Not a “One and Done:”

The role of the surgeon in longitudinal access surveillance and maintenance

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2026 Vascular Access Society of the Americas Annual Meeting

Longitudinal access care: CONFLICTS OF INTEREST

- None

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Longitudinal access care :
BACKGROUND

- How do the unenlightened do it today?



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Longitudinal access care : BACKGROUND

- How do the unenlightened do it today?
  - Creation: The surgeon (or interventionalist)
  - Maturation: The surgeon usually, but the ball gets dropped.
  - Maintenance/observation: Essentially no one. Nurses in most units are not well educated, it's amazing what is missed.

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Longitudinal access care : BACKGROUND

- How do the unenlightened do it today?
  - Intervention:
    - If you're lucky, you get referred to the same interventional nephrologist (who is likely not, however, following you otherwise).
    - If you're not lucky you get referred to a random interventionalist, for whom you are "just an arm."

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Longitudinal access care :
BACKGROUND

- How do the unenlightened do it today?
  - This is not to badmouth anyone – I lived that life for the first half of my career.





Longitudinal access care :
DIALYSIS ACCESS INSTITUTE

- However – I became ENLIGHTENED in 2018!





Longitudinal access care :
DIALYSIS ACCESS INSTITUTE

- Dialysis Access Institute was (almost certainly) the first “Comprehensive Dialysis Access Center” (CDAC)
  - One stop shopping, same day service (“own” your own ORs)
  - All services under one roof
  - Longitudinal care

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Longitudinal access care :
DIALYSIS ACCESS INSTITUTE

- However, “longitudinal care” was, and remains, a description of providing intervention by the same team to the same patient, when needed.
- Patients are, however, NOT regularly followed in the absence of a problem!

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Longitudinal access care :
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- I became DOUBLY ENLIGHTENED when I moved to Houston (2021)!





Longitudinal access care :
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- Our policy: We follow ALL our patients at 3-month intervals.
- Bill ONLY the (very low) E+M office visit, usually NP or level 2 established patient.
- We do not (and cannot) perform a fistulagram without a referral from the nephrologist!

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Longitudinal access care :
THE QUESTION OF BILLING



- Any physician can see their patient for E+M visits as often as they want (assuming medical necessity)

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Longitudinal access care :
THE QUESTION OF BILLING*

- Surgeons can intervene without referral during maturation process
- SURGEONS need a neph (unit) referral prior to fistulagrams
- NEPHROLOGISTS (IN) can self-refer
- q3 month fistulagrams are ILLEGAL

*Illig interpretation of the rules

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All Visit Calendar for River Oaks Clinic - Google Chrome

moo-secure.com/000534/MOO-000534a.nsf/Calendar?OpenForm&View=Calendar7+AllVisit+Exp&Grid=6&Date=2026-04-20

07:45 AM						
08:00 AM						
08:15 AM						
08:30 AM						
08:45 AM						
09:00 AM	C	✔	Done	F		ri - EP - 832-488-6513 - 3 Month F/U - River Oaks Clinic - 07/27/1965
	C	✔	Done	F		rtha - ER - 832-908-1433 - 2 Week F/U - River Oaks Clinic - 12/20/1970
09:15 AM						
09:30 AM	C	✔	Done	F		Eduardo - ER - 832-571-4644 - CVC Removal - River Oaks Clinic - 05/31/1987
09:45 AM	C	✔	Done	F		ilario - ER - 936-499-4450 - (KI) 2 Week F/U - River Oaks Clinic - 07/16/1978
10:00 AM	C	✔	Done	F		- 432-528-9332 - New Access Consult - River Oaks Clinic - 04/15/1968
10:15 AM	C	✔	Done	F		R - 409-344-7540 - (KI) 2 Week F/U - River Oaks Clinic - 02/08/1983
10:30 AM	C	✔	Done	F		- 936-648-6670 - Access Eval - River Oaks Clinic - 09/25/2000
	C	✔	Done	F		- 832-264-2128 - (KI) 2 Week F/U - River Oaks Clinic - 09/28/1969
10:45 AM	C	✔	Done	F		- 346-300-6536 - New Access Consult - River Oaks Clinic - 06/06/1976
	C	✔	Done	F		ER - 346-409-5504 - 2 Week F/U - River Oaks Clinic - 11/25/1954
11:00 AM	C	✔	Done	F		EP - 832-244-2560 - 3 Month F/U - River Oaks Clinic - 12/10/1940
	C	✔	Done	F		oleta - EP - 832-683-6863 - (KI) 2 Week F/U - River Oaks Clinic - 02/16/1953
11:15 AM	C	✔	Done	F		P - 713-320-0600 - 3 Week F/U - River Oaks Clinic - 12/04/1966
	C	✔	Done	F		ez, Maria - ER - 281-864-8766 - (KI) Office Visit - River Oaks Clinic - 07/02/1969
11:30 AM	C	✔	Done	F		, Celerino - EP - 832-972-2547 - Access Eval - River Oaks Clinic - 07/02/1960
11:45 AM	C	✔	Done	F		832-287-1449 - Access Eval - River Oaks Clinic - 06/12/1974
12:00 PM	C	✔	Done	F		- 281-438-4389 - Access Eval - River Oaks Clinic - 02/02/1963
	C	✔	Done	F		ER - 757-575-1146 - CVC Removal - River Oaks Clinic - 07/19/1983
12:15 PM	C	✔	Done	F		Albertano - EP - 832-207-0025 - CVC Removal - River Oaks Clinic - 02/25/1965
12:30 PM	C	✔	Done	F		en - ER - 979-267-1698 - 3 Month F/U - River Oaks Clinic - 12/16/1982
12:45 PM	C			F		EP - 832-725-0978 - (KI) 1 Month F/U - River Oaks Clinic - 02/09/1967
	C	✔	12:22 PM	F		EP - 713-367-8131 - Access Eval - River Oaks Clinic - 06/19/1960
01:00 PM	C	✔	12:02 PM	F		- EP - 832-466-1088 - 2 Week F/U - River Oaks Clinic - 01/15/1957
01:15 PM	C	✔	Done	F		ica L - ER - 281-658-8478 - (KI) 2 Week F/U - River Oaks Clinic - 04/20/1967
	C			F		- 832-537-6086 - 3 Month F/U - River Oaks Clinic - 09/16/1967
01:30 PM	C			F		EP - 346-369-6399 - (KI) 2 Week F/U - River Oaks Clinic - 03/05/1949
01:45 PM	LM			F		P - 832-742-1520 - New Access Consult - River Oaks Clinic - 04/06/1962
	LVM			F		R - 979-257-4242 - (KI) 2 week f/u - River Oaks Clinic - 09/12/1980
02:00 PM	C			F		281-850-4036 - 3 Month F/U - River Oaks Clinic - 10/02/1968
02:15 PM	C			F		- EP - 612-747-8650 - 3 Month F/U - River Oaks Clinic - 04/30/1942
	C			F		P - 832-231-1697 - 3 Month F/U - River Oaks Clinic - 04/07/1984
02:30 PM	C			F		dro - EP - 281-896-5546 - 3 Month F/U - River Oaks Clinic - 06/14/1981
	C			F		EP - 281-351-5443 - New Access Consult - River Oaks Clinic - 05/27/1981
02:45 PM	C			F		- 832-760-2135 - New Access Consult - River Oaks Clinic - 09/02/1976
03:00 PM	C			F		sie - EP - 832-896-7415 - 3 Month F/U - River Oaks Clinic - 08/08/1981
	C			F		ER - 409-656-5220 - (KI) Follow UP - River Oaks Clinic - 01/12/1940
03:15 PM						
03:30 PM						

Close
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Longitudinal access care :
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- WHY DO WE DO THIS?
  1. MONITOR THE SKIN
  2. MONITOR THE PRESSURE
  3. MONITOR THE HAND
  4. ANSWER QUESTIONS and COUNSEL
     - (Limited MD/RN duplex, not billed)
  5. IT'S GOOD BUSINESS

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Longitudinal access care :
MONITOR THE SKIN

1. MONITOR THE SKIN
   - It's amazing what the dialysis unit staff miss!
   - Minor issues: Counselling, band-aid over the area in question, early followup.
   - Major issues: Down the hall to the OR!

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Longitudinal access care :
MONITOR THE SKIN

1. MONITOR THE SKIN
   - DAI: one “blowout” (or near miss – “keep the curtain open,” next in line to the OR) per month.
   - FLOW: I’ve seen ONE blowout in the 5 years I’ve been there, and had only ONE patient who needed to be walked to the OR. We book patients based on skin issues within a day or so monthly.

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Longitudinal access care :
MONITOR THE PRESSURE

2. MONITOR THE PRESSURE

- Subjective: How does it feel? How is compressibility during duplex?
- “Does the machine beep a lot?”

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Longitudinal access care :
MONITOR THE PRESSURE

2. MONITOR THE PRESSURE

- Objective: “How long does it take you to stop bleeding after the needles come out?”
  - Normal: <5 minutes
  - Concerning: 10 minutes
  - Abnormal: >15 minutes or recent increase

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Longitudinal access care :
MONITOR THE HAND

3. MONITOR THE HAND

- HAIDI: Mild, moderate, or severe?
  - Don’t worry about MACN, radial nerve symptoms
- "¿Tienes dolor en la mano?“
- Prosthetic – higher postop, but then plateaus
- Vein – lower postop, but higher risk as time goes on as vein dilates.

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Longitudinal access care :
MONITOR THE HAND

3. MONITOR THE HAND

- Wrist BP for ANY concerning symptoms

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- $17.99 from Walmart

Longitudinal access care :
MONITOR THE HAND

3. MONITOR THE HAND

- Measure *in situ* – hand perfusion
  - I go more on the absolute pressure – 70mm or so – rather than the index
- Compress access (being careful not to compress brachial artery) – how is the inflow?

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Longitudinal access care :
ANSWER QUESTIONS, COUNSEL

4. ANSWER QUESTIONS:

- "How can I avoid the 'two lumps?'"





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Longitudinal access care :
ANSWER QUESTIONS, COUNSEL

4. ANSWER QUESTIONS:
   - How can I avoid the “two lumps?”
   - “Can I get the numbing cream?”
   - “What can I use for pain?”

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Longitudinal access care :
ANSWER QUESTIONS, COUNSEL

4. **COUNSEL:**
   - Tell the staff to move the d—n needles around!
     - (Buttonholes very rare in Houston)
   - Where they can cannulate – mark on the skin (have patient take picture), provide “fistula map” to unit

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Longitudinal access care :
ANSWER QUESTIONS, COUNSEL

4. **COUNSEL:**
   - Things to watch out for (skin lesions, hand symptoms)
   - “No, contrary to what the unit staff tell you, your aneurysm is not going to rupture” (assuming intact skin)
   - “How is your breathing, exercise tolerance?”

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Longitudinal access care:
MD/NP DUPLEX

- Limited MD/NP duplex
  - Mostly for patient reassurance, though helps to assess flow and pressure subjectively
  - CANNOT intervene for asymptomatic duplex findings

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Longitudinal access care: MD/NP DUPLEX

- N=780 AVF cases underwent fistulogram for stenosis
- Peak systolic velocity ≥500 cm/s on duplex correlated with >50% stenosis on fistulogram with SENS 0.89 and SPEC 0.90

Wo et al. Ann Vasc Surg 2017:38:99-104

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Longitudinal access care: MD/NP DUPLEX

- Peak systolic velocity ≥500 cm/s on duplex correlated with >50% stenosis on fistulogram with SENS 0.89 and SPEC 0.90

- So this is a grey area – seems reasonable to discuss with unit, have them send referral if any problems have been encountered.

Wo et al. Ann Vasc Surg 2017:38:99-104

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Longitudinal access care :
IT'S GOOD FOR BUSINESS!

5. IT'S GOOD (GREAT!) FOR BUSINESS:
   - Patients and unit staff happy that this is being monitored in real time
   - You keep track of the patients, get all interventions needed
   - Gain new patients sent to you for problems – invariably love being seen!

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Longitudinal access care :
IT'S GOOD FOR BUSINESS!

5. IT'S GOOD (GREAT!) FOR BUSINESS:
   - We are IMPROVING OUTCOMES (I cannot prove that) by rigorously following these patients
     - "Everyone gets a bottle cap in England"

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Longitudinal access care :
THE QUESTION OF FISTULAGRAMS

- In 2021:
  - Unit referrals: “Please obtain fistulagram for 3-month surveillance.”
  - Our answer: “What is the clinical problem?”
  - Unit: “No problem, we just want to make sure everything’s OK.”
  - Us: “Sorry, we can’t do that. We just want to make sure we stay out of jail.”

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Longitudinal access care :
THE QUESTION OF FISTULAGRAMS

- Sometimes fistulagrams ARE indicated:
  - During maturation period (assisted maturation)
  - Prior to aneurysm repair or other surgical procedure if indicated

  - Referral from unit/neph NOT needed*

*Illig interpretation of the rules

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Longitudinal access care :
THE QUESTION OF FISTULAGRAMS

- Sometimes fistulagrams ARE indicated:
  - Very high pressures
    - Obviously pulsatile
    - “Machine always beeps”
    - Bleeding time >15 minutes or recent increase

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Longitudinal access care :
THE QUESTION OF FISTULAGRAMS

- Sometimes fistulagrams ARE indicated:
  - HAIDI to look at inflow
  - Suspicion of outflow obstruction
    - New swelling
    - Shoulder and neck pain

  - Book, but contact unit for referral (99%+)

*Illig interpretation of the rules

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Longitudinal access care :
WHY IS THIS A GOOD THING?

- Identify problems EARLY, before they become emergencies.
- Make the patient happy
- Make the unit happy

- Retain your patients, good for business

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