

Predictor Factors of Early Arteriovenous Fistula Failure

A Case – Control Study

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INTRODUCTION AND OBJECTIVES

- ✓ Building a functioning vascular access is a challenge increasingly complex
- ✓ Identification of several factors that promote failure of fistula maturation enhanced access planning which was supposed to improved results **BUT ...**

AJKD

Original Investigation

Am J Kidney Dis. 2014;63(3):464-478

Patency Rates of the Arteriovenous Fistula for Hemodialysis: A Systematic Review and Meta-analysis

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Meta-analysis 62 studies between 2000 and 2012:

Increased primary failure rate of 15% → 23%

- ✓ New approaches: the role of uremia and antithrombotic drugs in neointimal hyperplasia, the role of etiology of kidney disease ...



We proposed to identify predictors of early fistula failure in a sample of patients followed in a Vascular Access Consult between 2012 and 2015

MATERIALS AND METHODS

Vascular Access Consult

Multidisciplinary Team
(Nephrologist, Vascular Surgeon and Nurse)

- 1º) Clinical and Vascular History
- 2º) Physical Examination
- 3º) Vascular study by eco-doppler
- 4º) Construction planning of vascular access

- ✓ 100 patients with puncturable fistula at 6 weeks compared with 100 patients who developed early fistula complications in that period, excluding patients with primary fistula failure at 10 weeks.

- **Inflow problems:** Arterial Disease, anastomotic and pós-anastomotic stenosis
- **Outflow problems:** venous stenosis



Early Complications

- ✓ Retrospective analysis of medical processes to collect **sociodemographic, clinical and analytic data (below)** to statistical analysis

Clinical Data

Cause of Kidney Disease

Isquemic, Diabetic, Chronic Glomerulonephritis, Poliquistic, others

Comorbidities

Cerebrovascular Disease, Diabetes Mellitus, Congestive Heart Failure, Peripheral Artery Disease

Previous vascular access and presence of central cateter

Previous endovascular procedures

Antithrombotic drugs

Antiplatelets, Warfarin and acenocoumarol

Mortality

Sociodemographic Data

Age

Gender

Race

Vascular Access Data

Localization of the Fistula

Type of early complication

Vein diameter

Analytic data

creatinine, urea, and glomerular filtration rate (CKD-EPI) 30 days before the fistula construction

RESULTS

	Control Group	Early Fistula Failure	
Mean Age	68,2 years	67,7 years	
Female Gender	53%	54%	
Main cause of Kidney Disease	Diabetic – 36%	Diabetic – 53%	
Cerebrovascular Disease	14%	23%	
Diabetes mellitus	47%	78%	OR 3,8; p=0,01
Congestive Heart Failure	30%	34%	
Peripheral Artery Disease	18%	30%	
Previous Vascular Access	12%	17%	
Presence of Central Cateter	17%	20%	
Previous Endovascular Procedures	8%	11%	
Antiplatelet and Anticoagulant Drugs	37%/ 3%	35%/ 7%	
Fistula localization	Distal – 63%	Distal – 76%	OR 4,8; p=0,05
Early Complications	0	Inflow: 73% Outflow: 28%	
Mean vein diameter (mm)	1,7	1,9	
Mean creatinine (mg/dL)	3,8	4	
Mean Urea (mg/dL)	152	160	
Mean glomerular filtration rate (CKD-EPI)	11,5	10,9	
Mortality	5%	6%	

Factors associated with an increased overall risk of complications were diabetes mellitus and the distal location of the fistula

Predictor factors of early complications

Inflow problems (n= 73)	Odds Ratio (OR)	Valor p
Absence of Diabetes mellitus	6	0,02
Absence of Peripheral Artery Disease	3,9	0,03
Congestive Heart Failure	7,2	0,06

Non-diabetic patients with no history of peripheral arterial disease were less likely to have inflow problems.

There was a trend to greater frequency of inflow problems in patients with heart failure.

No factor predictor of outflow problems was identified, possibly due to small sample size.

CONCLUSIONS

- ✓ The previous use of antithrombotic drugs, the etiology of kidney disease and glomerular filtration rate had no influence on the rate of complications in this study
- ✓ The fact that lower GFR (<15 ml / min / m2) are not associated with more complications does not promote an earlier referral to Vascular Access Consult.
- ✓ In diabetic patients and / or congestive heart failure, the construction of more proximal fistulas should be considered, given the lower risk of early complications.
- ✓ The absence of impact of variables traditionally associated with increased risk of vascular complications may be due to a study bias (inclusion of patients who's fistula was planned according with recent evidence, for example, avoiding a more distal localization in high risk diabetic patients, with multiple cardiovascular comorbidities)

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