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비만과 연관된 수술 중 혈류감소가 동정맥루 실패에 미치는 영향조사

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Obesity-related Decrease in Intraoperative Blood flow is Associated with Maturation Failure of Radiocephalic Arteriovenous Fistula

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Objective: Successful arteriovenous fistula (AVF) maturation is often challenging in obese patients. Optimal initial intraoperative blood flow (IOBF) is essential for adequate AVF maturation. In this study, we evaluated the effect of obesity on radiocephalic AVF by its association with IOBF.

Methods: Patients who newly created radiocephalic AVF were included (n=252). Obesity was defined as a baseline BMI $\geq$25 kg/m^2, and primary maturation failure was defined as the failure to use AVF successfully by 3 months after its creation. IOBF was measured immediately after construction of the AVF using a VeriQ^{TM} transit time flow measurement system.

Results: The mean BMI was 24.1±3.9 kg/m^2, and the prevalence of obesity was 31.3%. Primary maturation failure occurred in 100 (39.7%) patients and an IOBF <190 mL/min was closely associated with the risk of maturation failure (relative risk,3.05; 95% CI,1.52-6.11). Compared to non-obese patients, obese subjects had a significantly higher prevalence of diabetes and elevated hs-CRP levels, whereas intraoperative diameters of radial arteries and cephalic veins were similar between the two groups. However, obese individuals had a much lower IOBF (225.2±89.8 vs. 263.5±96.7 mL/min, p=0.003) and higher maturation failure rate (60.8 vs. 30.1%, p=0.001) than non-obese patients. According to multivariate analysis, the statistically significant variables that determined maturation failure were obesity, previous vascular disease, increased hs-CRP levels, and IOBF <190 mL/min.

Conclusions: Obese patients had a significantly lower IOBF, and both obesity and low IOBF contributed to the primary maturation failure of AVF. Obesity-associated inflammation and atherosclerosis might play roles in this association.

Key Words: 비만, 수술중 혈류, 동정맥루 실패
Obesity, Intraoperative blood flow, Primary maturation failure