

Neurovascular anatomy of the anterolateral thigh flap used in reconstructive surgery

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Born in ancient India and revolutionised following the World Wars, reconstructive surgery has become one of the most innovative and exciting disciplines in medicine. Reconstructive surgeons repair congenital defects and injuries in an effort to restore form and function to the body. A major part of their work concerns the repair of severe wounds, which are too large or deep to heal unaided. Such injuries are repaired by transfers of healthy tissue, or 'flaps', from other parts of the body.

The anterolateral thigh (ALT) flap is one of the most popular tissue transfers in use today, and is used to repair defects resulting from trauma such as road traffic accidents, burns and tumour resections. The ALT flap consists of a block of skin and muscle harvested from the thigh, along with a cutaneous artery known as a 'perforator' that supplies blood to these tissues. The flap is transferred to the injury site and the perforator is then re-attached to a local blood vessel, thus re-establishing circulation through the flap.

As surgeons may often have several perforators to choose from when raising an ALT flap, this study aims to provide surgeons with better anatomical evidence on which to base this decision. Comprehensive characterisation was made of the neurovascular anatomy of perforators along the proximal-distal length of 20 such thigh flaps. Of particular interest is the point where the perforator arises from its source vessel. This area, known as the box junction, is a key point of navigation during surgery. In this study, a number of variables were carefully examined and measured, including artery diameter, length of intramuscular dissection, location of nearby accessory branches, and the relation of motor nerves to the vessel.

This study would not be possible without the generosity of the donors who had consented to the use of their bodies for anatomical research.