

Survival and Outcomes of Native Arteriovenous Fistulas following Percutaneous Transluminal Angioplasty in the Haemodialysis Population in Dumfries and Galloway



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INTRODUCTION

Haemodialysis vascular access is the life line of the dialysis patient. Native arteriovenous fistulas (AVF) are the preferred vascular access due to their longevity and low infection rates.¹ Significant stenosis are a common problem encountered with AVF, requiring percutaneous and open procedures to re-establish patency.² Patency following percutaneous intervention is highly variable.³

METHOD

Records of those who underwent first time PTA for dysfunctional AVF between 2008 and 2017 were analysed. All patients with no previous history of stenosis or thrombosis referred for fistulography and treatment were included.

The reasons for referral were decreased blood flow rate, difficult cannulation, increased venous pressure, oedema of the upper extremity or a suspected stenosis on duplex scan of the AVF.

RESULTS

Majority (63.6%) of the AVFs referred for PTA were left sided and were predominantly radiocephalic fistulas (54.5%). Juxta-anastomotic and draining vein stenosis (81.8%) were the commonest lesions referred for PTA.

AVF characteristics	Number	Percentage (%)
Side		
Right	16	36.4
Left	28	63.6
Type		
Radiocephalic	24	54.5
Brachiocephalic	14	31.8
Brachiobasilic	5	11.4
Radiobasilic	1	2.3

Characteristics of AVF referred

Technical success is defined as a residual stenosis of 30% on angiography. This was 95.5% in our population, which was comparable to most studies.^{2,4}

Clinical success is defined as the ability to provide uninterrupted dialysis for at least 3 consecutive sessions. This was 79.5% in our group, which was lower than other studies.^{4,5}

Demographics	P-value	
	Technical success	Clinical success
Gender	0.498	0.643
Age	0.954	0.996
Diabetes	0.488	1.000
AVF type	0.245	0.289

Correlation between technical and clinical success with clinical factors

Technical and clinical success were not correlated with age, sex, diabetes or type of fistula. Early recurrence is defined as dysfunction within 6 months of PTA. This was 40.9% in our population which was comparable to other studies.^{4,5}

Complication rate was 2.3%, similar to the rate of 3.0% reported in most studies.^{4,5}

Years	Primary patency (%)	Secondary patency (%)
1	38.1	66.7
2	30.0	55.0
3	25.0	37.5

Demographics	1 year			2 year			3 year		
	P-value	Odds ratio	Relative risk	P-value	Odds ratio	Relative risk	P-value	Odds ratio	Relative risk
Gender	0.531	1.6	1.333	0.728	1.545	1.353	0.717	1.500	1.353
Diabetes	0.527	1.753	1.414	0.731	1.615	1.400	0.716	1.714	1.500
AVF type									
Radiocephalic	0.354	1.944	1.515	0.731	1.615	1.400	0.273	3.051	2.333
Brachiocephalic	0.180	0.315	0.462	0.157	0.267	0.371	0.070	0.145	0.206
Brachiobasilic	0.352	2.769	1.708	0.149	4.333	2.333	0.584	2.25	1.75

Correlation between primary patency with clinical factors

No correlation was detected between the clinical factors and primary patency rates.

CONCLUSION

Radiocephalic fistulas require the most number of interventions, with juxta-anastomotic and draining vein lesions predominating. While technical success is higher in our population, this does not seem to translate to clinical success. This is possibly related vascular inflammation after PTA, which has been identified as a major contributory factor to the restenotic process.⁶