WELCOME To the

2026 SYMPOSIUM

Forearm Loop Arteriovenous Grafts in the Modern Dialysis Access Plan

Rethinking the Climb Toward Optimal Access

Thomas Coleman MD
General Surgery Resident PGY - 4
Prisma Health Vascular Surgery

Disclosures

None.

The Initial Ascent

> Nephrol Dial Transplant. 1997 Oct;12(10):2060-3. doi: 10.1093/ndt/12.10.2060.

National Kidney Foundation: Dialysis Outcome Quality Initiative--development of methodology for clinical practice guidelines

N Levin [1], G Eknoyan, M Pipp, E Steinberg

Affiliations + expand

PMID: 9351065 DOI: 10.1093/ndt/12.10.2060

- Objectives:
  - Improve end stage renal disease patient survival
  - Reduce patient morbidity
  - Increase efficiency of care
- **Fistula First**
- Success Metric: % patients using autogenous arteriovenous fistulas

Levin N, Eknoyan G, Pipp M, Steinberg E. National Kidney Foundation: Dialysis Outcome Quality Initiative--development of methodology for clinical practice guidelines. Nephrol Dial Transplant. 1997 Oct;12(10):2060-3. doi: 10.1093/ndt/12.10.2060. PMID: 9351065.

Challenges Along the Climb

- 80% of dialysis patients starting HD with a catheter
- Catheters had the highest association with morbidity and mortality including superficial site infections and bacteremia

Outcomes of vascular access for hemodialysis: A systematic review and meta-analysis

Jehad Almasri [1], Mouaz Alsawas [1], Maria Mainou [2], Reem A Mustafa [3], Zhen Wang [1], Karen Woo [4], David L Cull [5], M Hassan Murad [6]

Affiliations + expand

PMID: 27345510 DOI: 10.1016/j.jvs.2016.01.053

Free article

Prioritizing fistula creation led to increased catheter days and worse patient outcomes

Almasri J, Alsawas M, Mainou M, Mustafa RA, Wang Z, Woo K, Cull DL, Murad MH. Outcomes of vascular access for hemodialysis: A systematic review and meta-analysis. J Vasc Surg. 2016 Jul;64(1):236-43. doi: 10.1016/j.jvs.2016.01.053. PMID: 27345510.

Redefining the Summit

KDOQI Clinical Practice Guideline for Vascular Access: 2019 Update

Charmaine E Lok, Thomas S Huber, Timmy Lee, Surendra Shenoy, Alexander S Yevzlin, Kenneth Abreo, Michael Allon, Arif Asif, Brad C Astor, Marc H Glickman, Janet Graham, Louise M Moist, Dheeraj K Rajan, Cynthia Roberts, Tushar J Vachharajani, Rudolph P Valentini; National Kidney Foundation

PMID: 32778223 DOI: 10.1053/j.ajkd.2019.12.001

Change in Philosophy

- Introduces Dialysis Life Plan
- Emphasizes **minimizing catheters days**

Lok CE, Huber TS, Lee T, Shenoy S, Yevzlin AS, Abreo K, Allon M, Asif A, Astor BC, Glickman MH, Graham J, Moist LM, Rajan DK, Roberts C, Vachharajani TJ, Valentini RP; National Kidney Foundation. KDOQI Clinical Practice Guideline for Vascular Access: 2019 Update. Am J Kidney Dis. 2020 Apr;75(4 Suppl 2):S1-S164. doi: 10.1053/j.ajkd.2019.12.001. Epub 2020 Mar 12. Erratum in: Am J Kidney Dis. 2021 Apr;77(4):551. doi: 10.1053/j.ajkd.2021.02.002. PMID: 32778223.

Different Routes to the Same Destination

Forearm loop arteriovenous grafts preserve and may create new upper arm access sites

Nathan K Itoga [1], Whitt Virgin-Downy [1], Matthew W Mell [1]

Affiliations + expand

PMID: 31006339 PMCID: PMC8439284 DOI: 10.1177/1129729819835137

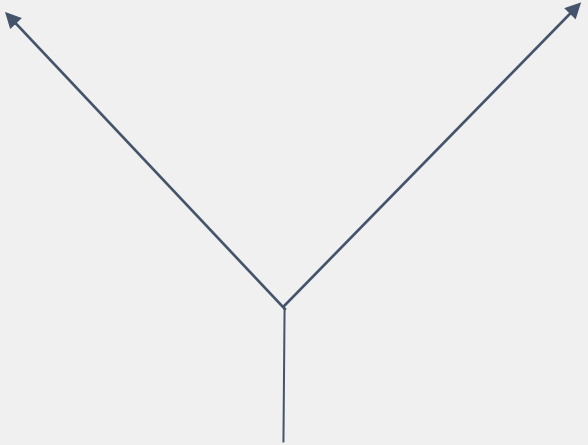
A Single-Center Experience with Forearm Arteriovenous Loop Grafts for Hemodialysis

Ian M Brastauskas [1], Nimesh Patel [2], Zachary German [2], Ross P Davis [2], Jeanette M Stafford [3], Matthew Edwards [2], Mariana Murea [2], Matthew P Goldman [2]

Affiliations + expand

PMID: 35817384 DOI: 10.1016/j.avsg.2022.06.003

- **Advocates for forearm loop AVG** because no difference in mid-term patencies compared to upper arm AV fistula
- ⅓ of patients without adequate upper arm vein became candidates for fistula after forearm loop AVG



- **Advocates for upper arm AVGs** due to high rates of failure after forearm loop AVG creation

Minimize catheter days
Longitudinal access planning

Charting the Course

Cohort	
95 Forearm Loop AVG	229 Other access

Study Design:

- Single center retrospective cohort study
- IRB-approved, Prisma Health, 2010-2024
- All adults referred for primary permanent HD access

Comparisons:

- **Analysis 1**: Forearm loop arteriovenous grafts vs all other access (n = 229)
- **Analysis 2:** Forearm loop arteriovenous grafts vs upper arm grafts (n = 27)

Other Access Included:

- Radiocephalic AVF (n=76)
- Brachiocephalic AVF (n = 87)
- Upper Arm Basilic Vein Transposition (n = 35)
- Forearm Basilic Vein Transposition (n = 4)
- Upper arm AVG (n = 27)

Primary Endpoints:

- Primary patency, functional patency, secondary patency

Secondary Endpoints:

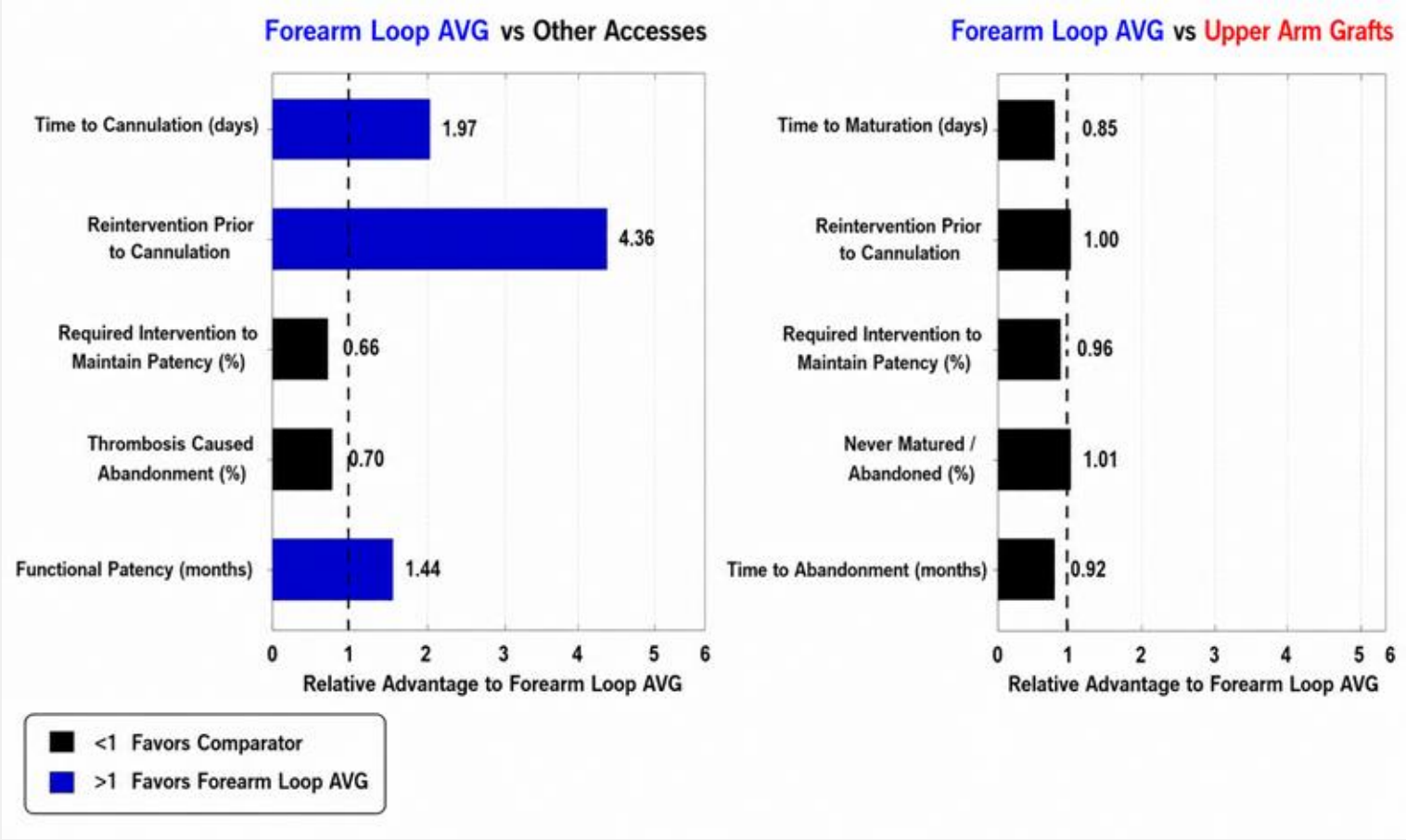
- Maturation rate, time to cannulation , interventions, abandonment

Findings at Each Fork

Characteristic	Forearm Loop	Other Accesses	*p-value*
Access Matured	85.3%	76.0%	0.063
Reintervention Prior to Cannulation	**7.4%**	**32.3%**	**<0.001**
Time to First Successful Cannulation (months)*	**33 (22, 44)**	**65 (43, 114)**	**<0.001**
Patency (months)*	32 (9, 68)	44 (15,66)	0.308
Intervention for Maintenance Required	**69.5%**	**45.9%**	**<0.001**
Functional Patency (months)*	10.4 (4.7, 21.2)	7.2 (2.6, 20.5)	0.208

Characteristic	Forearm Loop	Upper Arm Grafts	*p-value*
Access Matured	85.3%	77.8%	0.354
Reintervention Prior to Cannulation	7.4%	7.4%	0.995
Time to Maturation (months)*	33 (22, 44)	28 (26, 36)	0.526
Patency (months)*	32	45	0.679
Intervention for Maintenance Required	69.5%	66.7%	0.781
Graft Abandoned	55.6%	52.4%	0.794
Time to Abandonment (months)*	10.4 (4.7, 21.2)	11.3 (4.8, 14.7)	0.676

Tradeoff Profile



Preserving the Next Climb

Forearm Loop Pathway

- Comparable patency
- Comparable intervention burden
- Comparable abandonment

Preserves future upper arm access

Upper Arm Graft Pathway

- Comparable outcomes

Consumes 50% of access site locations

If outcomes are comparable, preserve the next access site

Thinking Longitudinally

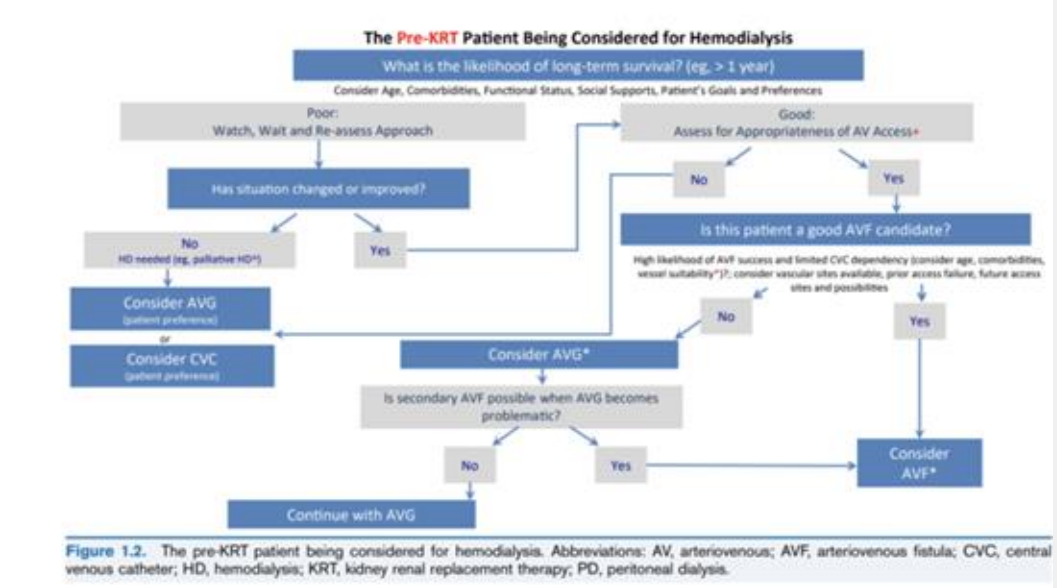


Figure 1.2. The pre-KRT patient being considered for hemodialysis. Abbreviations: AV, arteriovenous; AVF, arteriovenous fistula; CVC, central venous catheter; HD, hemodialysis; KRT, kidney renal replacement therapy; PD, peritoneal dialysis.

- Forearm loop AVGs offer **faster access with comparable functional patency**, at the cost of greater downstream maintenance

- *The best access strategy may not be the one that last forever* - ***but the one that keeps the patient moving forward***