
PECTORALIS MAJOR FLAP

FLAP TERRITORY

The pectoralis major myocutaneous flap (PMMF) is useful in head and neck reconstruction. The extent of coverage and the reach of the flap are dependent on the anatomy of the patient but the upper limits are generally considered the zygomatic arch externally and the tonsillar bed internally.

VASCULAR ANATOMY

The PMMF is mainly supplied by perforators of the pectoral branch of the thoraco-acromial artery which runs on the underside of the PM.

The lateral thoracic artery provides a secondary blood supply but is usually sacrificed to maximize the reach of the flap.

The superior thoracic artery contributes supply to the lateral superior portion of the

muscle and is usually divided when the flap is raised.

The course of the pectoral branch of the thoraco-acromial artery can be identified by drawing a line from the xiphoid to the acromion. A second line is made vertically from the midpoint of the clavicle to intersect the first line. The course of the artery corresponds to the line drawn from the midpoint of the clavicle continuing to the medial portion of the acromion to xiphoid line. **Figure 1**

FLAP HARVEST

Identify the clavicle, ipsilateral sternal border, xiphoid, and humeral insertion of the PM.

Design the size and location of the skin paddle over the PM.

Skin overlying any portion of the muscle may be utilized. The size and location

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of skin paddle depends on reconstructive requirements. In most cases, the skin paddle is located at the infero-medial border of the PM between the nipple and the edge of the sternum. In women, the skin paddle can be designed below the breast in the inframammary fold.

The larger the skin paddle harvested, the higher the likelihood the skin will survive the transfer due to the increased number of myocutaneous perforators.

For additional length, the skin paddle may be extended as a random-pattern flap beyond the inferior edge of the muscle. Excessive thickness of the fatty tissue is associated with a higher risk of skin necrosis. **Figure 2**

The first incision is made from the lateral edge of the skin paddle toward the anterior axillary line (defensive incision - which preserve the deltopectoral flap). This incision is carried down to the muscle

and allows identification of the medial and inferior extents of the muscle. At this point, the skin paddle can be moved inferiorly or superiorly so that most of it lies over muscle.

The other incisions are made down to the muscle. The skin paddle can be temporarily sutured to the fascia.

The superior skin flap is elevated to clavicle whilst preserving perforators to the deltopectoral flap. A tunnel can be created to the neck where needed. **Figure 3**

The inferior skin flap is elevated to reveal the lower edge of the PM and the muscle is then elevated off the chest wall. There are normally numerous chest wall perforators at the muscular attachments. In live patients, take care to control bleeding as vessels can retract into the chest.

The pedicle can be identified on the deep surface of the superior part of the muscle. **Figure 4** Cut the muscle close to the sternal

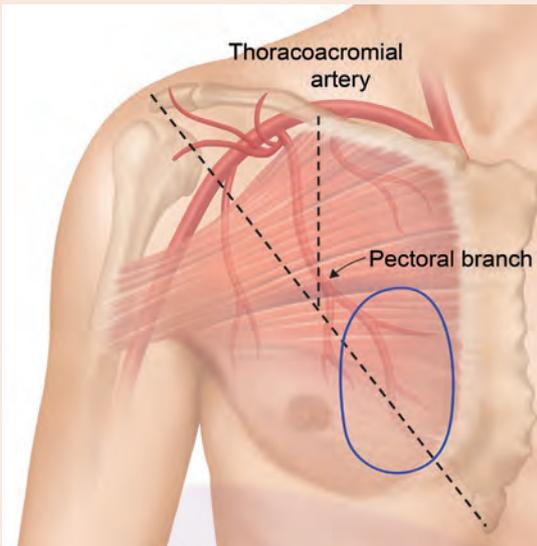


Figure 1

Schematic diagram to locate the pedicle of **PM** flap

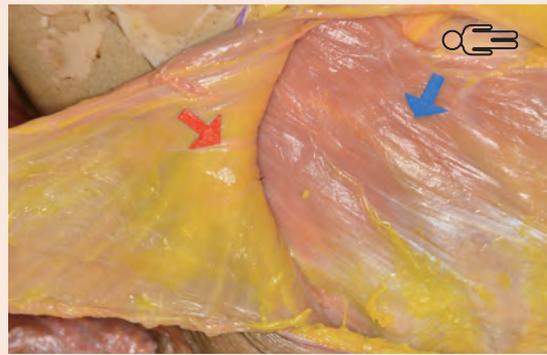


Figure 4

PM muscle raised to show the pectoralis minor (blue arrow) and pedicle (red arrow) running on the under surface



Figure 2

Design of the skin island in **PM** flap with "defensive incision"

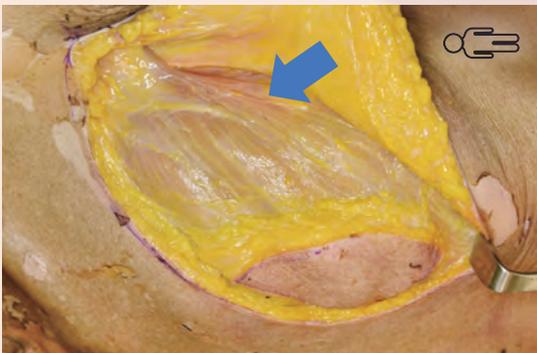


Figure 3

Identify the free edge (blue arrow) of **PM** muscle and ensure the skin island is "within" the boundary of **PM** muscle

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attachments, taking care with the internal mammary perforators. Laterally, cut the muscle taking care to preserve the pedicle. The lateral thoracic artery is usually sacrificed to increase length and rotation.

Figure 5

When inseting the flap, take care not to overly rotate, kink, or compress the proximal flap.

Flap reach can be increased by dividing the clavicular portion of the muscle above the pedicle and by splitting and removing the middle one-third of the clavicle.



Figure 5

Raised **PM** flap to show the pedicle (red arrow) from thoraco-acromial artery

KEY POINTS

1. The PMMF is mainly supplied by the pectoral branch of the thoraco-acromial artery and a secondary blood supply from the lateral thoracic artery.
2. The course of the pedicle can be identified by locating the landmarks including the xiphoid, acromion and midpoint of the clavicle.
3. Place the skin paddle over the infero-medial border of the PM.
4. Defensive incision preserves the deltopectoral flap for future use.
5. Flap reach can be increased by dividing the lateral thoracic artery and the clavicular portion of the muscle above the pedicle.

