

One Versus Two Venous Anastomoses in Free Flap Surgery: A Systematic Review and Meta-analysis

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Introduction: The necessity of a second venous anastomosis in free tissue transfer is controversial. The purpose of this study is to conduct a systematic review and meta-analysis to determine whether the rate of venous flap failure, in patients undergoing free tissue transfer, is lower when two venous anastomoses are preformed compared to one. The secondary objective is to determine, in cases where two venous anastomoses are performed, whether the rate of venous flap failure is lower when one vein comes from a superficial system and one from a deep system compared to when both veins come from the same system.

Materials and Methods: An electronic search (MEDLINE, Embase, and CENTRAL) identified all English studies published from 1980 to 2014 comparing one versus two venous anastomoses in free flap surgery. Studies were excluded if the study population was less than thirty. Investigators independently, and in duplicate, extracted data on rates of reoperation secondary to venous congestion and rates of flap failure. Methodological quality was assessed using the MINORS scale. Odds ratios (OR) were pooled using a random-effects model and 95% confidence intervals (CI).

Results: Of 18,190 potentially eligible studies, 15 were included for analysis. No randomized controlled trials were identified. The studies had a mean sample size of 287 patients (min=102, max=564). The majority of studies were of low methodological quality. No statistically significant difference in venous flap failure was found when comparing one versus two venous anastomoses, OR 1.35 (CI 0.46-3.93). However, a significant decrease in the rate of reoperation due to venous congestion was shown, OR 3.03 (CI 1.64-5.58).

Conclusions: There is low quality evidence suggesting that the use of two venous anastomoses in free flap surgery will lower the rate of reoperation due to venous congestion. There is insufficient data published to meaningfully compare outcomes of flaps with two venous anastomoses from different systems to flaps with anastomoses from the same system.