SIMPLE APPROACH TO HARVEST OF THE ANTEROLATERAL THIGH FLAP

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Another example of ALT flap harvest, starting with the anterior skin incision and fascia incision over the RF and VL muscles. The RF muscle fibers will have a longitudinal orientation whereas the VL muscle fibers will oriented obliquely and medially. The yellow fatty septum between both muscle is easily identified distally.
Case 1

**Step 1**
- Anterior skin incision
- Septum identification between RF and VL
Case 1

Again, once identified distally, the septum between RF and VL muscles is opened from distally. It is much easier to identify the septum distally then proximally.
Step II
Septum opening between RF and VL
Once the septum between the RF and VL is identified distally, the septum is opened from distal to proximal. The RF muscle is displaced medially away from the VL muscle in order to identify the descending ranch of the LCFA and its associated perforators. Skin paddle dissection is quickly performed once the location of the perforators has been identified.
Step III
Septum dissection from distal to proximal between RF and VL
Case 1

Once the VL is dissected medially away from the VL, the descending branch of the lateral circumflex femoral artery is identified along with its associated perforators (Case 1). In this case, a single proximal septocutaneous perforator just distal to the tensor fascia lata is selected and dissected with preservation of all motor branches. A small cuff of TFL muscle can be left around the perforator without any functional morbidity. The pedicle dissection is then carried caudal or cephalad to the rectus muscle branch depending on pedicle size and length requirements (Case 2).
Case 1

Step IV
- Medial retraction of RF muscle
- Identification of descending branch of lateral circumflex femoral artery
Step VI
Dissection of perforator and preservation of motor branches of femoral nerve
Hyperperfusion of a single proximal perforator will allow significant inter-perforator flow in a single perforator ALT flap. We almost always harvest a single perforator ALT flap even in extended ALT flap cases (> 250 cm²). Clinical case Figures 1-5a,b.
Vascular Basis of Extended ALT Flap

- Recurrent flow through the subdermal plexus
- Linking vessel communicating between adjacent perforator complexes

Inter-Perforator Flow

- = direction of inter-perforator flow
- = perforator
- = ALT perforator

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Extended ALT Flap

Fig. 1
Extended ALT flap

630 cm²

Fig 2. ALT harvest perf ‘B’

Fig 3. Suprafascial harvest
Extended ALT flap

Fig 4. Intra-op

Figs. 5a,b 6 months PO (Liposuction)
This figure illustrates the skin paddle design and major landmarks for flap harvest. We always harvest the largest skin paddle possible in order to allow for maximal perforator selection options. The proximal extent of the skin paddle also allows capture of more proximal and shorter septocutaneous perforators which speeds up harvest time considerably. The ALT flap can also be harvested with the addition of fascia lata for composite reconstruction.
Case 3

ALT Flap markings
Same case example as figure 10. The anterior skin incision is made first along with an incision of the RF muscle fascia. The septum between both RF and VL muscles are identified distally (yellow adipose tissue line) where it easily visible. This is also an area where no perforators will be selected for the flap therefore we also elevate the skin paddle off of the VL here in order to facilitate exposure. The rest of the septum between the RF and VL muscle is opened from distal to proximal.
Step III
Septum dissection from distal to proximal between RF and VL
The RF muscle is dissected off of the VL in an avascular plane quickly. This allows for an easy identification of the both the descending branch of the LCFA and its associated perforators. At this point, all septocutaneous or musculocutaneous perforators are visible and we select a single septocutaneous perforator whenever possible. Also visible is the large muscle branch to the rectus femoris muscle which originates from the descending branch of the LCFA. We usually stop our pedicle dissection just distal to this branch, this further shortens flap harvest time, which is approximately 30 minutes for a septocutaneous flap and 45-60 minutes for a musculocutaneous flap.
Step IV
Medial retraction of RF muscle
Identification of descending branch of lateral circumflex femoral artery
Case 3

Anterolateral thigh flap harvest based on a single musculo-cutaneous perforator. Note preservation of motor branches from the femoral nerve. A combination of bovie cauterie and bipolar cauterie are used for perforator dissection and the lateral skin paddle incision is left intact until the entire pedicle is harvested. Perforator arterial and venous Doppler signals are also confirmed at the entrance within the deep fascia before making the final lateral skin paddle incision.
Step V
Identification of perforator from LCFA

Step VI
Dissection of perforator and preservation of motor branches of femoral nerve
Case 3

Once the perforator and pedicle are dissected and flow confirmed, the lateral incision is made and the pedicle is sectioned. Towel clamps can be used to confirm primary closure and the skin paddle design is re-adjusted accordingly to allow primary closure. In order to preserve as much fascia as possible at the donor site, a 5 cm radius of fascia can be harvested around the selected perforator and the rest of the flap is harvested in a supra-fascial plane. This is especially useful in cases where the donor will require skin grafting. The fascia is then sewn loosely and never under tension.
Case - 3

**Step VII**
- Final skin paddle
- Re-adjustment and incision