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HKU Introduces the Latest Lymphedema Surgery to Hong Kong and Helps Patients Return to Normal Life

Press Conference

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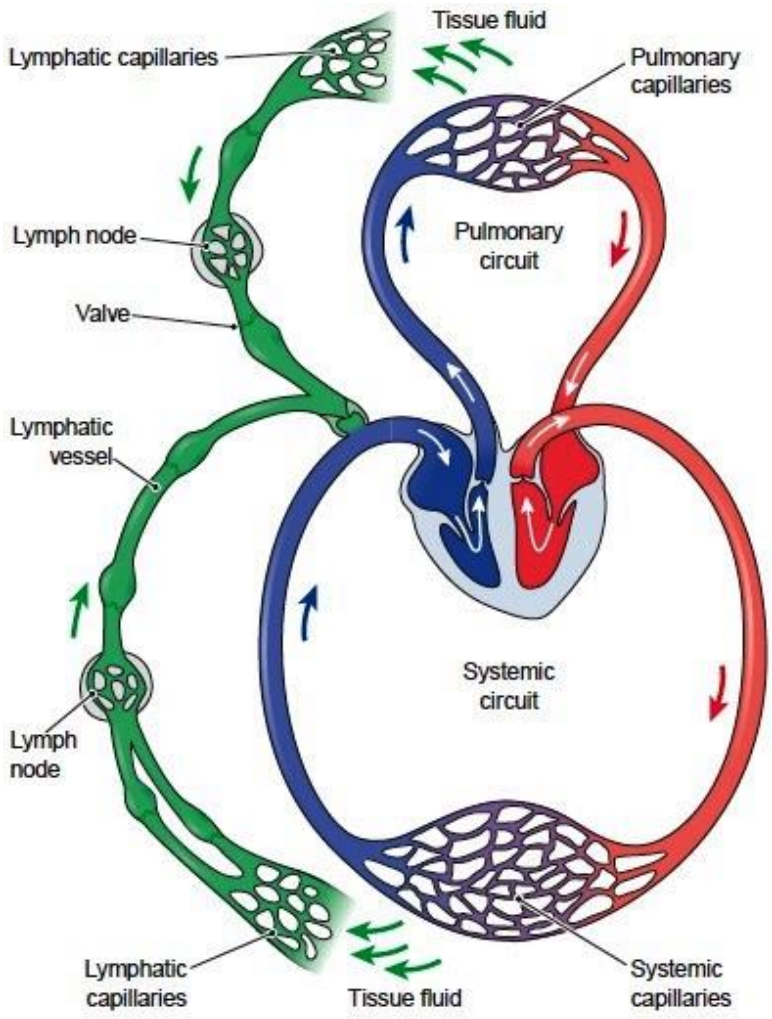
Lymphatic system

- Lymph is a body fluid
- It circulates throughout the lymphatic system
- Emptying ultimately into the venous system



What is lymphedema?

- Failure of lymphatic system, i.e. lymph nodes or lymphatic vessels are missing, impaired, damaged or removed
- Circulation of lymph is blocked and swelling is caused by retention of lymph under the skin

Causes of lymphedema

- **Common cause**
  - Breast cancer and its treatment – upper limb
  - Gynaecological cancer and its treatment – lower limb
- **Other causes (uncommon)**
  - Congenital
  - Filariasis – mainly in developing countries

Impact on daily life

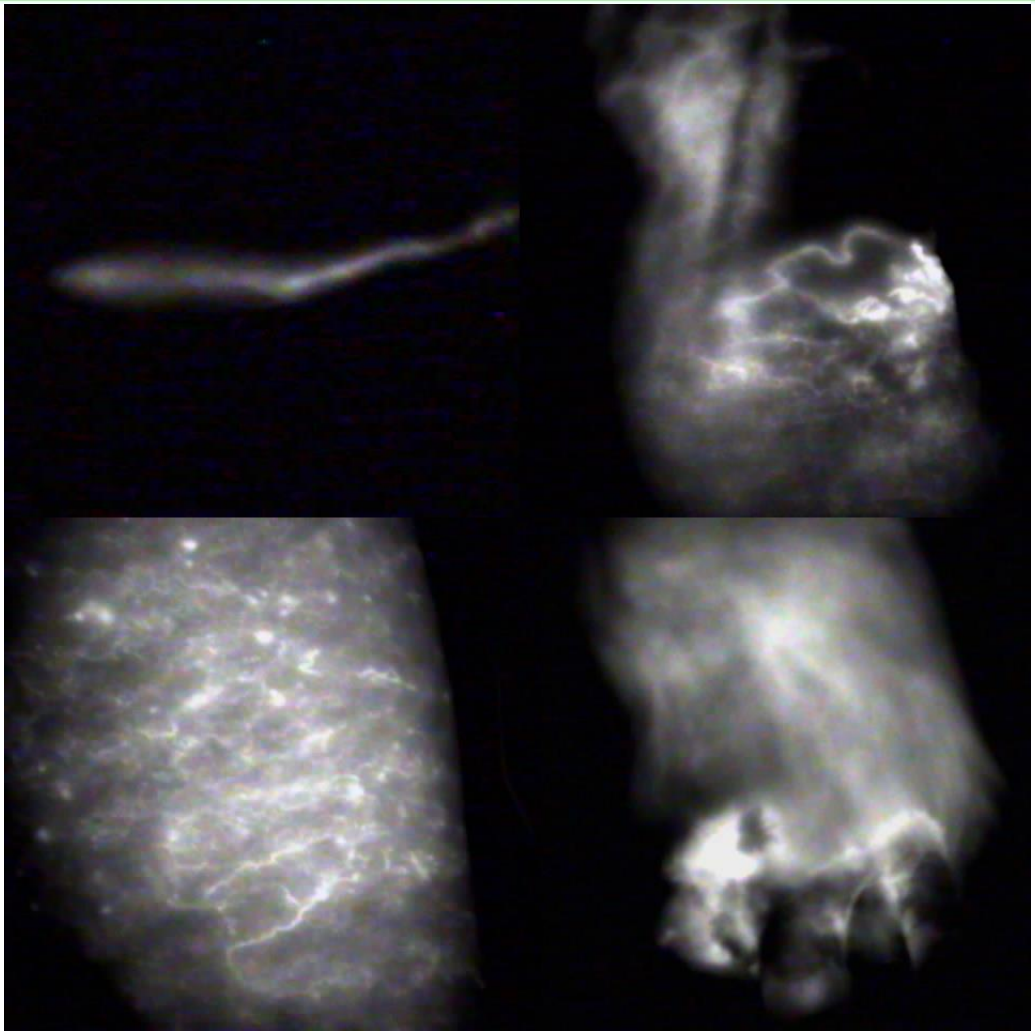
- Heavy limb
- Lymph leak
- Chronic wound
- Recurrent infection
- Social embarrassment
- Lymphangiosarcoma (uncommon)

Normal lymphatic vessels (ICG lymphangiography)

Diseased lymphatic vessel (ICG lymphangiography)

Stage 1
Linear pattern

Stage 2
Splash pattern



Stage 3
Stardust pattern

Stage 4
Diffuse pattern

Liu HL, Pang SY, Chan YW. The use of a microscope with near-infrared imaging function in indocyanine green lymphography and lymphaticovenous anastomosis. *J Plast Reconstr Aesthet Surg.* 2014 Feb;67(2):231-6

Irreversible if without treatment

Reversible lymphedema (Stage 1) ----> Irreversible lymphedema (Stage 2) ----> Elephantiasis (Stage 3)

Risk factors of upper limb lymphedema after breast cancer treatment

- Axillary dissection
- Radiotherapy
- Recurrent infection
- Obesity
- Duration after operation

after breast cancer treatment
(axillary dissection and radiotherapy)

Mak SS et al. Predictors of lymphedema in patients with breast cancer undergoing axillary lymph node dissection in Hong Kong. Nurs Res. 2008 Nov-Dec;57(6):416-25.

Prevalence of lymphedema

Upper limb lymphedema

- Axillary dissection
  - 16-45%
- Sentinel lymph node sampling
  - 5-10%

Lower limb lymphedema

- Gynecological cancer treatment
  - 22-36%

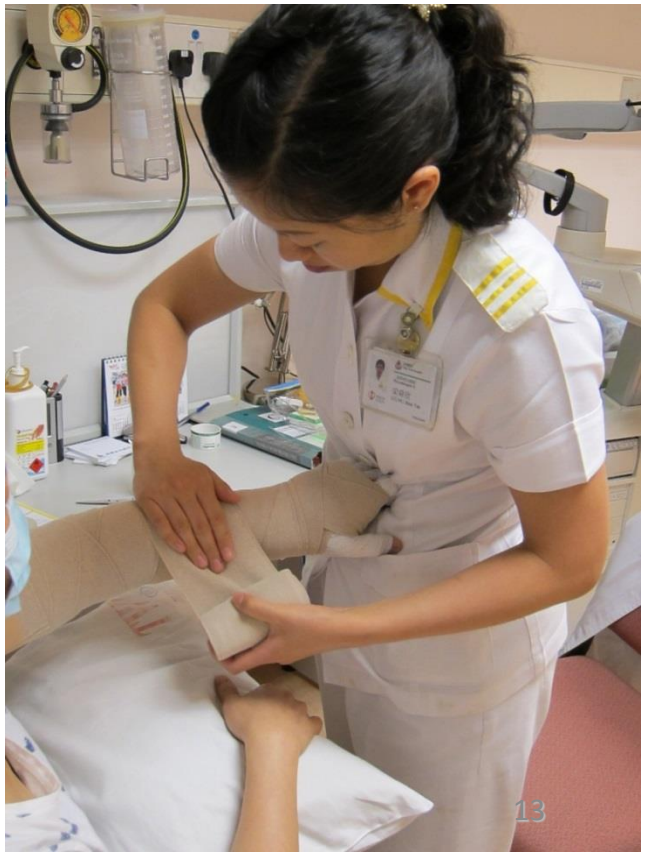
-McLaughlin Sa et al. Prevalence of lymphedema in women with breast cancer 5 years after sentinel lymph node biopsy or axillary dissection: objective measurements. J Clin Oncol. 2008 Nov 10;26(32):5213-9.
- Paiva DM et al. Prevalence of lymphedema in women undergoing treatment for breast cancer in a referral center insoutheastern Brazil. BMC Womens Health. 2013 Feb 13;13:6

Management of lymphedema

- **Limb maintenance**
  - Good hand/foot hygiene
  - Treat fungal infection
  - Get rid of bad habits e.g. nail biting
  - Pressure garment
- **Conservative – by physiotherapists**
- **Operative – by plastic surgeons**

Physiotherapy

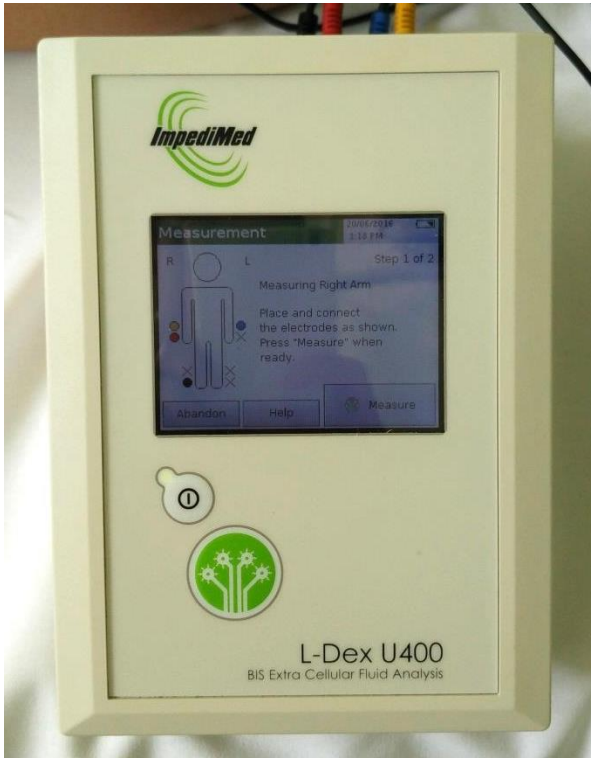
- Manual lymphatic drainage
- Bandaging



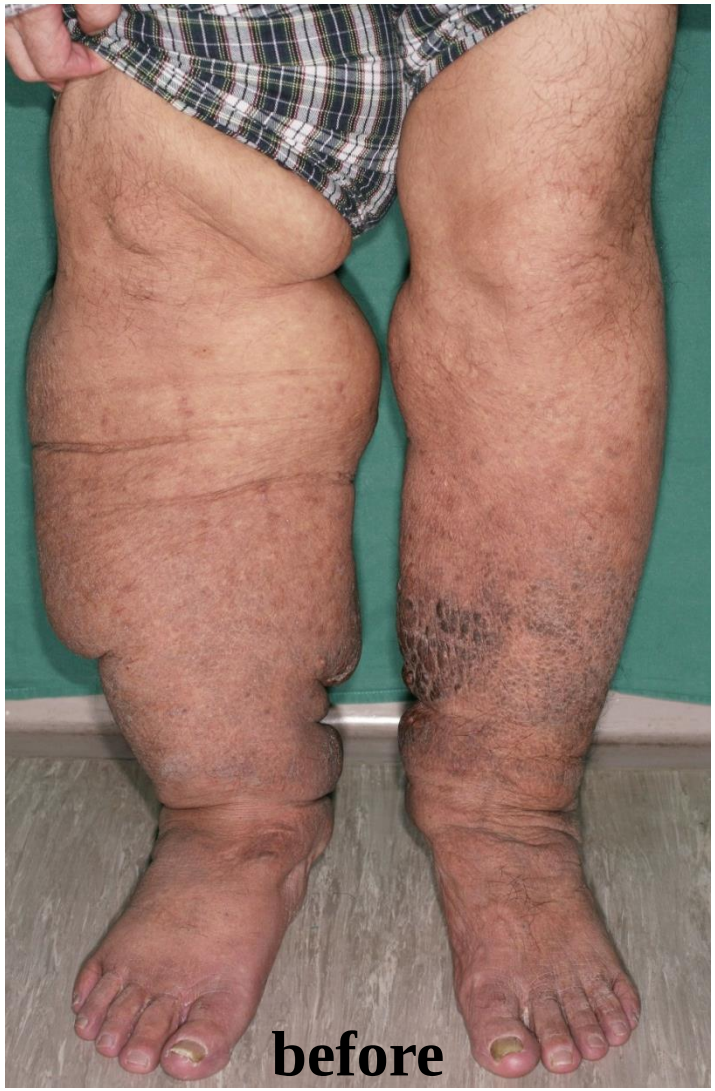
Physiotherapy

Disease follow up

- bioimpedance analysis



Traditional surgery
Excisional surgery – Charles operation



Problems with traditional surgery

- Severe scarring
- Poor cosmesis
- Chronic wound
- Lymph leak

New surgical treatment introduced by HKU

- Introduced in 2012
- Physiological treatment with microsurgery
- Lymphaticovenous anastomosis (LVA)
  - first case in May 2012
- Vascularised lymph node transfer (VLNT)
  - first case in August 2013
- Aim: re-establish the normal lymphatic flow or modify the disease process

New surgical treatment introduced by HKU

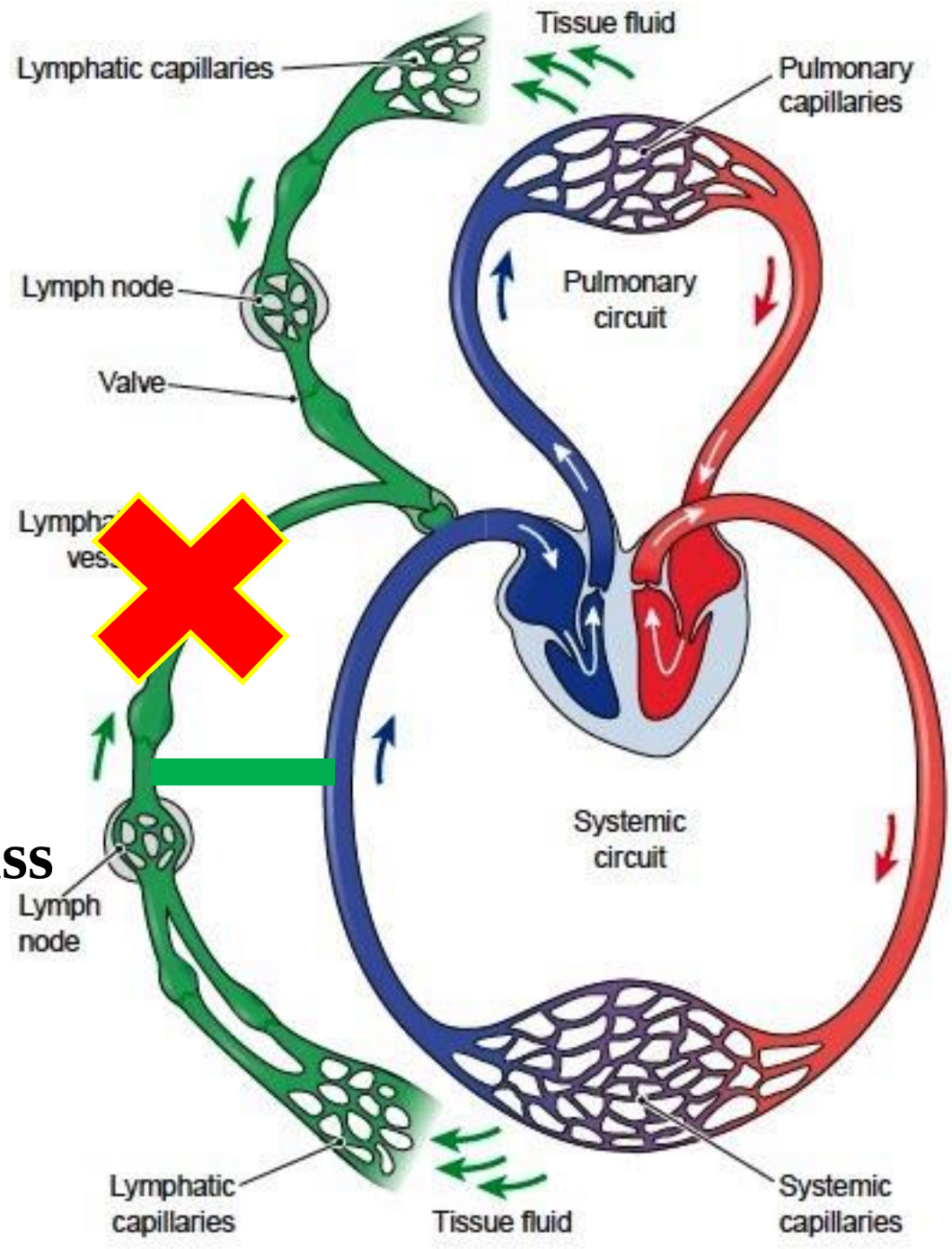
Since 2012	QMH / TWH
LVA	7
VLNT	34
Total	**41**

Lymphaticovenous anastomosis (LVA)

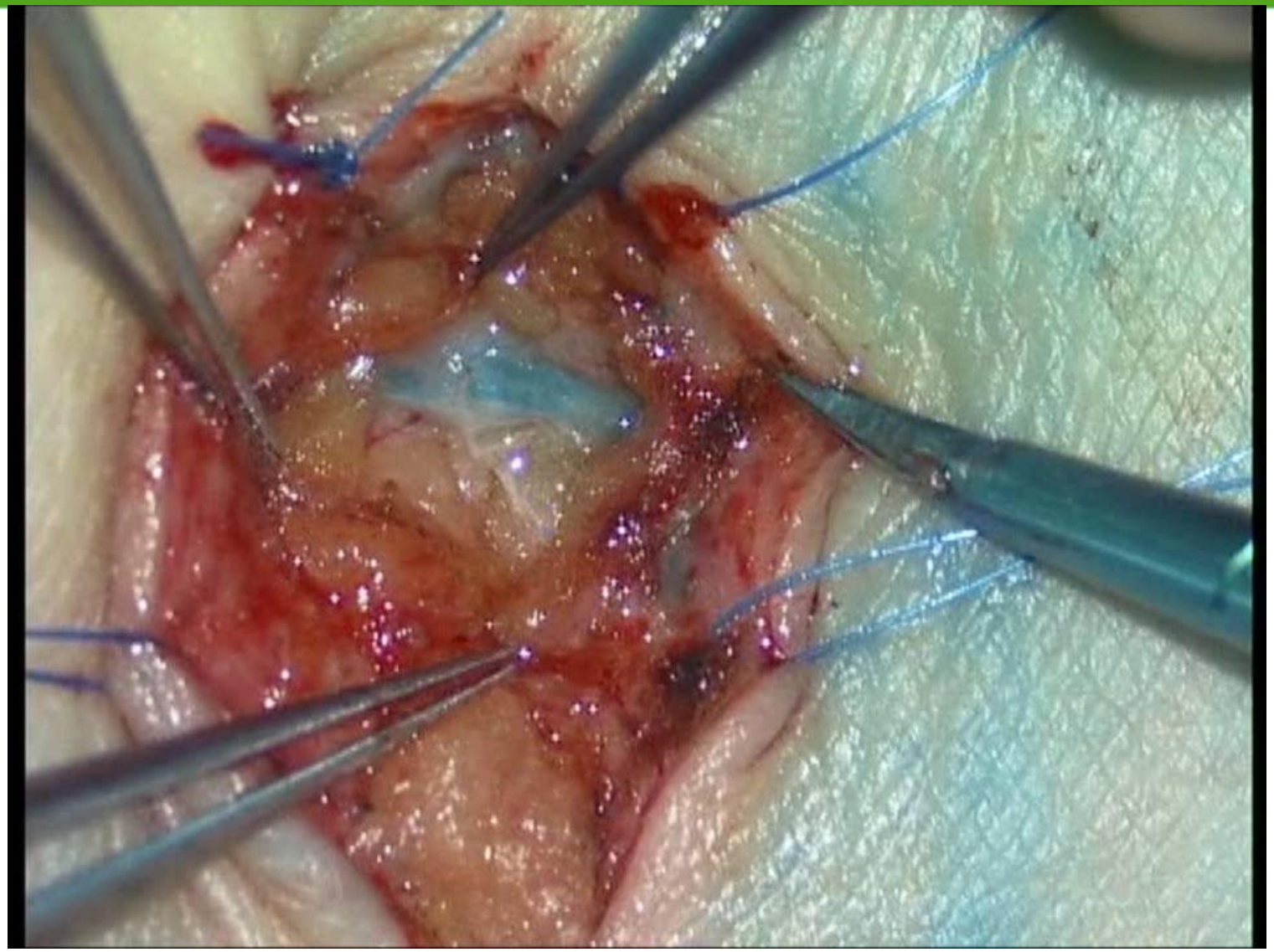
- Skin incision in disease limb (2 cm)
- Supermicrosurgery skills
  - vessel size 0.5 to 0.8mm
- Making connections between subdermal lymphatics and venules
- To bypass proximal lymphatic obstruction

Cancer leading to obstruction

LVA as bypass



LVA

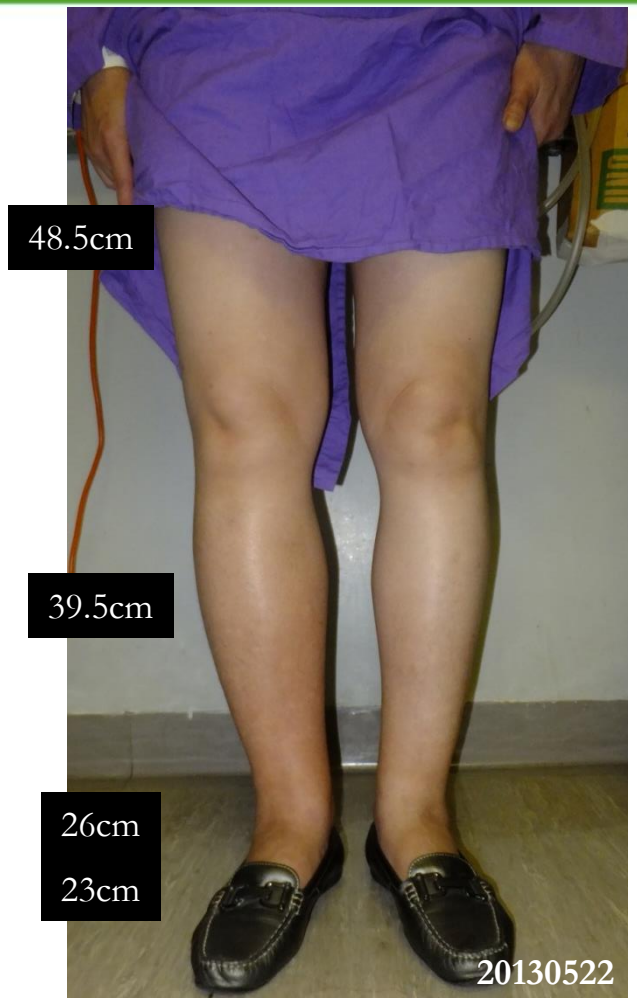


LVA

60/F CA Lt breast post-OT/RT ISL II

2.5 months after LVA, no compression after OT

LVA



53/F CA cervix post-OT/CTRT 2012 ISL I / LE 1 year

LVA

Advantages

- Small skin wound
- Can be performed under local anesthesia

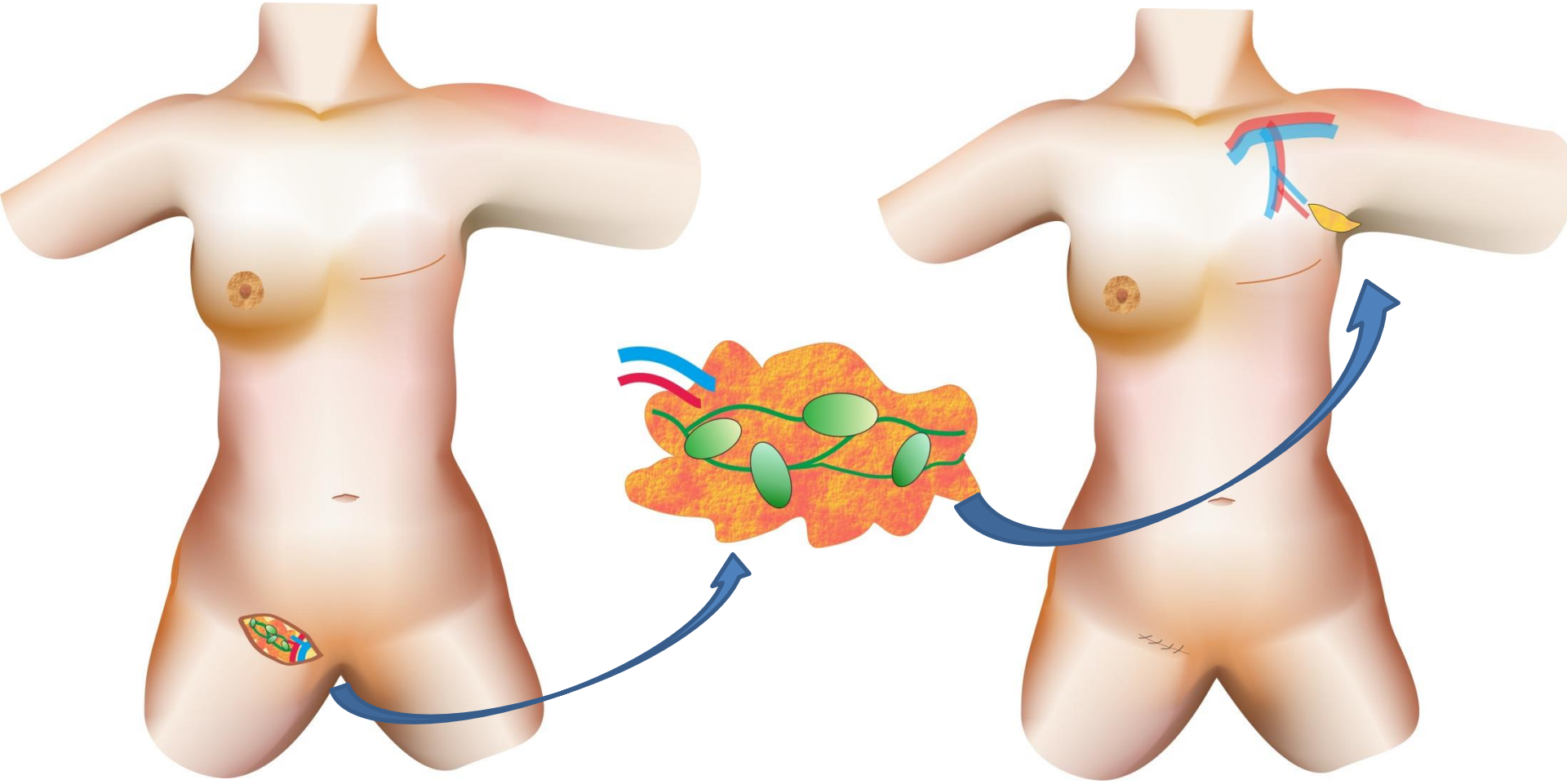
Limitations

- Only effective in early disease
- Effect is localised

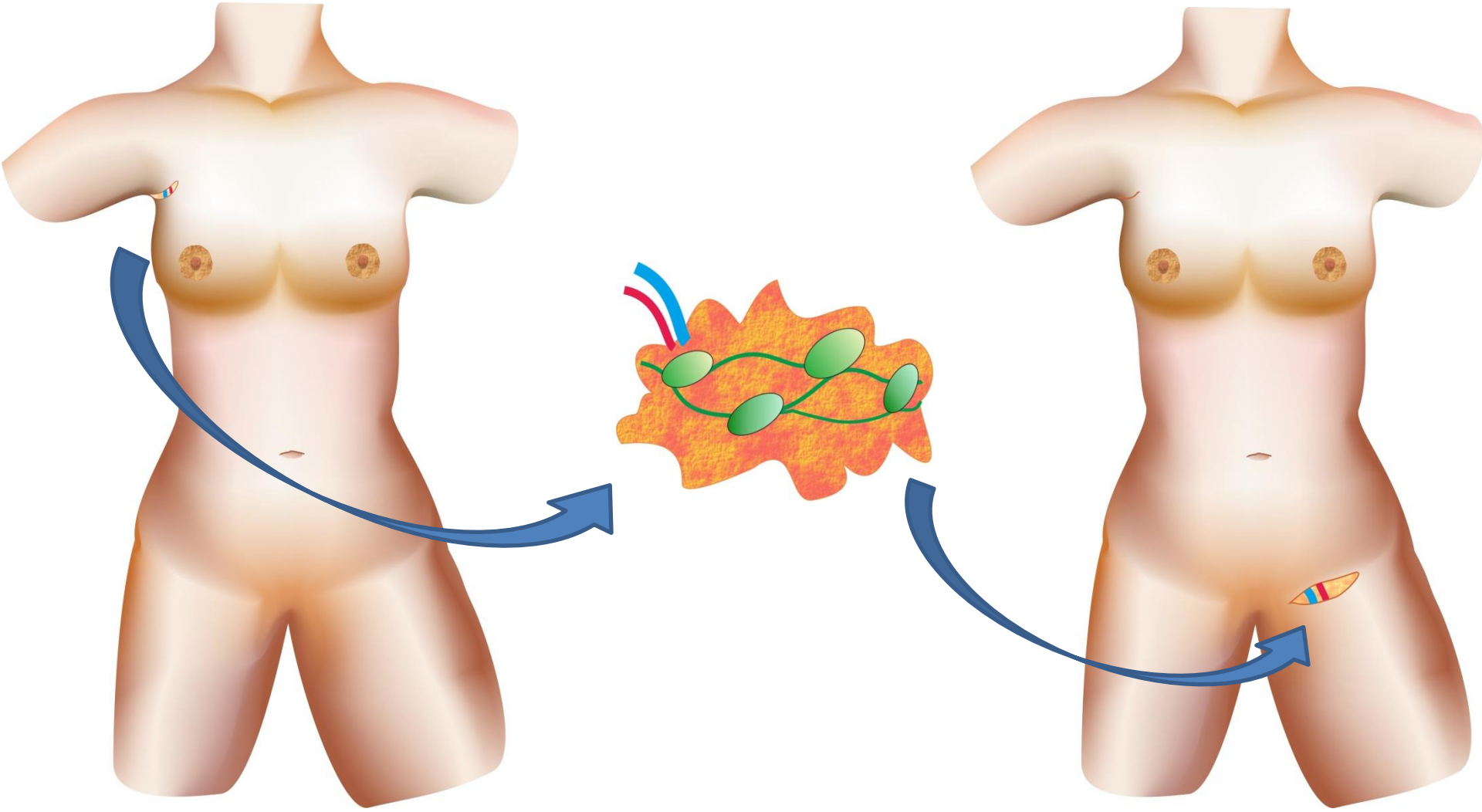
Vascularised lymph node transfer (VLNT)

- **Free tissue transfer techniques**
- **Microsurgical skills**
- **Upper limb lymphedema** – transplant free lymph node flap from groin to axilla where the lymphatic circulation is obstructed
- **Lower limb lymphedema** – transplant free lymph node flap from axilla to groin where the lymphatic circulation is obstructed
- **Mechanisms**
  1. Its pumping action can absorb excessive lymph
  2. Release growth factors that stimulate Lymphangiogenesis (VEGF and cytokine mediated)

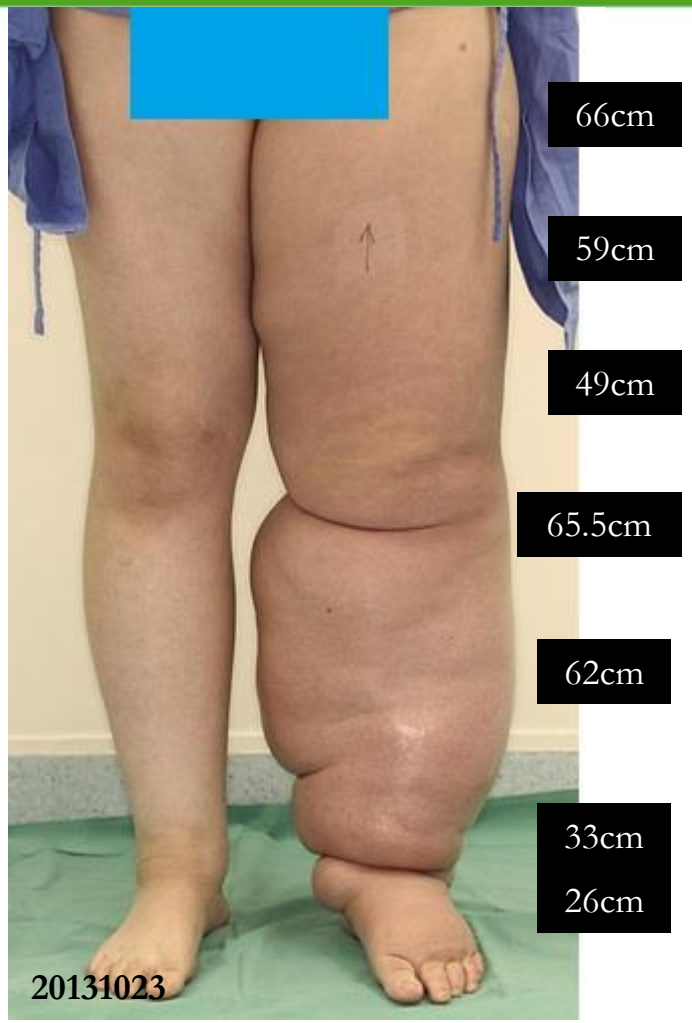
VLNT
– Upper limb lymphedema

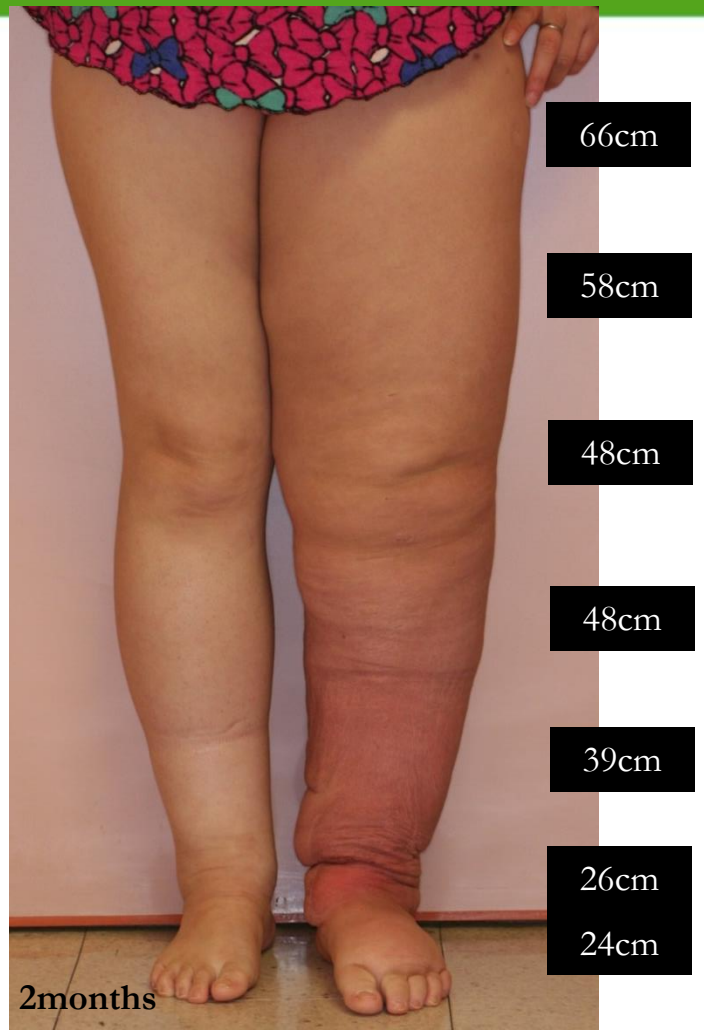


VLNT
– Lower limb lymphedema



VLNT



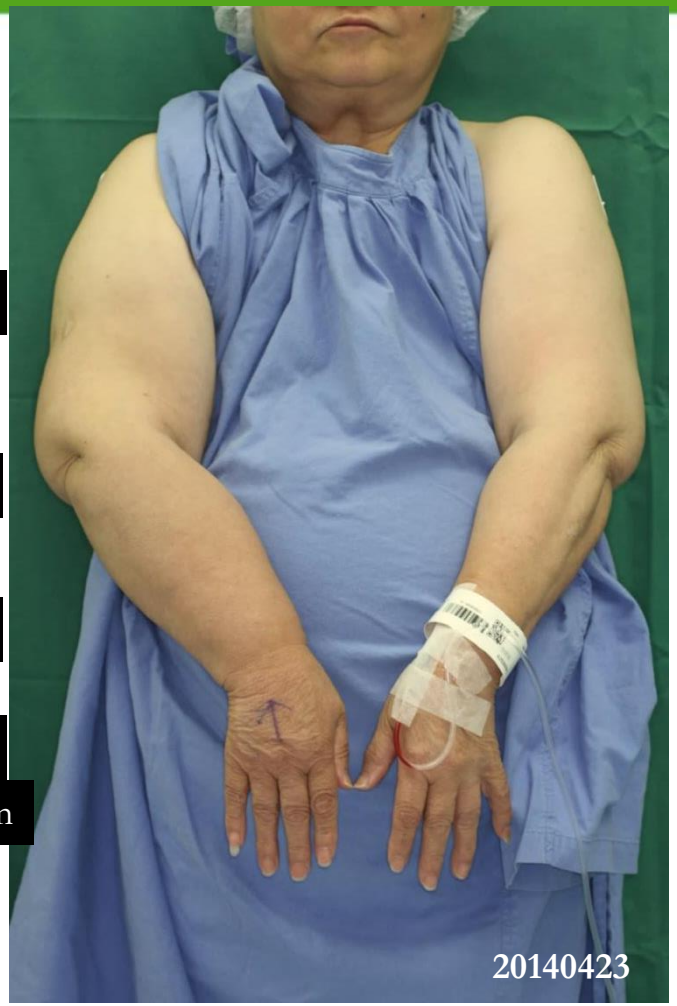


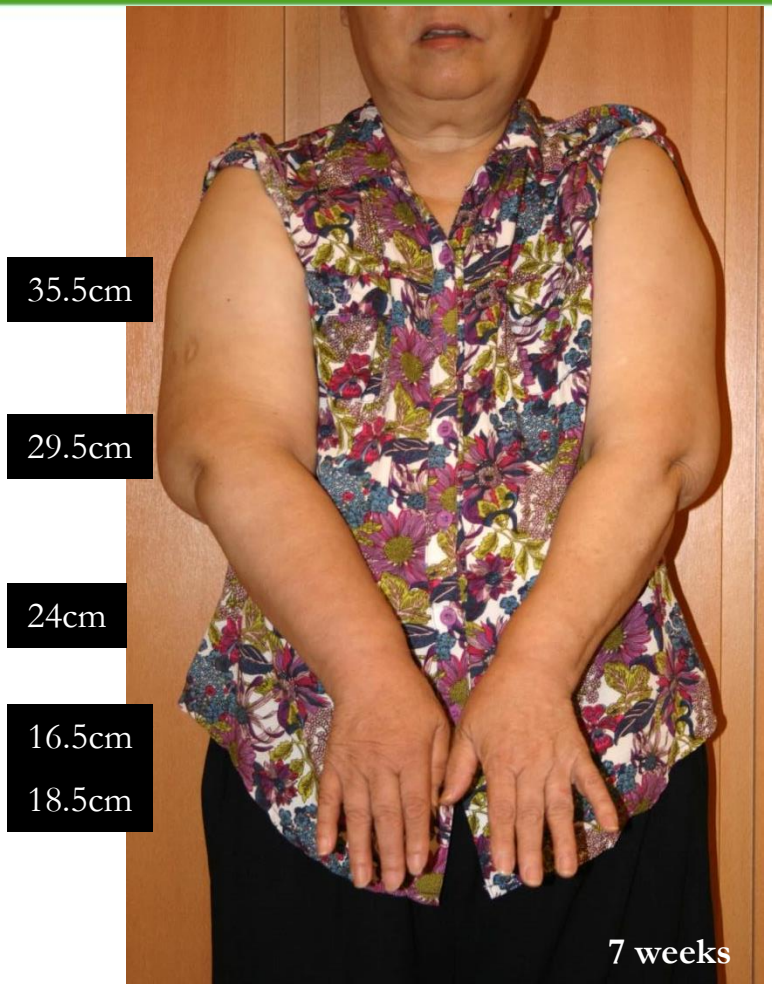
37/F CA cervix post-OT/CTRT 2004 ISL late II / LE 8 years

VLNT

64/F CA corpus post-OT/RT 2010 ISL late II LE 2 years

VLNT





70/F CA Rt breast post-OT/CTRT 1996 ISL II LE 2 years

VLNT

71/F CA Rt breast post-OT/CTRT 1988 ISL late II LE 5 years

VLNT case series

- Period: August 2013 to May 2016 (34 months)
- Number of patients undergoing operation:
  - 34 – all female
- Mean age: 59 years (range: 37 to 79 years)
- All secondary lymphedema after cancer treatments
- 20 upper limb, 14 lower limbs
- Mean duration of lymphedema: 7 years (range: 1 to 24 years)
- Stage: 2 ISL I, 21 ISL II, 11 ISL late II

Results

Mean follow-up period: 15 months (range: 2 to 28 months)

- **Upper limb**
  - 79% had circumference reduction
  - mean circumference reduction: 2cm (range: 0 to 6.5cm)
- **Lower limb**
  - 70% had circumference reduction
  - mean circumference reduction: 3cm (range: 0 to 23cm)

VLNT

Advantages

- Also effective in late stage disease

Limitations

- Effective in 70-80% patients
- Degree of improvement is stage-dependent, the outcome for early lymphedema patients is better
- Physiotherapy is required after surgery for late stage patients

Lymphedema service

QMH's Lymphedema Clinic

- Since July 2012
- S4 Surgical SOPD, Queen Mary Hospital
- New patients per year: 25

TWH's Lymphedema Multicare Programme (LMCP)

- Since September 2015
- Plastic surgeons, breast surgeons, physiotherapists and nursing specialists
- C5 Breast center, Tung Wah Hospital
- Number of patients served: 112 (as of May 2016)

Patient Sharing

Q & A