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

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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 3
Stardust pattern

Stage 2
Splash pattern

Stage 4
Diffuse pattern

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

Prevalence of lymphedema

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

Lower limb lymphedema
- Gynecological cancer treatment
  - 22-36%

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

<table>
<thead>
<tr>
<th>Since 2012</th>
<th>QMH / TWH</th>
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<tbody>
<tr>
<td>LVA</td>
<td>7</td>
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<tr>
<td>VLNT</td>
<td>34</td>
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<td>Total</td>
<td>41</td>
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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
60/F CA Lt breast post-OT/RT ISL II  

2.5 months after LVA, no compression after OT
53/F CA cervix post-OT/CTRT 2012 ISL I / LE 1 year
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
37/F CA cervix post-OT/CTRT 2004 ISL late II / LE 8 years
64/F CA corpus post-OT/RT 2010 ISL late II LE 2 years
70/F CA Rt breast post-OT/CTRT 1996 ISL II LE 2 years
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)
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
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