



Proximalization of Arterial Inflow for Treatment of Hemodialysis Access Induced Distal Ischemia

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I have no disclosures




Introduction

- Hemodialysis access induced distal ischemia (HAIDI)
 - Affects anywhere from 1-20% of patients with arteriovenous fistulas (AVF)
- Proximalization of Arterial Inflow (PAI) is known technique for HAIDI management
 - Resolve ischemia + maintain patency
- The purpose of our study was to report our experience with and long-term outcomes of PAI



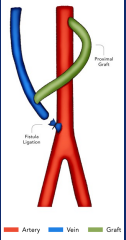
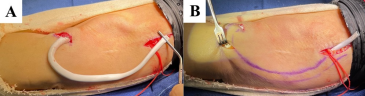

Methods

- Single center, retrospective cohort study
 - Adults age 18+ with PAI procedure for HAIDI from May 2017 to August 2023
- Surveillance following PAI
 - 4 weeks, 3 months, 6 months, annually
- A total of 64 patients with PAI were included in the study population



PAI Procedure


- Prior anastomosis dissected free and distal fistula ligated
- Arterial inflow of HD access translocated more proximally
 - Via 4-7mm tapered PTFE graft
 - Hooded 7mm end believed to reduce risk of stenosis

Baseline Demographics

- Included AVF and AVG
 - 95.3% AVF
 - 4.7% AVG
- Access configurations:
 - 71.9% brachiocephalic
 - 15.6% brachiocephalic
 - 7.8% proximal radial
 - 4.7% axillobrachial

Characteristic	Patient Number (%)
Sex	Male 26 (40.6)
	Female 34 (59.4)
Age (years)	Mean 65
	Range 27-92
	White 21 (32.8)
Race	Black/African American 24 (37.5)
	Asian 10 (15.6)
	Hispanic 7 (10.9)
	Other 2 (3.1)
CAD	32 (50.0)
HTN	61 (95.3)
Diabetes	Total 51 (79.7)
	Type I 3 (4.7)
	Type II 48 (75.0)
Smoking History	None 36 (56.3)
	Previous Smoker 24 (37.5)
	Current Smoker 4 (6.3)



Resolution of HAIDI

- Overall resolution**
 - 85.9% complete resolution
 - 7.8% partial resolution
 - 3.1% no resolution
 - 3.1% unknown resolution
- Resolution by grade of ischemia**
 - Grade I: 75% (12/16)
 - Grade II: 80% (8/10)
 - Grade III: 90.5% (19/21)
 - Grade IV: 94.1% (16/17)

Grade	Symptoms
I	Pale/blue discoloration or cold feeling of hand without pain
II	Pain during exercise and/or hemodialysis
III	Pain while at rest
IV	Ulcers/necrosis/gangrene

Patency of PAI

- Mean patency of 45 months and median patency of 47 months
- 60.9% (39/64) of patients did not require additional interventions

Time (Months)	Primary Patency	Secondary Patency
1	94%	97%
12	81%	87%
24	71%	84%
36	43%	84%

Complications

- 30-day complication rate was 10.9% (7/64)
- 15.6% (10/64) patients eventually failed patency due to thrombosis
 - Thrombosis rate was 14% (9/64) at 1 year and 15.6% (10/64) at 2 years
- Only 1/64 (1.6%) patient had HAIDI symptom recurrence (pain)

30-Day Complications	% (N)
Thrombosis	7.8% (5/64)
Thrombosis and Infection	1.6% (1/64)
Upper extremity edema	1.6% (1/64)

Discussion – PAI vs DRIL

- HAIDI complete resolution**
 - PAI → 85.9% (recurrence 1.6%)
 - DRIL → 78-81% (recurrence 5-6.7%)³⁻⁵
- Overall patency at 1 and 3 years**
 - PAI → 87%, 84%
 - DRIL → 80%, 61%⁴
- 30-Day complications**
 - PAI → 10.9%
 - DRIL → 17.2-22% (primarily vein harvest site)⁴⁻⁵

Discussion – PAI vs DRIL

- PAI maintains the native arterial pathway
 - Lower risk of symptom recurrence with thrombosis
 - Reported 42.9% symptom recurrence in failed DRIL⁵
- PAI has comparable safety/efficacy **despite** synthetic graft
 - Harvest site complications are leading complication for DRIL (14.3%)⁴
 - PAI avoids complications involving autogenous vein harvest

Conclusions

- PAI is a reliable option for HAIDI intervention that has comparable if not superior safety/efficacy results when compared to DRIL
- PAI has the added benefit of maintaining the native arterial pathway and potentially reducing the risk of ischemic recurrence in fistula thrombosis
- Use of synthetic graft does NOT increase PAI thrombosis or decrease patency compared to DRIL
- PAI should be considered as an alternative to DRIL for those patients with HAIDI