A Comparison between Single and Two Stage Brachiobasilic Arteriovenous Fistulas

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Objectives: Controversy exists as to whether the brachiobasilic arteriovenous fistula (BBAVF) should be performed in one or two stages. We compare primary failure rates, as well as primary and secondary patency rates of one and two-stage BBAVF.

Methods: Patients undergoing one and two-stage BBAVF at two institutions were compared retrospectively with respect to age, sex, body mass index, use of preoperative venous duplex ultrasound, diabetes, hypertension, and causes of end stage renal disease. Categorical variables were compared using chi-square and Fisher’s exact test, whereas the Wilcoxon-rank sum test was used to compare continuous variables. Primary and secondary patency rates were assessed using the Kaplan-Meier survival analysis and the Cox-proportional hazards model.

Results: 90 patients (60 one-stage and 30 two-stage) were identified for the study. Mean follow up was 14.2 months and the mean time interval between the first and second stage was 11.2 weeks. Three patients in each group required procedures to maintain assisted primary patency. Although no significant difference in early failure existed (one-stage 22.9% vs. two-stage 9.1%, p = 0.2), the two-stage BBAVF showed significantly improved primary patency (hazard ratio 0.31; 95% CI 0.09-0.99; p=0.048) and significantly improved secondary patency (hazard ratio 0.18; 95% CI 0.04-0.84; p=0.03). Mean primary patency for one stage BBAVF was 72.3 weeks and two-stage was 138 weeks (1 SD; p=0.05). Mean secondary patency was 94 weeks and 139 weeks, respectively (1 SD; p=0.05). In addition, primary patency at one year for one and two-stage stage BBAVF was 78% and 84%, respectively (p=0.05). Functional primary patency at one year for one and two-stage BBAVF was 61% and 88%, respectively (p=0.05). Complication rates were not statistically different (each greater than p=0.11).

Conclusions: Patency rates appear to be improved with the two-stage BBAVF. There is no difference in complication rate. Optimal surgical technique for patients undergoing BBAVF for dialysis are discussed. Longer-lasting hemodialysis access improves patient outcome and decreases morbidity associated with dialysis.