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## **Role of peribrachial fat as a key determinant of brachial artery dilatation for successful arteriovenous fistula maturation in hemodialysis patients**

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**Objectives:** The functional quality of the inflow artery is one of the most important determinants of arteriovenous fistula (AVF) success. We evaluated the association of early optimal brachial arterial dilatation with a successful AVF maturation and assessed the role of peribrachial adipose tissue in determining brachial arterial distensibility.

**Methods:** All patients underwent a preoperative vascular mapping with Doppler ultrasound (US), and only patients who had suitable vessels for AVF creation were enrolled (n=162). Peribrachial fat thickness was measured using US. To evaluate the degree of brachial dilatation, follow-up US was performed at 1 month after surgery, and early brachial artery dilation was defined as the change in postoperative arterial diameter compared to the preoperative value. The primary outcome was failure to achieve a clinically functional AVF within 8 weeks.

**Results:** Nonfunctional AVF occurred in 21 (13.0%) patients, and they had a significantly lower brachial dilatation than patients with successful AVF during early period after surgery (0.85 vs. 0.43 mm,  $p=0.003$ ). Patients with a brachial dilatation greater than median level showed a 1.8-times higher rate of achieving a successful AVF than those without. The early brachial dilatation showed strong negative correlations with diabetes ( $r=-0.260$ ,  $p=0.001$ ), peribrachial fat thickness ( $r=-0.301$ ,  $p=0.008$ ), and the presence of brachial artery calcification ( $r=-0.178$ ,  $p=0.036$ ). Even after adjustments for demographic factors, comorbidities, and baseline brachial flow volume, peribrachial fat thickness was an independent determinant for early brachial dilatation ( $\beta=-0.286$ ,  $p=0.013$ ).

**Conclusions:** A close interplay between the peri-brachial fat and brachial dilatation can be translated into novel clinical tools to predict successful AVF maturation.