Dokumenttyp: journal article

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Titel des Beitrags: Opened end-to-side technique for end-to-side anastomosis and analyses by an elastic true-to-scale silicone rubber model.

Abstract: The end-to-side anastomosis is frequently used in microvascular free flap transfer, but detailed rheological analyses are not available. The purpose of this study was to introduce a new modified end-to-side (Opened End-to-Side, OES-) technique and compare the resulting flow pattern to a conventional technique. The new technique was based on a bi-triangulated preparation of the branching-vessel end, resulting in a "fish-mouthed" opening. We performed two different types of end-to-side anastomoses in forty pig coronary arteries and produced one elastic, true-to-scale silicone rubber model of each anastomosis. Then we installed the transparent models in a circulatory experimental setup that simulated the physiological human blood flow. Flow velocity was measured with the one-component Laser-Doppler-Anemometer system, recording flow axial and perpendicular to the model at four defined cross-sections for seven heart cycles in each model. Maximal and minimal axial velocities ranged in the conventional model between 0.269 and -0.122 m/s and in the experimental model between 0.313 and -0.153 m/s. A less disturbed flow velocity distribution was seen in the experimental model distal to the anastomosis. The OES-technique showed superior flow profiles distal to the anastomosis with minor