

Modification of the peroneal perforator flap for treatment of knee and distal femoral defects.

Purpose

Since its introduction by Donski and Fogdestam¹, the skin island of the lateral part of the leg has been extensively used as a reverse flap for reconstruction of the distal leg and foot. The flap is perfused by the distal cutaneous branch (perforator) of the peroneal artery which is consistently present.

Ruan et al. incorporated the main trunk of the peroneal artery to obtain a longer pedicle reaching the lateral knee area. The proximally rotated peroneal perforator flap can reach the proximal area of the lower leg.

The purpose of this paper is to present a technical modification for the antegrade peroneal perforator flap for increasing pedicle length and arc of rotation. This involves creating a tunnel through the interosseous membrane through which the flap can be passed. An anatomical study in 8 fresh cadaveric specimens was done to measure the gain in pedicle length when the flap is tunneled compared to the direct transfer around the fibula.

Methods

A 15 x 7cm peroneal flap based on the distal perforator was raised from the lateral part of the leg. The peroneal artery was ligated distal to the origin of this perforator and dissected proximally up to its origin at the bifurcation of the tibio-peroneal trunk. The flap was transferred around the fibular bone to the area of the anterior knee. The proximal position on the anterior knee to which the flap easily reached was marked. Then the same flap was brought back, tunneled through the interosseous membrane and transfer to the anterior knee. The new position was marked and compared with the previous one.

Results

There was a difference of 8 cm in the reach of the flap so that it easily reaches all aspects of the knee as well as the distal upper leg.

5 Clinical cases have been successfully performed. A clinical example of this flap will be presented and technical aspects of flap transfer highlighted.

Conclusion

A simple modification of the peroneal perforator flap is presented. This significantly increases the reach of the flap and improves its versatility for reconstructing defects of the lower extremity.

1. Donski PK, Fogdestam I. Distally based fasciocutaneous flap from the sural region. A preliminary report. Scand J Plast Reconstr Surg. 1983;17(3):191-6.
2. Ruan HJ, Cai PH, Schleich AR, Fan CY, Chai YM. The extended peroneal artery perforator flap for lower extremity reconstruction. Ann Plast Surg. 2010 Apr;64(4):451-7.

