

Versatility of Medial Sural Artery Perforator Flap in Lower Extremity Reconstruction

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Background: The medial sural artery perforator flap is a relatively new flap, and the recorded experience thus far is limited to several small series. Taylor and Daniel first suggested the medial sural vessels as the basis of a new flap donor site in 1975. Two decades later, Montegut described the topographical anatomy of the posterior calf laying the foundation for medial sural artery perforator (MSAP) flaps. Cavadas et al. emphasized its major advantages, including its long pedicle, thin, pliable nature, and a well-hidden donor site that can often be closed primarily with minimal functional deficit. The medial sural artery perforator flap has since been adopted by several institutions for various indications.

Flap harvest Technique: The patient is positioned supine, with the option of applying a tourniquet around the ipsilateral thigh. The hip joint is maintained in abduction with the knee flexed. Once the targeted perforator is confirmed, the flap is then carefully raised anteriorly. The dissection can be conducted either in a suprafascial or subfascial manner. Precise dissection is essential to expose the emergence of the musculocutaneous perforators. The lateral section of the flap is carefully elevated from the muscle, ensuring the preservation of the sural nerve and the lesser saphenous vein.

Flap characteristics: The anatomy of the medial sural artery perforator flap has been studied extensively. The average flap size of 10×6 cm and an average pedicle length of 10cm. The average number of perforators used was 1.4. A flap width greater than 5.75 cm had an odds ratio of 5.3 of having a donor-site complication if closed primarily.

Conclusion: The medial sural artery perforator flap is a good alternative for lower limb reconstruction, with the advantages of thin and pliable skin, a long and reliable vascular pedicle, straightforward intramuscular dissection, the possibility of chimeric flap design, and minimal donor-site morbidity.