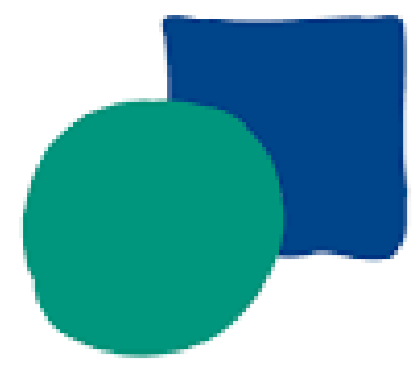


# PREDICTIVE FACTORS IN ELDERLY FOR FISTULA CREATION: ULTRASOUND ROLE



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## Introduction and aims

The introduction of Doppler ultrasound (US) has changed the approach to vascular access surgery for hemodialysis. The integrity of veins and arteries are usually compromised in specific population like elderly patients. The aim of this study was to analyse survival of native arteriovenous fistulas (AVFs) in older patients and determine predictors of AVF early failure and secondary patency.

## Methods

A prospective and uni-center study was conducted. Inclusion criteria were elderly patients ( $\geq 65$  years) submitted to preoperative US mapping and native AVF placement between January 2011 and December 2015.

## Results

Baseline characteristics and US measures are shown in tables 1 and 2. Univariate analysis for AVF patency and early failure are described in table 3. Secondary patency at 5 years and early failure were 68,3% and 21,7%, respectively.

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Baseline characteristics and US measures are shown in tables 1 and 2. Univariate analysis for AVF patency and early failure are described in table 3. Secondary patency at 5 years and early failure were 68,3% and 21,7%, respectively.

Variables	Survival (n=41)	No survival (n=19)	Early failure (n=13)	No early failure (n=47)
Male gender	68,3%	68,4%	53,8%	72,3%
Distal AVF location	50%	47,4%	38,5%	52,2%
Hypertension	93,8%	90%	100%	90,9%
Diabetes	56,3%	70%	77,8%	54,5%
Arteriopathy	43,8%	50%	44,4%	45,5%
Tobacco use	28,1%	30%	33,3%	27,3%
Score Charlson	7	8	8	7
Hemoglobin (g/dL)	11,2	11,6	11,6	11,0
Calcium (mg/dL)	9,1	8,9	9,1	9,1
Phosphorus (mg/dL)	4,8	5,0	4,3	4,8
PTH (pg/mL)	241	146	171	224
Ferritin (ng/mL)	333,0	293,5	220	348
C-reactive protein (mg/dL)	0,75	0,60	0,4	0,8
Diameter of artery (mm)	2,1	2,4	2,1	2,2
Diameter of vein (mm)	2,5	2,0	<b>2,0*</b>	<b>2,5*</b>
PSV of radial artery (cm/s)	<b>70*</b>	<b>48,5*</b>	<b>48,5*</b>	<b>68,0*</b>
PSV of ulnar artery (cm/s)	<b>69*</b>	<b>49*</b>	47,0	65,0
RI	0,8	0,8	0,8	0,8

**Table 1. Baseline characteristics of elderly patients (n=60)**

Male gender	68,3%
Age (years)	75,1 (11)
Hypertension	92,9%
Diabetes	59,5%
Arteriopathy	45,2%
Tobacco use	28,6%
AVF location	
Wrist	49,2%
Forearm	18,7%
Arm	32,2%
AVF number	
First	83,3%
Second	13,3%
Third	3,3%
Score Charlson	7 (3)
Hemoglobin (g/dL)	11,3 (1,6)
Calcium (mg/dL)	9,1 (0,9)
Phosphorus (mg/dL)	4,8 (1,8)
PTH (pg/mL)	212 (215)
Ferritin (ng/mL)	333 (376)
C-reactive protein (mg/dL)	0,75 (1,15)

**Table 2. Ultrasound preoperative values**

Diameter of artery (mm)	2,15 (0,72)
Diameter of vein (mm)	2,4 (1,0)
PSV of radial artery (cm/s)	67 (34)
PSV of ulnar artery (cm/s)	61 (29)
RI	0,80 (0,12)

**Table 3. Univariate analysis for AVF secondary patency and early failure; \* p<0,05**

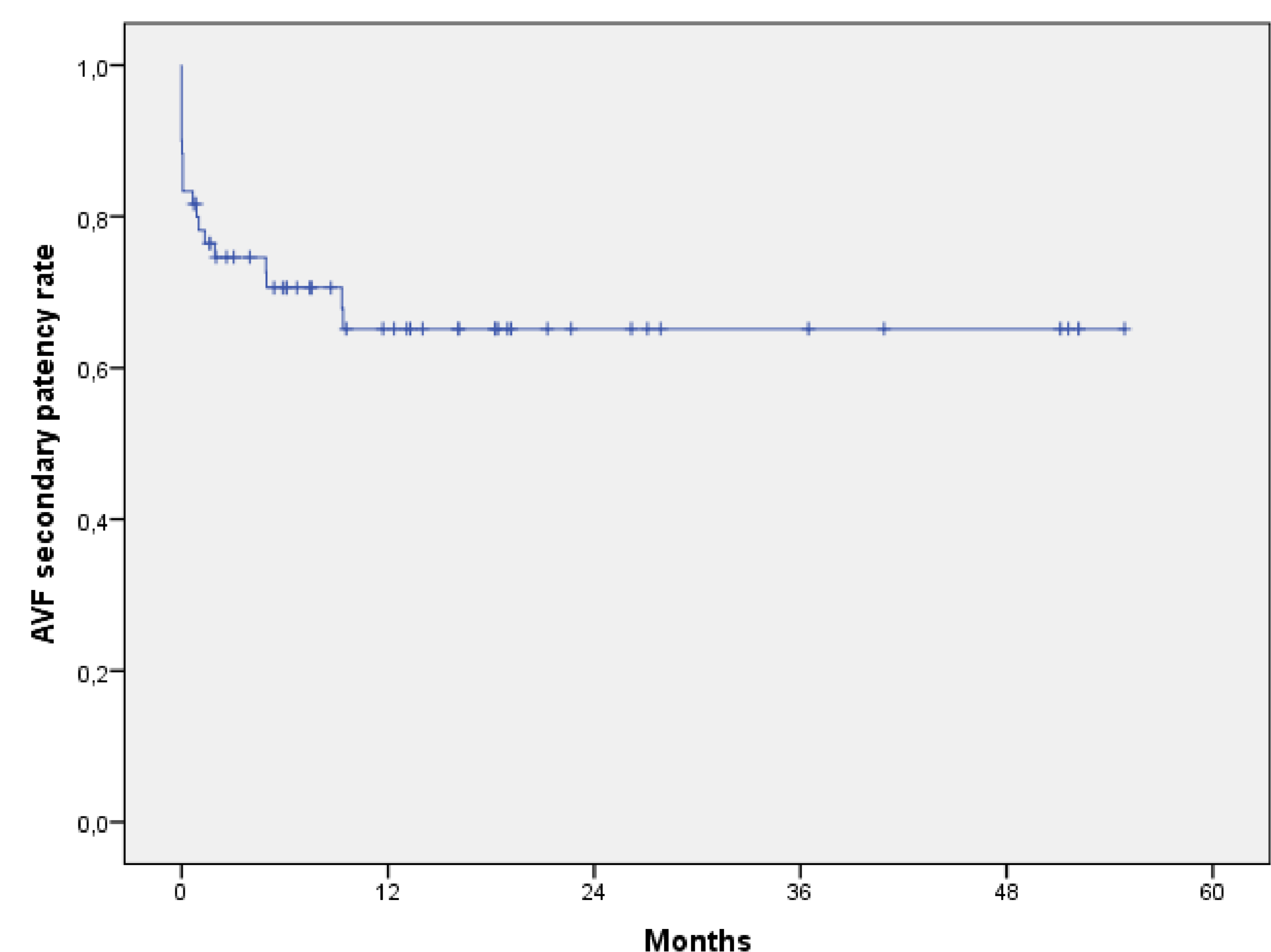


Figure 1. Kaplan-Meier analysis of AVF secondary patency

## Conclusions

Doppler US evaluation probably was responsible for good patency rate and distal AVF predominance in these patients, searching suitable vessels that could not be identified at physical examination. Distal hemodynamics and vein diameter showed predictable value in secondary patency and early AVF failure. Increasing aging with multiple comorbidities could justify a systematic preoperative US mapping.

