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# Lessons learned from 257 patients treated by surgical correction of dialysis steal syndrome

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The EVMS logo consists of the letters "EVMS" in a large, bold, blue serif font. Below this, the full name "Eastern Virginia Medical School" is written in a smaller, blue, sans-serif font.

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# Disclosure

Speaker name: Samuel N. Steerman

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I have the following potential conflicts of interest to report:

- Consulting – Medtronic, Bard/BD, Abbott, Penumbra
  - Employment in industry
  - Stockholder of a healthcare company
  - Owner of a healthcare company
  - Other(s)
- 
- I do not have any potential conflict of interest

# Background

- Dialysis access steal syndrome
  - Incidence rate can be as high as 8%, but can vary depending on access configuration and population

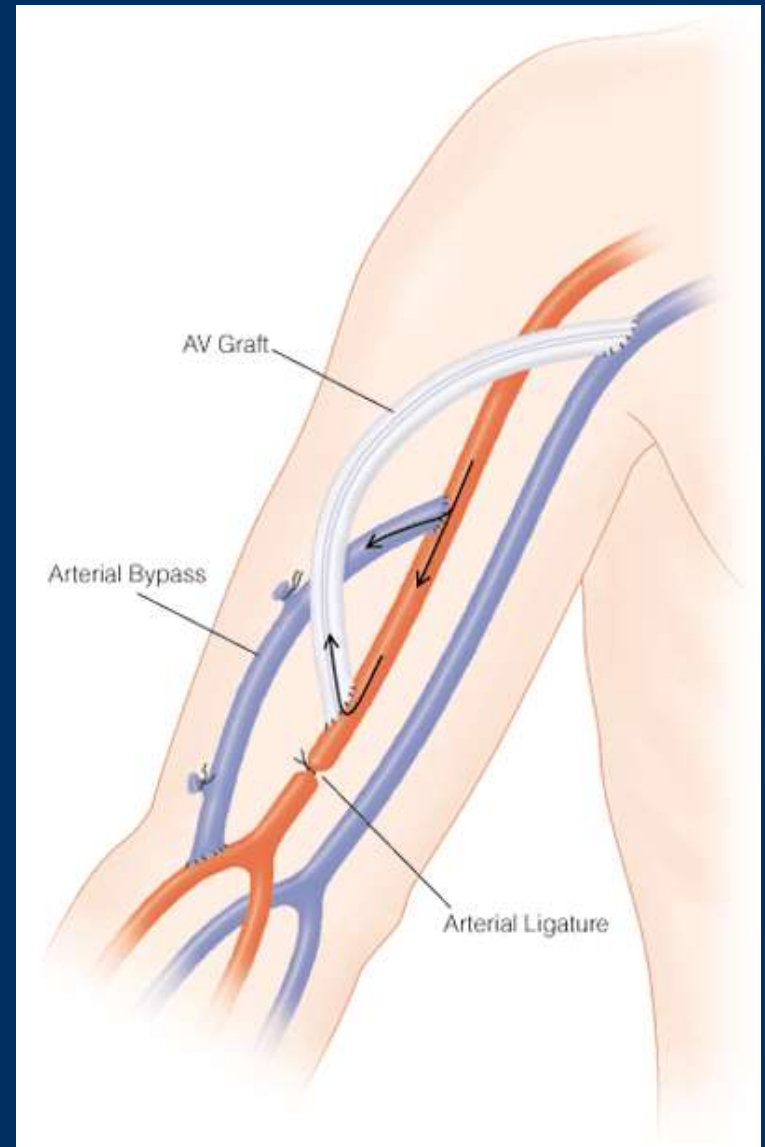


## Steal Classification

- 1: No/Low-grade steal - retrograde flow in distal artery without complaints
- 2: Mild - Pain on exertion and/or with hemodialysis
- 3: Moderate - Rest pain
- 4: Severe - Ischemic changes (ex. Ulceration, necrosis, gangrene)

# Surgical Management of Steal

- Distal Revascularization with Interval Ligation (DRIL)
- Proximalization of arterial Inflow (PAI)
- Banding
- Revision Using Distal Inflow (RUDI)
- Access Ligation



# Methods

- Retrospective review of dialysis patients who underwent surgical correction for steal syndrome within a single high-volume Vascular Surgery practice (January 2009 – May 2017)
- Steal syndrome diagnosis based on symptom presentation and Digit-Brachial Index  $< 0.45$

# Results: Demographics

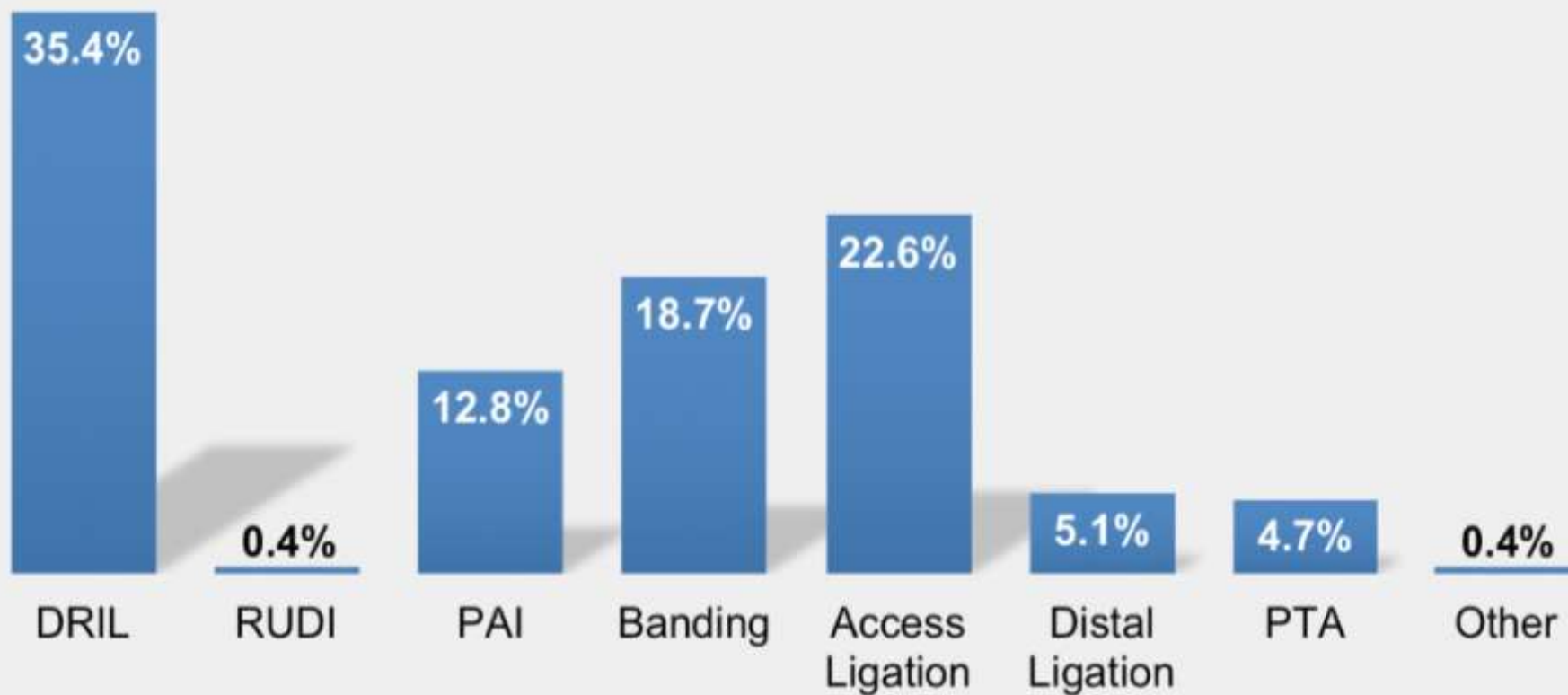
257 patients underwent surgical management for steal

Mean Age (years)	63 (range: 23-90)	Fistula	63%
BMI	30.4 (range: 14.6-56.1)	Graft	37%
Gender	65.7% (Female)	Access Location: Left upper extremity	68.1%
Race/Ethnicity: African-American	53.8%	Access on non-dominant hand	76.3%
Positive Smoking History	51%	Prior failed access procedures	35.4%
History of Diabetes Mellitus	74.7%	Prior access procedures on extremity that developed steal	19.5%
History of Peripheral Arterial Disease	17.5%	Number of prior access procedures on the extremity that developed steal	0: 80.2%
			1: 16.2%
			2: 2.8%
			3: 0.8%

# Access Configuration

<u>Configuration</u>	<u>AVF (162)</u>	<u>AVG (95)</u>
Axillary a.-Axillary v.		9.5%
Brachial a.-Axillary v.		75.8%
Brachial a.-Brachial v.		11.6%
Brachial a.-Basilic v.		1%
Brachial a.-Cephalic v.	61.4%	
Radial a.-Cephalic v.	13.6%	
Radial a.-Basilic v.	0.6%	
Basilic Vein Transposition (BVT)	24.7%	

## Surgical Interventions for Steal (n = 257)





All patients  
(257)

DRIL (91)

RUDI (1)

PAI (33)

Banding  
(48)

Access  
Ligation  
(58)

Distal  
Ligation  
(13)

PTA (12)

Other (1)

Complete  
Symptom  
Resolution:  
68.1%

Complete  
Symptom  
Resolution:  
0%

Complete  
Symptom  
Resolution:  
75.8%

Complete  
Symptom  
Resolution:  
54.2%

Complete  
Symptom  
Resolution:  
87.9%

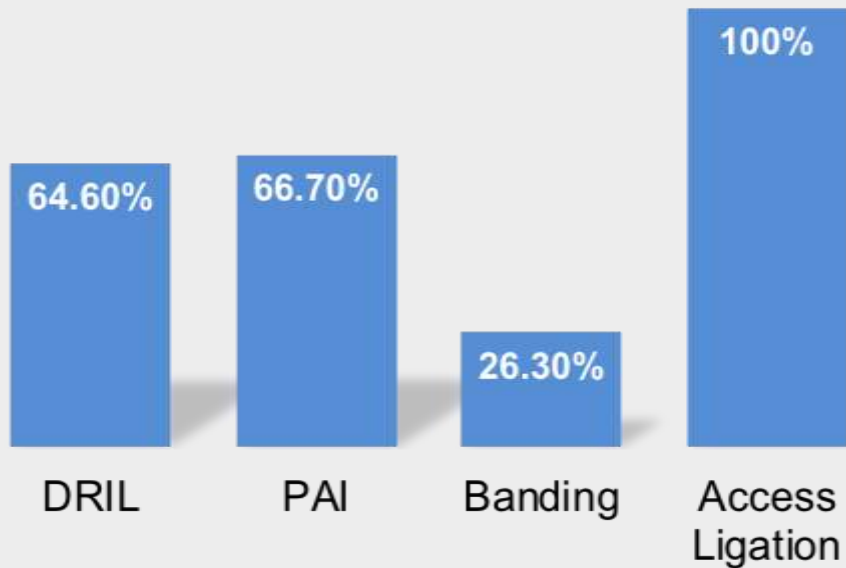
Complete  
Symptom  
Resolution:  
53.8%

Complete  
Symptom  
Resolution:  
91.7%

Complete  
Symptom  
Resolution:  
100%

# Results: AVF Symptom Resolution

Complete Resolution for AVF  
( $\chi^2=0.001$ )



Partial Symptom Resolution for AVF  
( $\chi^2=0.286$ )

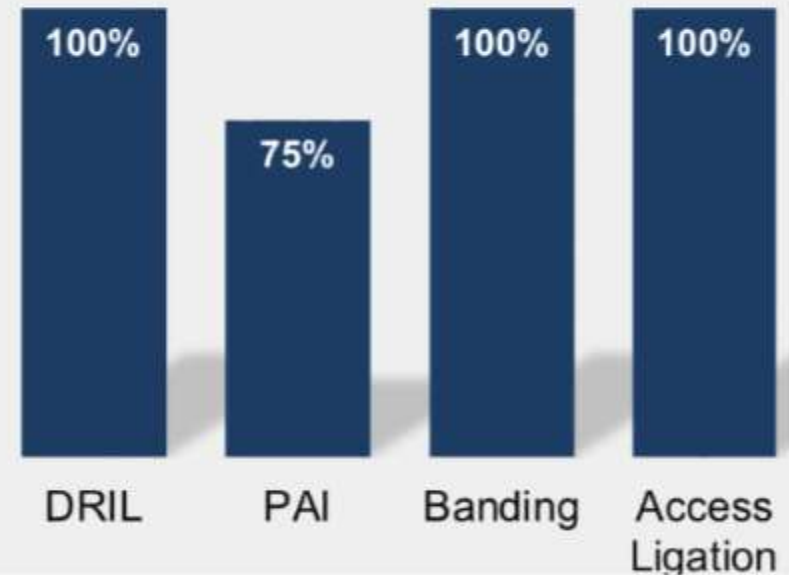


# Results: AVG Symptom Resolution

Complete Resolution for AVG  
( $\chi^2=0.567$ )



Partial Symptom Resolution  
for AVG ( $\chi^2=0.661$ )



# Conclusions

- AVG with steal had a higher rate of symptom resolution after surgical intervention compared to AVF with steal
  - Symptom resolution for steal in AVGs was shown to have equivalent results irrespective of the surgical modality chosen.
- For steal in AVFs, DRIL and PAI were superior to banding with statistical significance and allowed maintenance of patent access, as compared to access ligation.

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