Journal of Plastic, Reconstructive & Aesthetic Surgery (2014) 67, 119–123

JPRAS
An International Journal of Surgical Reconstruction
www.JPRASurg.com

CASE REPORT

A case of donor-site lymphoedema after lymph node–superficial circumflex iliac artery perforator flap transfer

Gemma Pons [a,b], **Jaume Masia** [a,b], **Pietro Loschi** [a,b,*], **Maria Luisa Nardulli** [a,b], **Joan Duch** [a,b]

[a] *Department of Plastic and Reconstructive Surgery, Hospital de la Santa Creu I Sant Pau, Av. Sant Antoni M. Claret, 167, 08025 Barcelona, Spain*[c]
[b] *Department of Plastic and Recostructive Surgery, University-Hospital of Modena and Reggio Emilia, Via del Pozzo, 71, 41125 Modena, Italy*

Received 10 May 2013; accepted 2 June 2013

KEYWORDS
Limb lymphoedema;
Complications of autologous lymph node transfer;
Lymph node-containing superficial circumflex iliac artery perforator flap;
LN–SCIP flap;
Donor-site lymphoedema

Summary Vascularised lymph node transfer is a promising technique to treat limb lymphoedema, especially when caused by lymph node dissection. The most common approach is the transfer of superficial inguinal lymph nodes using groin flaps or superficial circumflex iliac artery perforator flaps. Lower-limb lymphatic sequelae are unexpected as these lymph nodes should drain lymph from the lower abdominal wall. Recently, Vignes *et al*. described two cases out of 26 cases of chronic lymphoedema after superficial inguinal lymph node harvest. From a series of 42 vascularised lymph node transfers performed at our centre, only one patient developed swelling in the donor thigh. The features of this patient who underwent a lymph node-containing superficial circumflex iliac artery perforator flap are reported herein. We recommend maximal accuracy in selecting the appropriate lymph nodes for transfer and provide some tips from our experience.

* Corresponding author. University-Hospital of Modena and Reggio Emilia, Via del Pozzo, 71, 41125 Modena, Italy. Tel.: +39 059 422 5286; fax: +39 059 422 2454.
[c] Tel.: +34 932919000; fax: +34 932919427.santpau@santpau.cat

1748-6815/$ - see front matter
http://dx.doi.org/10.1016/j.bjps.2013.06.005

Secondary chronic limb lymphoedema is a disabling side effect of groin and axillary lymph-node (LNs) surgery.[1] Patients who do not respond adequately to complex decongestive therapy can benefit from microsurgical treatment.[2]

Vascularised lymph-node transfer (LNT) is becoming quite popular in improving the defective limb lymphatic drainage after LN clearance, especially in breast cancer-related lymphoedema patients.[3] The most common approach is the transfer of superficial inguinal LNs to the axilla or wrist using groin (LN-GROIN) flaps[4] or superficial circumflex iliac artery perforator (LN—SCIP) flaps.[5] For post-mastectomy patients with arm lymphoedema, microvascular breast reconstruction using an abdominal free flap can be performed in combination with LNT.[6]

As superficial inguinal LNs drain the suprailiac region, no functional sequelae are expected in the lower limb.[6] Nevertheless, Viitanen *et al.*[7] described unexpected changes in lymphatic transport in the leg after LNT, while Vignes *et al.*[8] reported cases of irreversible iatrogenic lymphoedema.

The clinical features of a patient who developed chronic thigh swelling after an LN—SCIP flap procedure are reported herein.

Clinical details

A 52-year-old woman had a right modified radical mastectomy and axillary LN dissection (ALND) for a ductal carcinoma in June 2003 (zero positive LNs). Breast reconstruction with a latissimus dorsi (LD) myocutaneous flap and implant was performed, followed by adjuvant radiotherapy (RT), chemotherapy (CT) and hormonotherapy (HT). Third-degree[2] arm swelling was detected 8 months after the operation.

In February 2008, neo-adjuvant CT was performed for contralateral lobular cancer, followed by left mastectomy with expander placement, sentinel LN (SLN) biopsy removing two negative LNs and RT—HT. First-degree[2] left-arm lymphoedema was detected 6 months later. In May 2012, the left breast was reconstructed using an LD myocutaneous flap with implant, and the contralateral implant was exchanged.

As complex decongestive therapy gave unsatisfactory results and recurrent right-arm lymphangitis was reported, in February 2011 a left LN—SCIP flap was harvested. The flap was based on the superficial branch of the superficial circumflex iliac artery and included at least three superficial inguinal LNs embedded in the surrounding fat tissue.[5] Anastomosis was performed to the right thoracodorsal vessels after adequate axillary scar release (Figure 1).

Swelling of the left thigh appeared 3 months later, and symptoms were still present at the 24-month follow-up (Figure 2).

The patient had a 25 pack-year history of smoking. Her body mass index (BMI) was 24.0 kg m^{-2}. Family history revealed a grandmother who suffered from third-degree breast cancer-related lymphoedema.

Upper- and lower-limb evaluation

Limb circumferences were assessed with a common tape: at first preoperatively, then every 3 months for the first year and every 6 months for the second year. Reference circumferences for the upper limb were the cubital crease, point 'zero' (K), +10 cm (A) in the upper arm, −10 cm (B) and −20 cm (C) in the forearm, the wrist (D) and the base of the first finger (E).

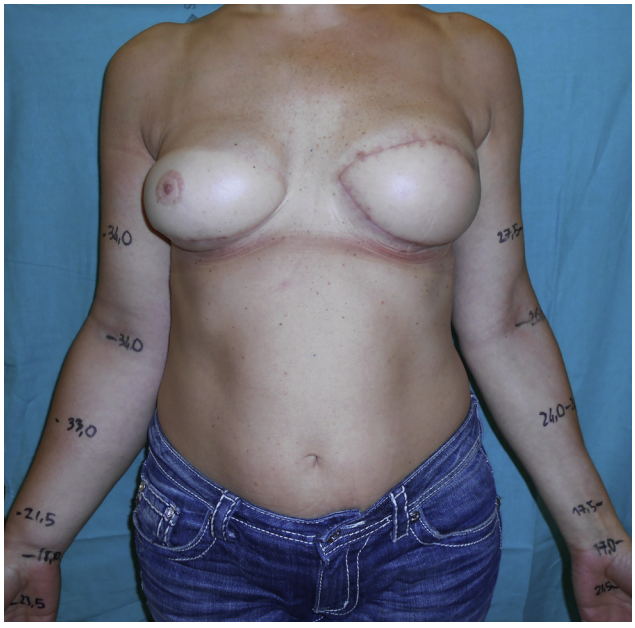

Figure 1 Frontal view of the patient at 24-month follow-up after LN—SCIP flap surgery for right upper limb lymphoedema (third-degree). Bilateral breast reconstruction was performed with LD myocutaneous flap with implant. Left upper limb lymphoedema (first-degree) was treated with complex decongestive therapy.

Reference points for the leg were the popliteal crease, point 'zero' (K), +30 cm (A), +20 cm (B), +10 cm (C) in the thigh, −10 cm (D), −20 cm (E), −30 cm (F) in the lower leg and 10 cm proximal from the tip of the first toe (G).

Using those measurements, upper limb as well as thigh (points A to C) and leg (points A to G) volume were calculated.

Postoperative lymphoscintigraphy (LS) was performed to assess upper- and lower-limb lymphatic function. 99mTc-Labelled human serum albumin (37 MBq, 0.1 ml volume) was administered subcutaneously in the second and fourth interdigital space. Images were taken immediately and 180 min after the injection.

Results

Preoperative leg circumferences showed no difference between the left and the right leg. At the 24-month follow-up, upper- and lower-limb measurements were compared to the preoperative values. A 2-cm enlargement of the left thigh circumferences at points A, B and C was detected (Figure 2). The percentage increase of the affected thigh was 8.5% and 6.2% considering the whole leg.

Immediate LS images showed tracer migration only in the healthy right leg (Figure 3). Later images confirmed