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Predictive parameters of arterio-venous fistula functional maturation in a population of patients with end-stage renal disease

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Introduction: With increasing number of patients diagnosed with ESRD, Arterio-Venous Fistula (AVF) maturation has become a major factor in improving both dialysis related outcomes and quality of life of those patients. Compared to other types of access it has been established that a functional AVF access is least likely to be associated with thrombosis, infection, hospital admissions, secondary interventions to maintain patency and death.

Aim: Study of demographic factors implicated in the functional maturation of arterio-venous fistulas and also to explore any possible association between pre-operative haematological investigations and functional maturation.

Methods: We performed a retrospective chart review of all patients with ESRD who were referred to the vascular service in the University Hospital of Limerick for creation of vascular access for HD. We included patients with primary AVFs and excluded those who underwent secondary procedures.

Results: The overall AVF functional maturation rate in our study was 53.7% (52/97). Female gender showed significant association with non-maturation (P=0.004) and was the only predictor for non-maturation in a logistic regression model (P=0.011). Patients who had history of renal transplant (P=0.036), had relatively lower haemoglobin levels (P=0.01) or were on calcium channel blockers (P=0.001) showed better functional maturation rates.

Conclusion: Female gender was found to be associated with functional non-maturation, while a history of kidney transplant, calcium channel-blocker agents and low haemoglobin levels were all associated with successful functional maturation. In view of the conflicting evidence in the literature, large prospective multi-centre registry-based studies with well-defined outcomes are needed.

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