SUPPLEMENTAL TABLE I. A	ssociation between baseline covariates of the study cohort (N=30)
and total vascularization in	pre-access veins and AVFs

	Veins		AVFs	
	Total VVD	Total VVA	Total VVD	Total VVA
Age	0.1 (-0.4 to 0.6)	-0.2 (-0.7 to 0.3)	-0.06 (-0.5 to 0.4)	-0.3 (-0.7 to 0.2)
Female	-0.1 (-0.5 to 0.3)	0.01 (-0.4 to 0.4)	0.06 (-0.4 to 0.5)	0.1 (-0.3 to 0.5)
Non-Hispanic Black	-0.1 (-0.6 to 0.3)	-0.2 (-0.7 to 0.2)	-0.3 (-0.8 to 0.1)	-0.4 (-0.9 to 0.04)
Hypertension	-0.1 (-0.6 to 0.4)	-0.09 (-0.5 to 0.4)	-0.1 (-0.6 to 0.3)	-0.2 (-0.7 to 0.2)
Diabetes	-0.01 (-0.4 to 0.4)	0.2 (-0.2 to 0.6)	0.2 (-0.2 to 0.6)	0.2 (-0.2 to 0.6)
Antiplatelet agents	-0.01 (-0.5 to 0.5)	-0.2 (-0.7 to 0.3)	0.03 (-0.5 to 0.5)	-0.2 (-0.7 to 0.4)
Statin	-0.06 (-0.5 to 0.4)	0.1 (-0.3 to 0.6)	-0.002 (-0.5 to 0.5)	0.09 (-0.4 to 0.5)
ACE-I/ARB	0.5 (0.08 to 0.9)	0.5 (0.05 to 0.9)	0.3 (-0.1 to 0.7)	0.2 (-0.2 to 0.6)

Total vasa vasorum density (VVD) was calculated as the total number of microvessels over the wall area. Total vasa vasorum area (VVA) was quantified as the total luminal area of the microvessels over the wall area. Associations are presented as standardized β coefficients (95% confidence interval). Significant associations are shown in red.

SUPPLEMENTAL TABLE II. Lack of association between pairwise change in vascularization during the vein to AVF transformation and maturation failure

	Change in VVD	Change in VVA
Intima	-0.09 (-0.3 to 0.1)	-0.2 (-0.6 to 0.2)
Media	0.2 (-0.1 to 0.6)	-0.06 (-0.4 to 0.3)
Adventitia	0.02 (-0.3 to 0.3)	-0.05 (-0.4 to 0.3)
Total	0.1 (-0.2 to 0.4)	-0.03 (-0.4 to 0.3)

Vasa vasorum density (VVD) was calculated as the number of microvessels per layer (and total) over the area of the corresponding wall layer or of the entire wall. Vasa vasorum area (VVA) was quantified as the luminal area of the microvessels per layer (and total) over the area of the corresponding wall layer or of the entire wall. Associations with AVF maturation failure are presented as standardized β coefficients (95% confidence interval).

SUPPLEMENTAL TABLE III. Postoperative morphometry in fistulas that matured and failed

	Matured	Failed	P value
Intima/Media Area Ratio	1.16 [0.84 – 2.06]	0.92 [0.60 – 2.21]	0.32
Min. Intimal Thickness (µm)	109.0 [61.7 – 206.8]	133.7 [58.3 – 165.0]	0.44
Max. Intimal Thickness (µm)	799.7 ± 349.0	724.7 ± 421.7	0.60
Min. Intima-to-Media Thickness (µm)	487.2 [276.8 – 686.8]	331.3 [195.0 – 518.7]	0.34
Max. Intima-to-Media Thickness (µm)	1189.0 ± 421.8	1105.0 ± 451.2	0.60
Medial Fibrosis (%)	44.22 ± 13.21	54.82 ± 9.80	0.02

Normally distributed data are presented as mean \pm standard deviation and compared using the Student's t-test; otherwise, data are presented as median [interquartile range] and compared using the Mann-Whitney test. Significant comparisons are shown in red.

SUPPLEMENTAL TABLE IV. Correlation between pre-existing, postoperative, or pairwise change in medial and adventitial vascularization and postoperative morphometry

	Pre-existing	Postoperative	<u>Change</u>
<u>Medial</u> vasa vasorum density			
Min. Intimal Thickness	0.05 (p=0.79)	0.28 (p=0.13)	0.21 (p=0.26)
Max. Intimal Thickness	0.28 (p=0.14)	0.53 (p=0.003)	0.04 (p=0.84)
Medial Fibrosis	0.05 (p=0.81)	0.07 (p=0.73)	0.08 (p=0.67)
Adventitial vasa vasorum density			
Min. Intimal Thickness	0.06 (p=0.77)	0.22 (p=0.25)	0.26 (p=0.17)
Max. Intimal Thickness	0.17 (p=0.37)	0.10 (p=0.61)	0.15 (p=0.43)
Medial Fibrosis	0.01 (p=0.95)	0.05 (p=0.78)	0.03 (p=0.88)
<u>Medial</u> vasa vasorum area			
Min. Intimal Thickness	0.09 (p=0.63)	0.18 (p=0.33)	0.22 (p=0.24)
Max. Intimal Thickness	0.25 (p=0.18)	0.37 (p=0.045)	0.10 (p=0.59)
Medial Fibrosis	0.08 (p=0.69)	0.16 (p=0.40)	0.19 (p=0.32)
Adventitial vasa vasorum area			
Min. Intimal Thickness	0.05 (p=0.80)	0.15 (p=0.44)	0.20 (p=0.29)
Max. Intimal Thickness	0.00 (p=0.98)	0.04 (p=0.85)	0.04 (p=0.82)
Medial Fibrosis	0.06 (p=0.77)	0.03 (p=0.87)	0.01 (p=0.96)

Correlations are presented as r (p-value). Significant associations are shown in red.