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**Background:** Color Doppler Ultrasound (CDU) is essential for vascular mapping in vascular access planning/creation. The aims of this study was to evaluate which anatomical and physiological variables of the artery and the vein, measured by CDU, were associated with higher patency at one year follow-up in brachiocephalic (BC) and brachio basilic (BB) primary AV fistula (AVF).

**Methods:** Retrospective observational analysis of patients admitted at our institution between January 2011 and June 2012 for native proximal AVF creation after CDU vascular mapping. Non parametric tests were used. Statistical significance:  $\alpha=0,05$

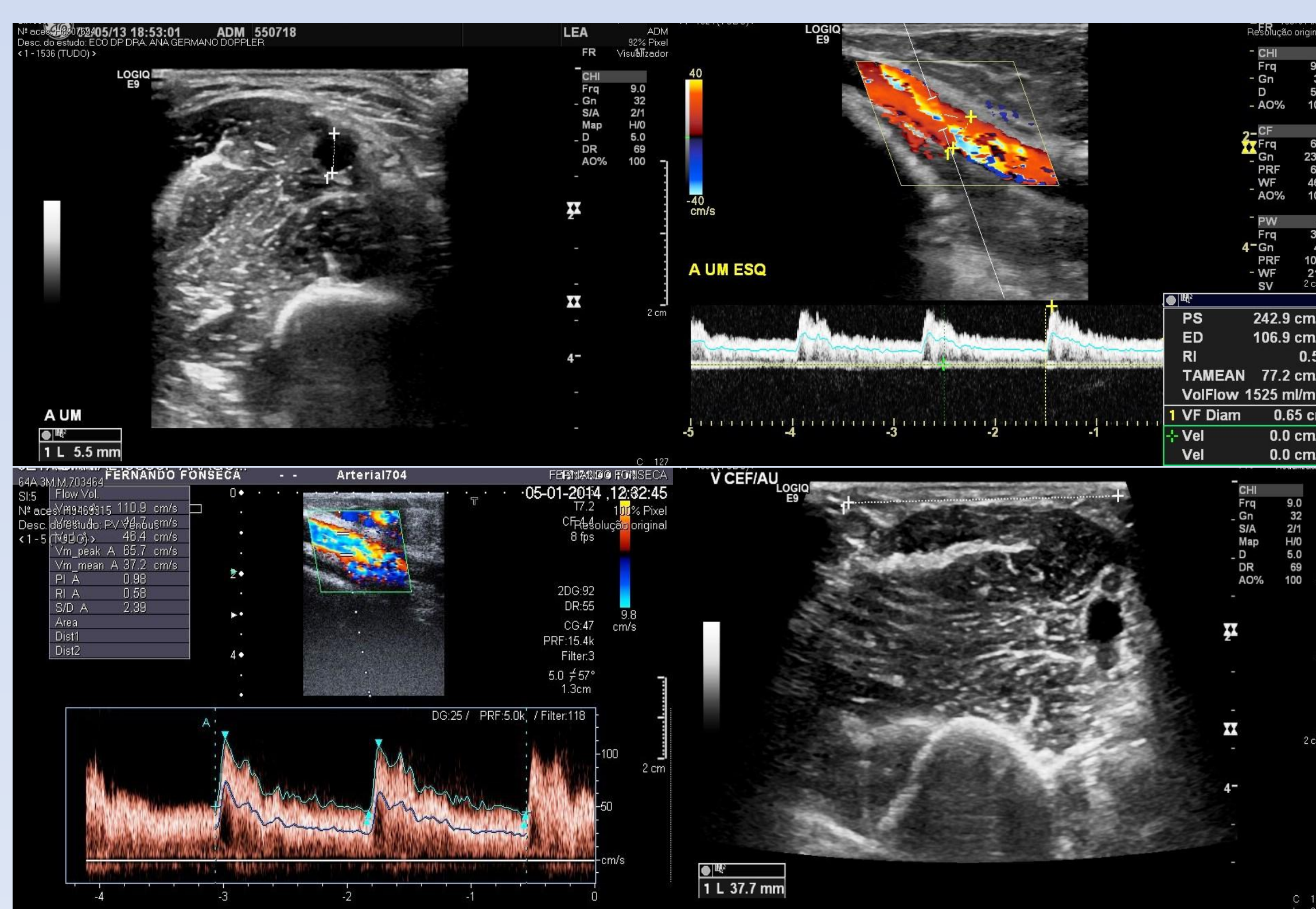
	GLOBAL n=61	1Y Patency n=40	Non-Patency n=21	
Age	66,08±13,81	68,53±12,42	61,41±15,38	p=0,053
Gender	26 F	17 F	9 F	p=0,853
Hypertension	49	29	20	<b>p=0,033*</b>
Type II DM	46	27	19	<b>P=0,047*</b>
BB AVF	18	8	10	<b>p=0,01*</b>

Table 2 – Anatomic and Physiologic parameters by CDUS (univariate and multivariate analysis)

	Brachial Art Diameter (mm)	Vein Diameter (mm)	Vein Distensibility	Brachial Art Flow (l/min)	Peak Systolic Velocity (m/s)	Resistance Index	AV Distance (mm)
1 Y Patency Group	4,50±1,53	3,31±1,12	1,37±0,42	0,19±0,11	78,77±23,2	0,94±0,07	31,73±11,9
Non Patency Group	4,15±1,06	3,59±1,76	1,51±0,51	0,16±0,06	65,47±18,47	0,95±0,08	17,75±8,61
p-value	p>0,05	p>0,05	p>0,05	p<0,05	p<0,05	p>0,05	p<0,05
Multivariate Analysis							
B	1,029	-	-	3,515	4,515	0,685	8,2818
p-value	0,311	-	-	0,044	0,034	0,408	0,04

Model Constant = -1.329;  $p < 0.001$ ; AV – Arterial-Venous distance, RI –Resistance Index

- The anatomical and physiological variables associated with 1 year patency at in proximal primary AV fistula were higher brachial artery flow and peak systolic velocity, and higher AV distance.
- Hypertension and type II DM was associated to 1Y non patency.
- We also stress the need for dedicated radiologist to standardization of operated dependent measurements.
- We will continue to recruit patients for ROC curve analyses and multivariate model.



**Fig1: Exemples of CDU characterization:**

BA diameter (upper left); BA flow (upper right)

Peak systolic velocity (lower left) and AV distance (lower right)