

LATISSIMUS DORSI AND THORACODORSAL ARTERY PERFORATOR FLAP

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FLAP TERRITORY

The latissimus dorsi (LD) flap is a muscle or musculocutaneous flap from the back area that has a long and reliable pedicle. The skin island may be designed in a vertical, oblique or transverse fashion overlying the muscle. It can be used as a pedicled flap (eg. for breast reconstruction) or a free flap (eg. for lower limb reconstruction).

Partial LD flaps have been used for facial reanimation as have perforator flaps based on the thoracodorsal artery (TDA) creating a TDAP flap.

A reversed LD flap based on the secondary perforators is less commonly used but is an option in back reconstruction.

VASCULAR ANATOMY

The LD muscle flap is a type V flap supplied by a dominant pedicle (TDA) and

secondary segmental pedicles (posterior intercostal perforators). The TDA arises from the subscapular artery (third part of axillary) and usually divides into transverse and vertical branches which are angulated at 45° allowing the LD to be split). The vertical pedicle enters the muscle 8-10 cm below the axilla approximately 2-2.5 cm medial to the anterior muscle edge.

Figure 1

FLAP HARVEST

The LD flaps can be harvested with the patient either prone or in a lateral decubitus position with the arm abducted to 90 degrees and elbow flexed to 90 degrees. The TDAP flap can be harvested in a 'partial' or dorsal decubitus position by placing a vertical block at the spine area.

The tip of the scapula, anterior border of LD muscle, posterior iliac crest and the midline of the back are relevant

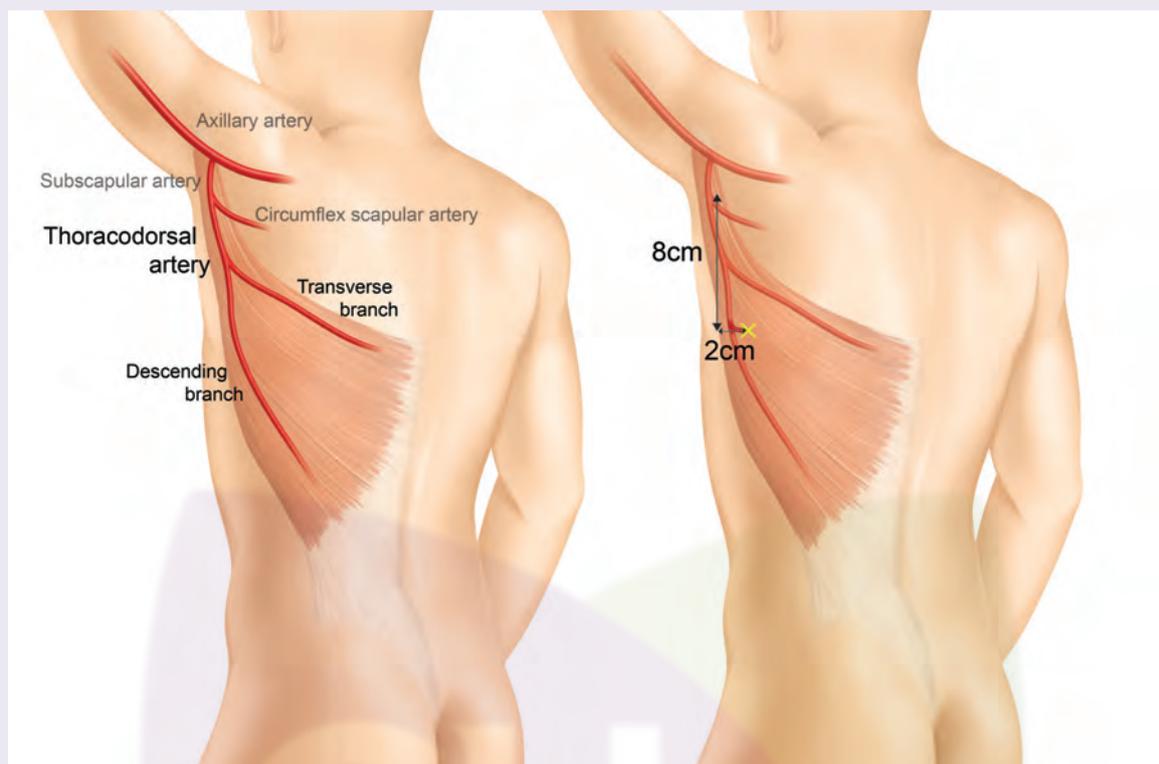


Figure 1

Vascular anatomy of the LD flap

anatomical landmarks. Design your skin island according to need and begin over the supero-anterior border. The anterior muscle edge is identified followed by the pedicle. **Figures 2, 3**

Bevelling away down to the muscle's surface allows for more soft tissue where needed.

Carefully separate the superior part of the muscle from the underlying serratus anterior (SA) and tip of scapula and divide its bony attachments inferiorly and posteriorly. **Figures 4-6** It is easy to get into the wrong muscle plane if you start from inferior to superior.

The pedicle is traced proximally dividing branches to SA and teres major muscles. The circumflex scapular artery and vein can be divided where additional pedicle length is needed, isolating it up to the subscapular artery. **Figures 7, 8**

A TDAP flap is based on cutaneous perforators from the vertical/descending branch of the TDA. The skin island is usually based over the anterior edge of the muscle. A preoperative handheld doppler probe is often used to locate the perforators. It is important to identify the leading edge of the LD carefully. It is common to make the posterior incision first to allow a posterior/medial to lateral

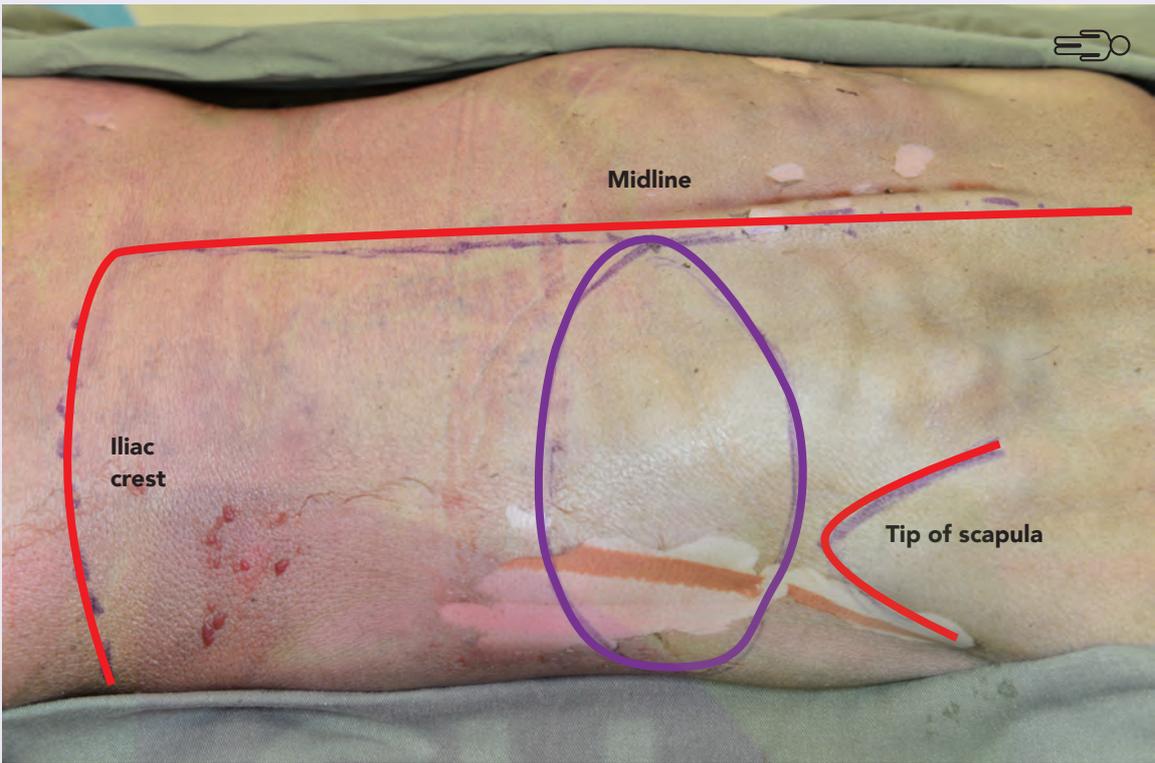


Figure 2
Skin flap designed in horizontal pattern

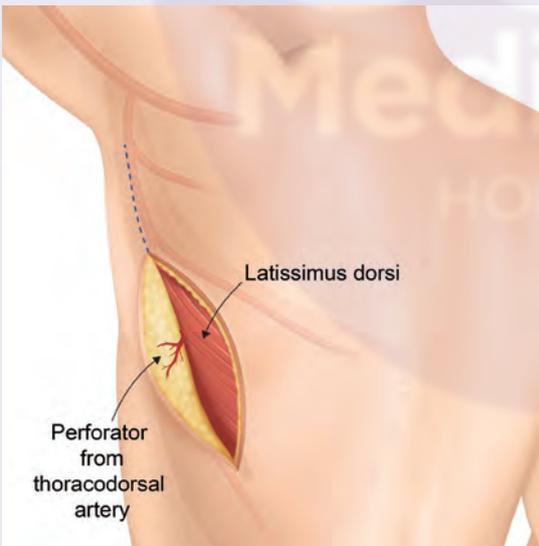


Figure 3
Skin flap designed in vertical pattern

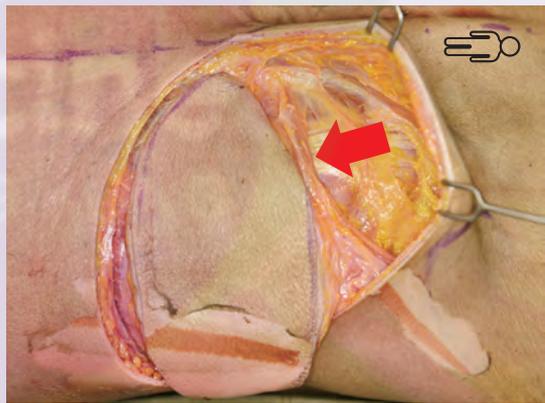


Figure 4
Superior border of LD

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dissection to facilitate localization of the perforators. However, it is possible to go lateral to medial from the mid axillary area, particularly if no preoperative localization has been performed.

The perforator(s) are dissected to free the pedicle from the muscle and then traced proximally to the TDA deep to the muscle. There are an average of 1-3 perforators that are greater than 0.5 mm in calibre.

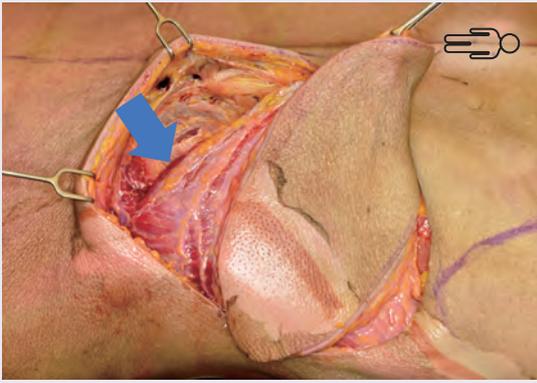


Figure 5
Dividing the inferior attachment of **LD**

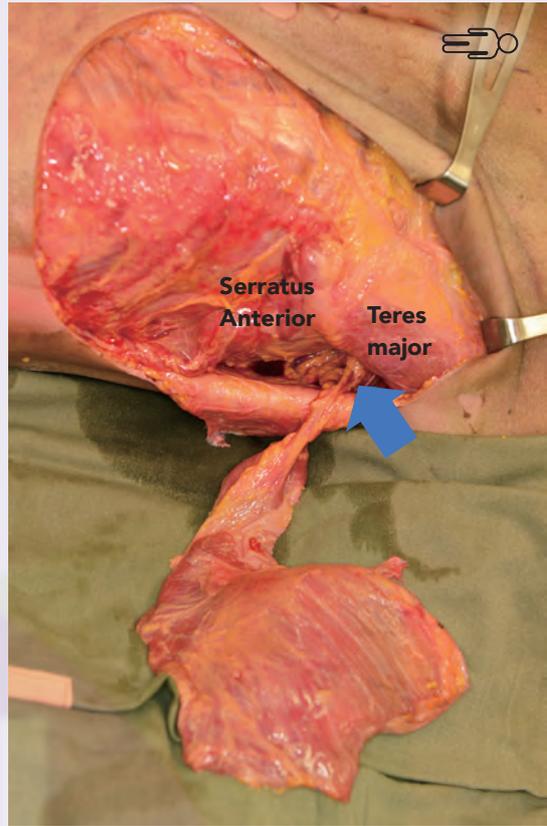


Figure 7
Pedicle (Blue arrow) traced proximally to identify the thoracodorsal artery (**TDA**)

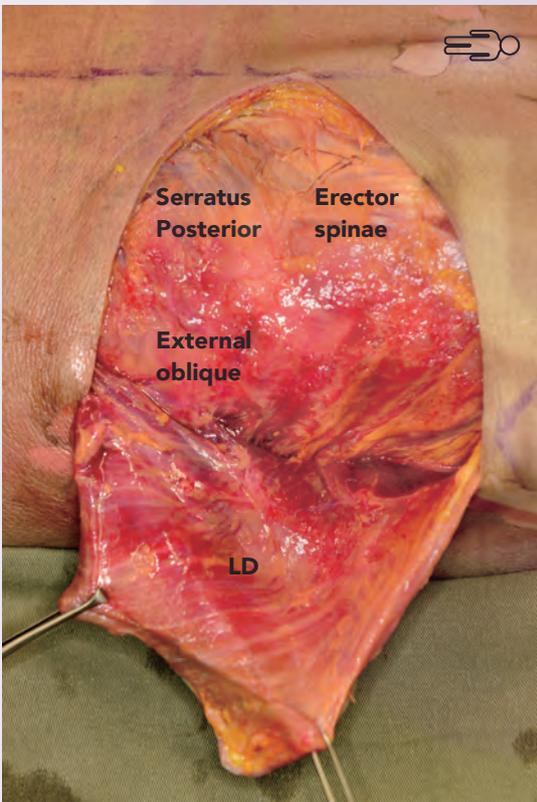


Figure 6
LD raised from the underlying muscles

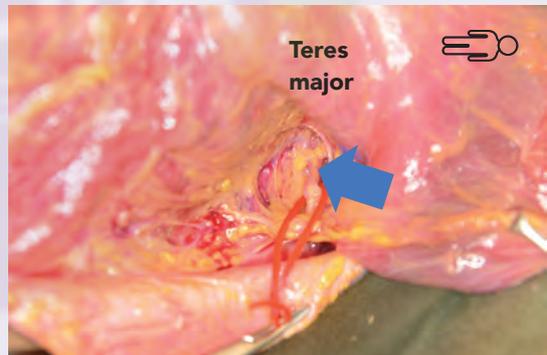


Figure 8
Close up view of the **TDA** (blue arrow)

KEY POINTS

1. The latissimus dorsi flap is supplied by the thoracodorsal artery (TDA).
2. The pedicle enters the muscle 8 cm below the axilla and approximately 2 cm medial to the anterior muscle edge.
3. Relevant landmarks include the anterior edge of LD muscle, iliac crest, tip of the scapula and midline of the back.
4. Dissection is begun by separating the superior part of the LD muscle from the underlying serratus anterior.
5. The pedicle can be lengthened by dividing the circumflex scapular artery and vein.
6. TDAP flap is a perforator flap based on the descending branch of the TDA.

