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Titel des Beitrags:
Comparison of effective use of implanted vascular pedicles for skin flap prefabrication: an experimental study.

Abstract:
Thin, large, well-vascularized, and axial-pattern flaps are often desired in the clinical practice of defect reconstruction to maximize esthetic and functional results. Flap prefabrication based on the neovascularization development following vascular pedicle implantation allows surgeons to create such flaps as required. Using different types of implanted vascular pedicles, the aim of the study was to identify the most effective and suitable types of pedicles for clinical use. Five models of implanted vascular pedicles in Chinchilla Bastard rabbits were investigated as follows: model 1, arteriovenous (AV) pedicle with end ligation (minimal blood flow in the implanted vascular pedicle); model 2, AV pedicle with end anastomosis (new shunt formation between vein and artery stump for creating maximal blood flow in the implanted vascular pedicle); model 3, purely isolated arterialized venous loop; model 4, purely isolated arterial loop; model 5, AV pedicle with end anastomosis (similar to model 2) combined with flap expansion. These different types of vascular pedicles were implanted into a random-pattern abdominal skin flap as large as 8 x 15 cm. Neovascularization in the various prefabricated flaps was evaluated macroscopically, scintigraphically, microangiographically, and histologically. A total of 150 prefabricated flaps were investigated
and randomly assigned to 5 models with 30 flaps each. Each model contained 5 groups of 6 flaps corresponding to the various retention times of 4, 8, 12, 16, and 20 days after vascular pedicle implantation. Six flaps were also designated to the control group. Neovascularization was best in model 5, followed by comparable results for models 2, 3, and 4, with the worst results found in model 1, especially for the time intervals of 8, 12, and 16 days. Twenty days remains the minimal length of time required for matured neovascularization in all models (P < 0.05). Models 2 and 3 both appear to be particularly promising for clinical application.