This study examines the utilization and outcomes of vascular access for long-term hemodialysis in the United States and describes the impact of temporizing catheter use on outcomes” Arhuidese et al (2018).

Abstract:

BACKGROUND: This study examines the utilization and outcomes of vascular access for long-term hemodialysis in the United States and describes the impact of temporizing catheter use on outcomes. We aimed to evaluate the prevalence, patency, and associated patient survival for pre-emptively placed autogenous fistulas and prosthetic grafts; for autogenous fistulas and prosthetic grafts placed after a temporizing catheter; and for hemodialysis catheters that remained in use.

METHODS: We performed a retrospective study of all patients who initiated hemodialysis in the United States during a 5-year period (2007-2011). The United States Renal Data System-Medicare matched national database was used to compare outcomes after pre-emptive autogenous fistulas, preemptive prosthetic grafts, autogenous fistula after temporizing catheter, prosthetic graft after temporizing catheter, and persistent catheter use. Outcomes were primary patency, primary assisted patency, secondary patency, maturation, catheter-free dialysis, severe access infection, and mortality.

RESULTS: There were 73,884 (16%) patients who initiated hemodialysis with autogenous
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fistula, 16,533 (3%) who initiated hemodialysis with prosthetic grafts, 106,797 (22%) who temporized with hemodialysis catheter prior to autogenous fistula use, 32,890 (7%) who temporized with catheter prior to prosthetic graft use, and 246,822 (52%) patients who remained on the catheter. Maturation rate and median time to maturation were 79% vs 84% and 47 days vs 29 days for pre-emptively placed autogenous fistulas vs prosthetic grafts. Primary patency (adjusted hazard ratio, 1.26; 95% confidence interval [CI], 1.25-1.28; P < .001) and primary assisted patency (aHR, 1.36; 95% CI, 1.35-1.38; P < .001) were significantly higher for autogenous fistula compared with prosthetic grafts. Secondary patency was higher for autogenous fistulas beyond 2 months (aHR, 1.36; 95% CI, 1.32-1.40; P < .001). Severe infection (aHR, 9.6; 95% CI, 8.86-10.36; P < .001) and mortality (aHR, 1.29; 95% CI, 1.27-1.31; P < .001) were higher for prosthetic grafts compared with autogenous fistulas. Temporizing with a catheter was associated with a 51% increase in mortality (aHR, 1.51; 95% CI, 1.48-1.53; P < .001), 69% decrease in primary patency (aHR, 0.31; 95% CI, 0.31-0.32; P < .001), and 130% increase in severe infection (aHR, 2.3; 95% CI, 2.2-2.5; P < .001) compared to initiation with autogenous fistulas or prosthetic grafts. Mortality was 2.2 times higher for patients who remained on catheters compared to those who initiated hemodialysis with autogenous fistulas (aHR, 2.25; 95% CI, 2.21-2.28; P < .001).

CONCLUSIONS: Temporizing catheter use was associated with higher mortality, higher infection, and lower patency, thus undermining the highly prevalent approach of electively using catheters as a bridge to permanent access. Autogenous fistulas are associated with longer time to catheter-free dialysis but better patency, lower infection risk, and lower mortality compared with prosthetic grafts in the general population.

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Reference:
Arhuidese, I.J., Orandi, B.J., Nejim, B. and Malas, M. (2018) Utilization, patency, and