

based on the superficial circumflex iliac artery (SCIA). Based on prior anatomic study, these lymph nodes are located above the groin crease and slightly below the inguinal ligament. They tend to cluster at the junction of the SCIA and SIEA, approximately one-third the distance from the pubic tubercle and 3 cm perpendicularly below this line (Fig. 8.9).¹⁷ When starting out, a handheld Doppler can localize the SIEA and SCIA. When reviewing the MRA, the side with the largest number and caliber of lymph nodes with a healthy distance from the lower extremity sentinel nodes is selected.

The morning of surgery, the patient is injected in the first and second web space of the foot on the side of the inguinal donor site then brought directly to the operating room. Four 0.1 mL intradermal injections of indocyanine green dye are administered across the lower abdomen on the donor side, halfway between the umbilicus and the inguinal ligament (Fig. 8.10). Once prepped and draped, either the SPY or PDE is used to visualize the lymphatics

draining the abdomen into the SCIA-based lymph nodes targeted for harvest. A gamma probe is then used to locate the lymph nodes draining the lower extremity, which are avoided. Note that the gamma probe will also detect a high signal strength over the area of the proposed flap because it is picking up technetium from iliac nodes deep to the flap.

The groin crease is first marked, as dissection should never cross this inferior border of the flap. A line is then drawn from the pubic tubercle and anterior superior iliac spine (ASIS) corresponding to the inguinal ligament. The target lymph nodes are located between these two lines (Fig. 8.11). If a skin paddle is required, a common dimension is 5×10 cm, although we generally avoid a skin paddle unless skin replacement or maximum flap bulk is required. More commonly, the incision is oriented obliquely, directly over the path of the SCIA. The medial extent does not cross much farther than the SIEA, as lymphatics from the lower extremity often pass medial and deep to this vessel.

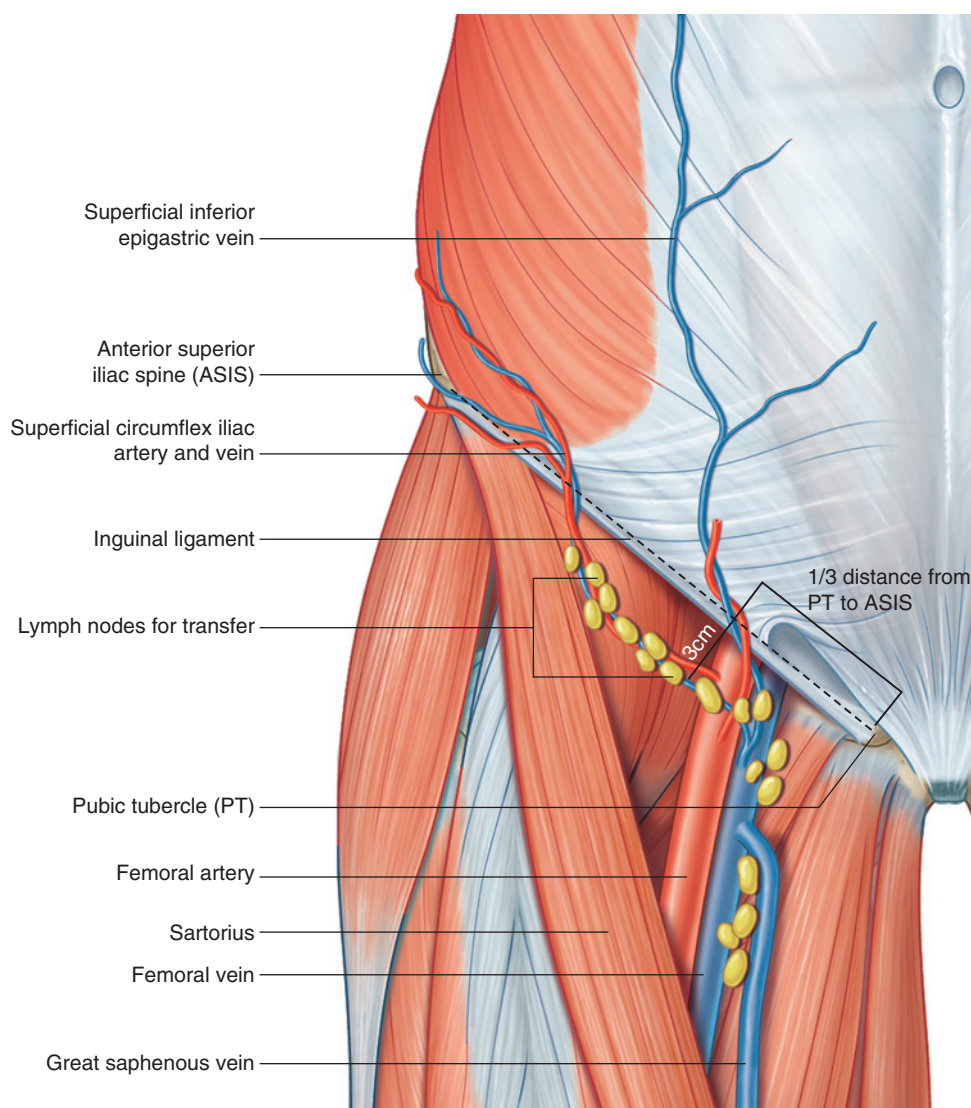


Figure 8.9 Illustration of the anatomic basis of a groin lymph node flap. Target nodes are clustered between the superficial inferior epigastric vein and superficial circumflex iliac artery/vein. PT, pubic tubercle; ASIS, anterior superior iliac spine. (Redrawn from Dayan J, et al. The use of magnetic resonance angiography in vascularized groin lymph node transfer: an anatomic study. *J Reconstr Microsurg* 2014;30[01]:41–16.)

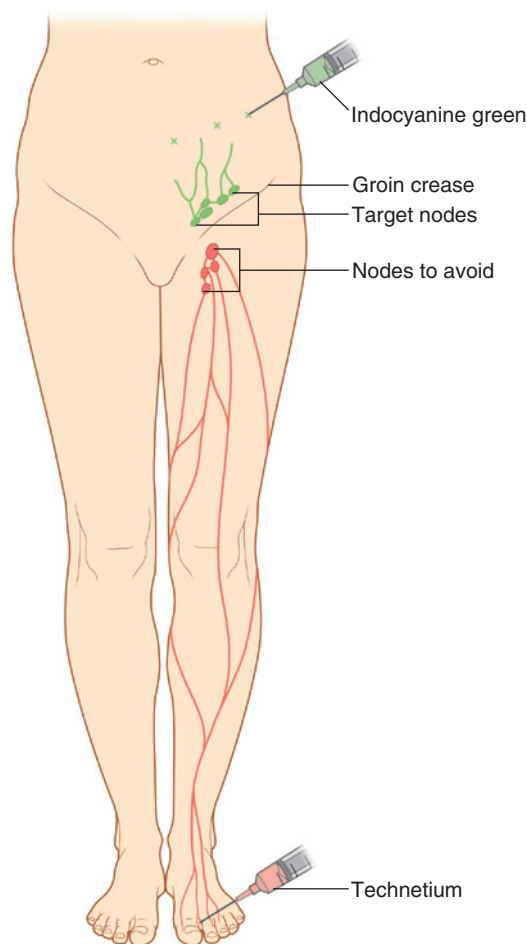


Figure 8.10 Schematic of reverse lymphatic mapping. (Redrawn from Dayan J. et al. Reverse lymphatic mapping: a new technique for maximizing safety in vascularized lymph node transfer. *Plast Reconstr Surg* 2015;135[1]:277–85.)

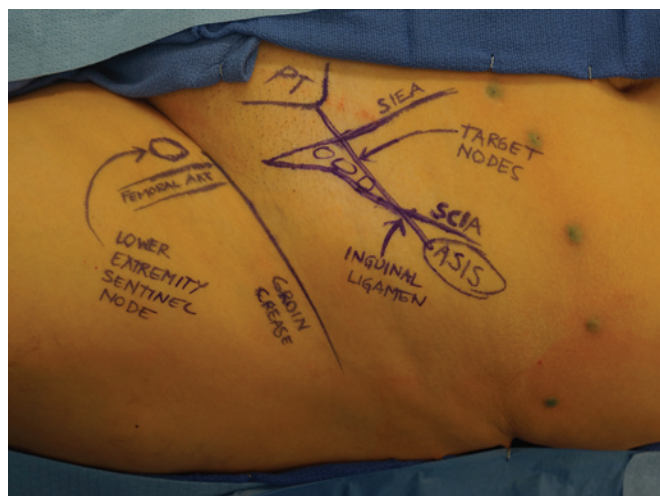


Figure 8.11 Markings for vascularized groin lymph node transfer.

Dissection is carried down to just above the Scarpa's fascia, as the lymph nodes reside deep to this fascia. Subcutaneous flaps are elevated superficial to Scarpa's fascia, but no lower than the groin crease. The superior border of the flap can be extended to include more soft tissue bulk to fill the

recipient site defect, particularly if a large amount of axillary scar is removed.

At this point, the SPY or PDE is used to confirm the presence of lymph nodes in the flap. Dissection is then carried down to the abdominal wall and sartorius muscle fascia superiorly and laterally, where the distal end of the superficial circumflex iliac artery/vein (SCIA/V) is divided. Flap elevation proceeds lateral to medial, superficial to the sartorius fascia (Fig. 8.2, and Figs 13.1 and 13.2). There is a branch from the SCIA that dives deep to the sartorius fascia, but care must be taken to ensure that the main SCIA pedicle is not inadvertently divided as it can emerge at medial border of the sartorius muscle as you approach the femoral triangle. Once medial to the sartorius muscle, the gamma probe is then carefully aimed upward from the undersurface of the lymph node flap to interrogate it for the presence of technetium. If there is an intense signal present (>30% of the lower limb sentinel node), the site is abandoned and an alternative site (often the supraclavicular donor site) is used. For this reason, informed consent is always obtained for the possibility of a donor site change if the lymphatic drainage patterns are abnormal. In the past 5 years, we have had two patients with significant uptake of technetium in SCIA-based lymph nodes, which prompted a site change, underscoring the fact that solely using anatomic landmarks without a physiologic method such as reverse lymphatic mapping may lead to the inadvertent harvest of lymph nodes contributing to lower extremity drainage.

If the gamma probe does not detect significant uptake of technetium in the target nodes illuminated by the SPY/PDE, the SCIA pedicle is completely dissected in retrograde fashion as the flap is incrementally divided along its inferior and superior borders. Superficial veins of any significant caliber (Fig. 13.19) on the inferior border of the flap are dissected proximally and divided in case the vena commitante of the SCIA is tiny. The investing fascia over the femoral artery is incised superiorly as the SCIA and vena commitante turn upward. Dissection is carried down to the take-off of the femoral artery. While the vena commitante is often adequate in caliber, there are some cases where it is tiny and the proximal superficial inferior epigastric vein (SIEV) or unnamed superficial vein must be used.

The next decision is how medial to extend the flap dissection. Once you enter the territory medial to the SIEV, lymphatics draining the lower limb can be disrupted, and for this reason, the gamma probe is used to determine which lymph nodes are "hot." No chances are taken in this regard, and if there is any question about the role of a lymph node in limb drainage, it is preserved. In general, the SIEV (Fig. 11.7) is sometimes included in this flap but if it is included, dissection is limited just medial to the SIEV. As lymphatic drainage patterns vary, there are some situations where the gamma probe demonstrates high signal intensity along the region of the SIEV and it is excluded from the flap. These decisions are completely guided by the RLM technique and vary from patient to patient. Once the medial border is determined, the flap is isolated on its pedicle and harvested (Fig. 8.12). For documentation purposes, a 10-second count is taken of the flap as well as the sentinel lymph node draining the limb. The signal intensity of the flap should be no more than 10% of the sentinel lymph node, and ideally, as low as possible. Finally, it is not enough