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SIMULTANEOUS BREAST AND LYMPHATIC RECONSTRUCTION WITH A CHIMERIC DIEP - VASCULARIZED INGUINAL LYMPH NODE TRANSFER: CASE REPORT

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SUMMARY

Breast cancer management is often associated with significant prevalence of upper extremity lymphedema, which when occurs can be devastating. The patient needs to be shielded from the unpleasant experience, and to prophylactically treat this occurrence, there are various named surgical physiological options for addressing this situation. Candidates for this remedy, however, often also present the need for breast reconstruction.

We offered a prophylactic vascularized inguinal lymph node transfer (VILNT) for lymphedema prophylaxis in combination with a deep inferior epigastric artery perforator (DIEP) chimeric flap for breast reconstruction.

The 50-year-old female who needed delayed breast reconstruction presented with a right-side breast mastectomy scar, also had ipsilateral axillary dissection a year prior followed by adjuvant chemotherapy. We performed a free chimeric DIEP and VILN transfer with good outcome.

Key words: **Mastectomy, lymphedema, deep inferior epigastric perforator flap, Breast reconstruction, vascularized inguinal lymph node transfer.**

INTRODUCTION

Breast cancer treatment-related secondary lymphedema occurs in about 14 to 28% after treatment (1,2). Using clinic criteria that employ centimetric measures, the rate is seen to be up to 41% (3), This is seen to significantly increase in patients receiving axillary lymph node dissection and radiation.

The management strategies for lymphedema are generally divided into conservative and surgical strategies. Complete decongestive lymphedema therapy (CDLT), a conservative strategy, is the mainstay in most centers. In the event that it proves futile, the surgical modalities are employed. These can either be physiologic strategies or debulking strategies.

However, with the advent of microsurgery and super microsurgery treatment modalities currently focus on physiologic reconstruction using lymph venous bypass surgery or vascularized lymph node transfer (VLNT). These aim to improve lymphatic flow and function by creating a healthy bridge between the vascular and lymphatic channels, act to absorb and pump lymphatic fluid and as well induce lymph-angiogenesis by inducing the production of VEGF-C(2). Despite the availability of multiple physiologic surgical procedures, for patients presenting for breast reconstruction with or at risk of developing lymphedema post breast cancer surgery, a single operation i.e. autologous breast reconstruction and lymph node transfer for lymphedema prophylaxis or management greatly improves patient satisfaction. Several studies have shown the efficacy of combining autologous breast reconstruction with VLNT (2).

The DIEP flap is a reliable well documented reconstructive option for the breast (4). Coupled with a shift toward lymph node transfers, the inguinal nodes have become a common donor for upper extremity lymphedema (5). Particular credit is to the consistent anatomy of the region and numerous lymph nodes available for harvest (6).

Conjoining DIEP flap harvest with inguinal lymph nodes is the most popular option for patients suffering from breast cancer related lymphedema (BCRL) and interested in breast reconstruction (7). Chimeric flaps using vascularized inguinal nodes (VILN), lateral thoracic nodes (LTN), or omental lymph nodes (VOLN) aim to construct an aesthetic breast and also improve lymphatic function (2). However, the benefit of using the chimeric DIEP flap is the tissue volume it provides, allowing for adequate aesthetic breast reconstruction and easy lymph node insertion into the axilla. Nguyen *et al*. reported the utility of a hemi-abdominal flap which can be designed for patients undergoing bilateral reconstruction or have a prior midline incision. Lastly, the DIEP flap has a very reliable vascular supply which has a low failure rate and has repeatedly shown good perfusion of the inguinal nodes (2).

CASE PRESENTATION

We present a case of a 55-year-old female who requested for breast reconstruction following an oncologic mastectomy of the right breast and adjuvant chemotherapy that she received 12 months prior. The patient had no overt lymphedema.

She was in good general condition, not hypertensive or diabetic, weight - 82kg, height - 175cm, BMI – 26.8 kg/m2.

The right post mastectomy scar was linear, extending to the anterior part of the axilla (Figure 1). She had a chemotherapy port on the left infraclavicular region.

Surgical technique

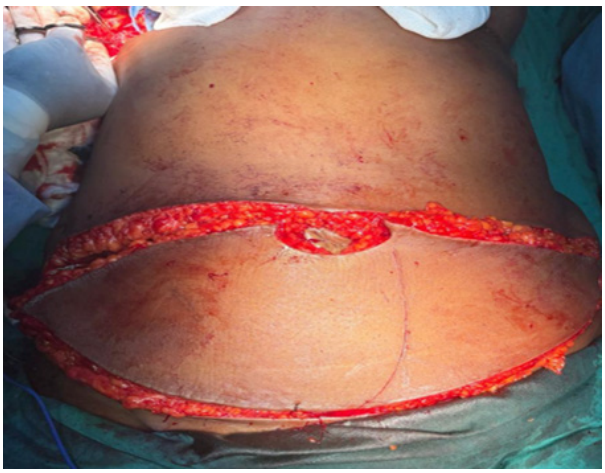
We performed a right breast reconstruction using a chimeric DIEP with inguinal nodes (Figure 2). The chimeric DIEP with vascularized lymphnodes transfer for breast reconstruction was first described by Saaristo *et al*. in 2012. Typically, the nodes can be safely harvested above the groin crease, at or below the inguinal ligament, and lateral to the femoral vessels (8). We harvested nodes above the inguinal crease in this case.

For favorable inset into the recipient site, the contralateral lymph nodes and ipsilateral deep inferior epigastric artery are harvested (7).

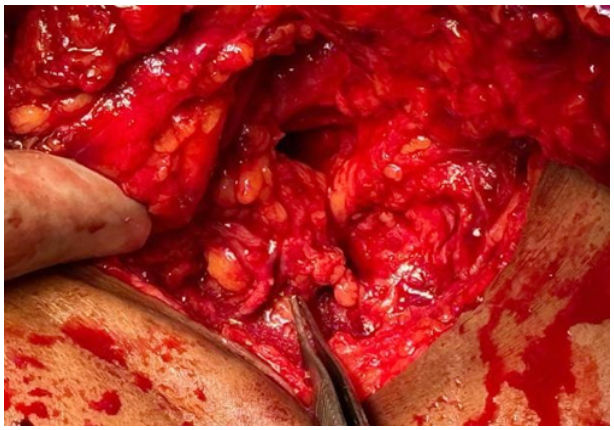
Figure 1: Peri-operative planning and marking of the right breast scar release extent, left breast symetrization and the DIEP flap.

We began our flap dissection inferiorly via an incision 3cm above the inguinal skin crease, identifying the superficial inferior epigastric perforator (SIEP) and the superficial circumflex iliac perforators (SCIP). We preserved the vascularity of the inguinal nodes by preserving the SCIP medially and also preserved a 3cm adipofascial margin to ensure adequate vascularization of the lymph node. The superior incision was then made and the chimeric DIEP flap was harvested (Figure 2a).

Figure 2: a) DIEP flap completely dissected out.



b) Some Inguinal lymph nodes as viewed in situ, in relation to the DIEP flap.



At the recipient site, the perforators of the internal mammary artery were small in caliber. We resected the third costal cartilage to expose a length of the internal mammary vessels to which the DIEP was later anastomosed; the superficial circumflex iliac vessels were anastomosed to the thoracodorsal artery to supercharge the flap and ascertain vascularity of the harvested lymph nodes. The dissection into the recipient axillary vessels also accomplished scar release which is recognized as a vital component of lymphedema management (9,10). With this orientation, the inguinal lymph nodes were inset in the axilla.

Figure 3: a) Immediate Post-operative photo showing the DIEP flap inset to the right breast reconstruction, donor site closure with a tummy-tuck scar.

b). Post-operative Photo one week after operation, showing the resultant breast mound.

Contralateral symmetrizing reduction mastopexy was also done at the same sitting.

RESULTS

Post-operative recovery was uneventful with good flap take. The patient was discharged after 1 week and followed up as an outpatient. She reported general satisfaction with the immediate result (Figure 3a).

CONCLUSION

Using a chimeric DIEP flap with vascularized inguinal lymph node transfer for simultaneous breast and lymphatic reconstruction is a reliable method to help patients who need both oncologic reconstruction and lymphedema therapy eliminating the need for multiple surgeries and enhancing patient quality of life both functionally and aesthetically. The current example highlights the feasibility and promising results, emphasizing the utility of this combined procedure in well selected patients.

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