

Abstract

Intra-Operative Cephalic Vein Distensibility Can Predict Maturation of Radiocephalic Arteriovenous Fistula

Kim JM, Kim YK, Hwang JK, Kim JI, Kim YS, and Moon IS

Department of Surgery and Internal Medicine, Seoul St. Mary's Hospital, The Catholic University of Korea, College of Medicine in Seoul, Korea

Introduction:

Recently, there have been many studies about risk factors of maturation failure. However, there is no valuable predictor and no study regarding the relationship between intra-operative venous distensibility and fistula maturation. The aim of this study is to investigate the predictive value of the intra-operative cephalic vein distensibility on maturation of radiocephalic arteriovenous fistula (RCAVF).

Methods:

A total of 77 subjects, who underwent RCAVF in our hospital from November 2009 through June 2011, were reviewed and analyzed, retrospectively. Diameters of the radial artery, cephalic vein, and maximally distended cephalic vein were checked intra-operatively. Cephalic vein distensibility was measured by the ratio of intra-operative maximal distensible diameter to the natural diameter of cephalic vein. Failure to mature is defined as the inability to use the AVF for hemodialysis within 6 months after the surgery or require radiologic intervention or surgical correction for the maturation.

Results:

The maturation rate was 77.98%. In univariate analysis, there were significant differences in the intra-operative maximal cephalic vein diameter (4.69 ± 0.70 mm vs 4.08 ± 0.59 mm, $P = 0.002$), the intra-operative cephalic vein distensibility (2.09 ± 0.31 vs 1.80 ± 0.18 , $P = 0.000$), post-operative cephalic vein flow (1091.88 ± 535.36 ml/min vs 644.81 ± 448.67 ml/min, $P = 0.003$) between matured and non-matured RCAVFs. The intra-operative cephalic vein distensibility (Odds ratio: 0.065, 95% CI: 0.005-0.842, $P = 0.036$) was the only significant risk factor for the maturation failure in a multivariate analysis.

Table 4: Multiple logistic regression with all native fistulas

	OR ^a	95% CI ^b	p value
Maximal diameter of cephalic vein	0.395	0.140-1.113	0.079
Distensibility of cephalic vein	0.065	0.005-0.842	0.036
Flow of cephalic vein (post-OP)	0.998	0.996-1.000	0.098
Diameter of cephalic vein (post-OP)	0.827	0.469-2.578	0.827

Discussion & Conclusions:

These results suggest that the intra-operative cephalic vein distensibility is a predictor of RCAVF maturation. Intra-operative measurement of venous distensibility may be helpful in choosing the most suitable native AVF type for each individual patient, which possibly improves the native AVF maturation.