Study of the neovascularisation of prefabrication of flaps using a silicone sheet and an isolated arterial pedicle: experimental study in rabbits.

Use of an isolated artery as an implanted pedicle in prefabricated flaps has rarely been reported either clinically or experimentally. In Chinchilla Bastard rabbits (n = 36), we dissected an isolated arterial pedicle from the femoral and saphenous artery, anastomosed it end-to-end to the femoral vein at the inguinal ligament and created an isolated arterial loop pedicle. This was implanted and fixed with polyglactin 9/0 under a random-pattern vascularised abdominal fasciocutaneous flap. The neovascularisation in the prefabricated flaps was evaluated macroscopically, by blood analysis, selective microangiography, and histology. The results showed a progressive degree of neovascularisation that corresponded to the increasing length of time that the pedicle was implanted in the flaps. Twenty days after prefabrication, the abdominal fasciocutaneous flap was readily perfused by the blood supply from the arterial pedicle. The capacity of the vessels in this group as seen on angiograms had increased to 258 vessels (108%) compared with the control group (239 vessels, 100%).