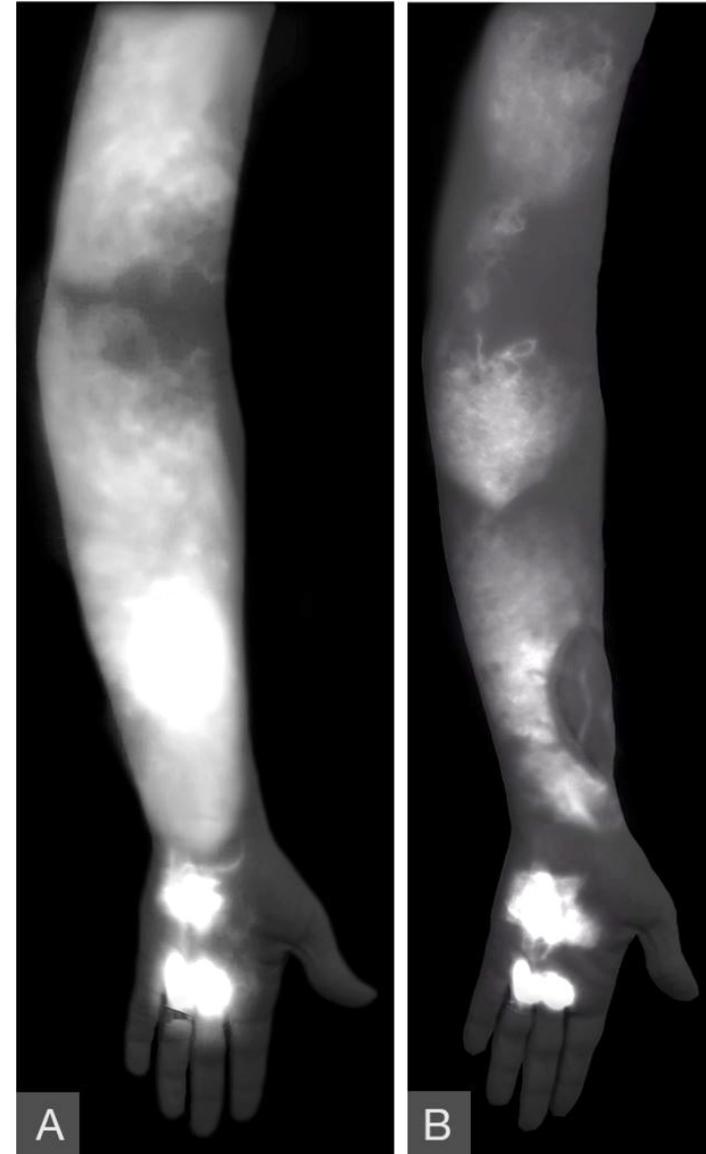
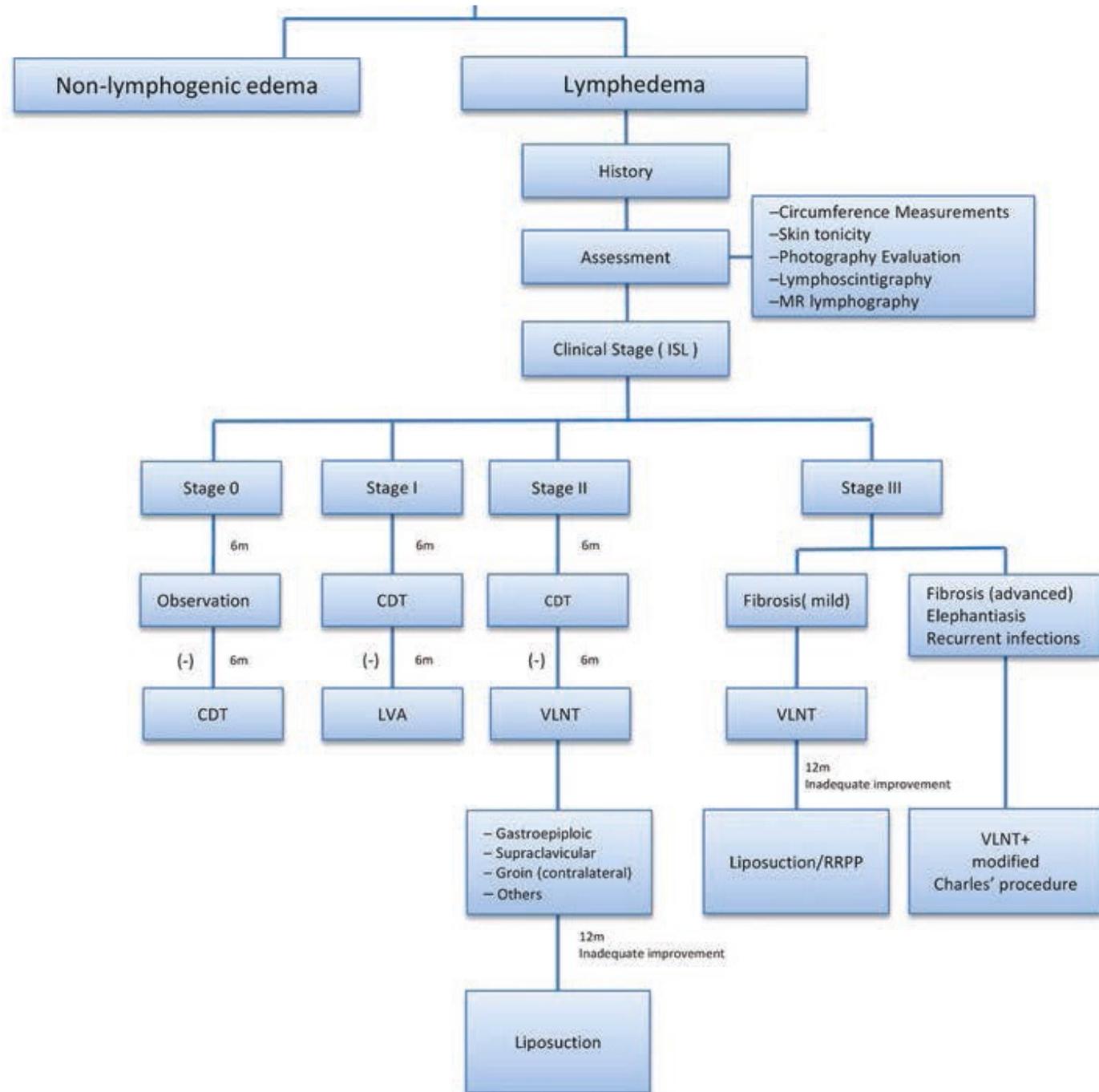


Figure 5. Comparison of lymph node flap inset and lymph vessel flap inset. Contour deformity was not avoidable due to the associated tissue bulk in a lymph node flap. In this case, we could not complete the flap inset due to venous congestion from pedicle compression with complete flap inset (panel A). The thin lymph vessel flap in combination with recipient site skin excision facilitated inset that did not disrupt anatomic contour (panel B).



Wann was?



Aktuelle Probleme

- Kostengutsprache
- Kostengutsprache
- Kostengutsprache

Lymphödem ist behandelbar!



Abschlussbild mit weltweiten Autoritäten auf dem Gebiet um meine Message und un glaubliche Kompetenz zu untermauern!

