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# Hemodialysis Access: Role of Chronic Kidney Disease on Basilic Vein Morphometry

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Disclosures: None

# Background

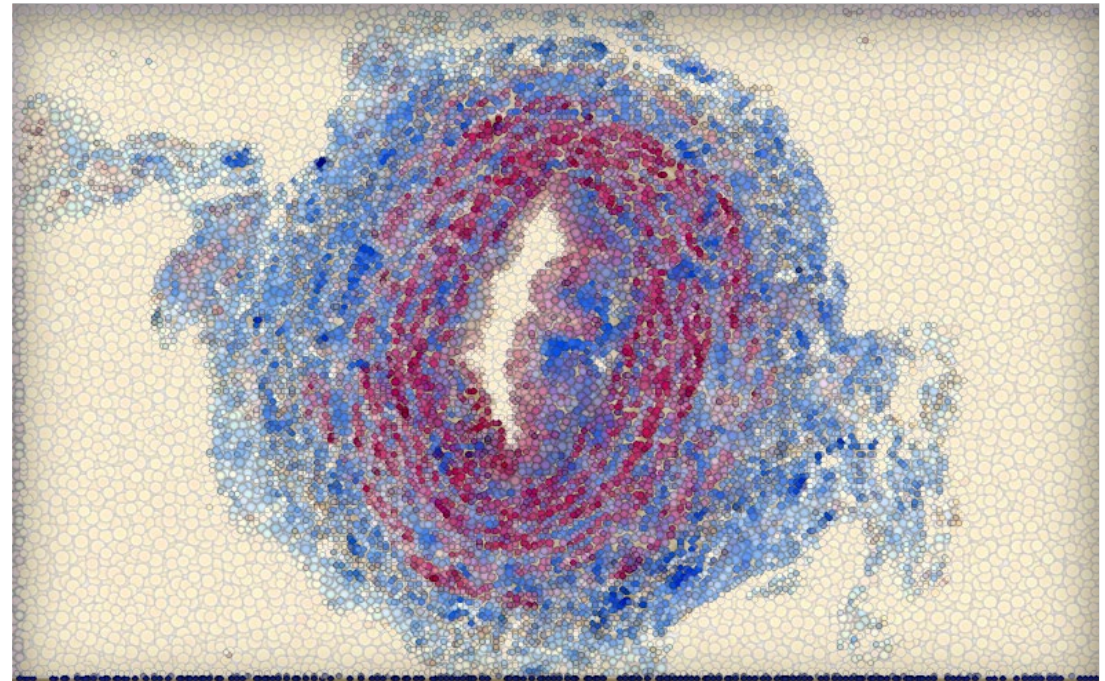
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- In patients receiving hemodialysis, chronic kidney disease (CKD) is considered to be a predisposing factor for arteriovenous fistula (AVF) failure due to its deleterious effects on the vascular system.
- Data surrounding the impact of CKD on the structure of pre-access veins and whether it differs from that in non-CKD populations is limited.

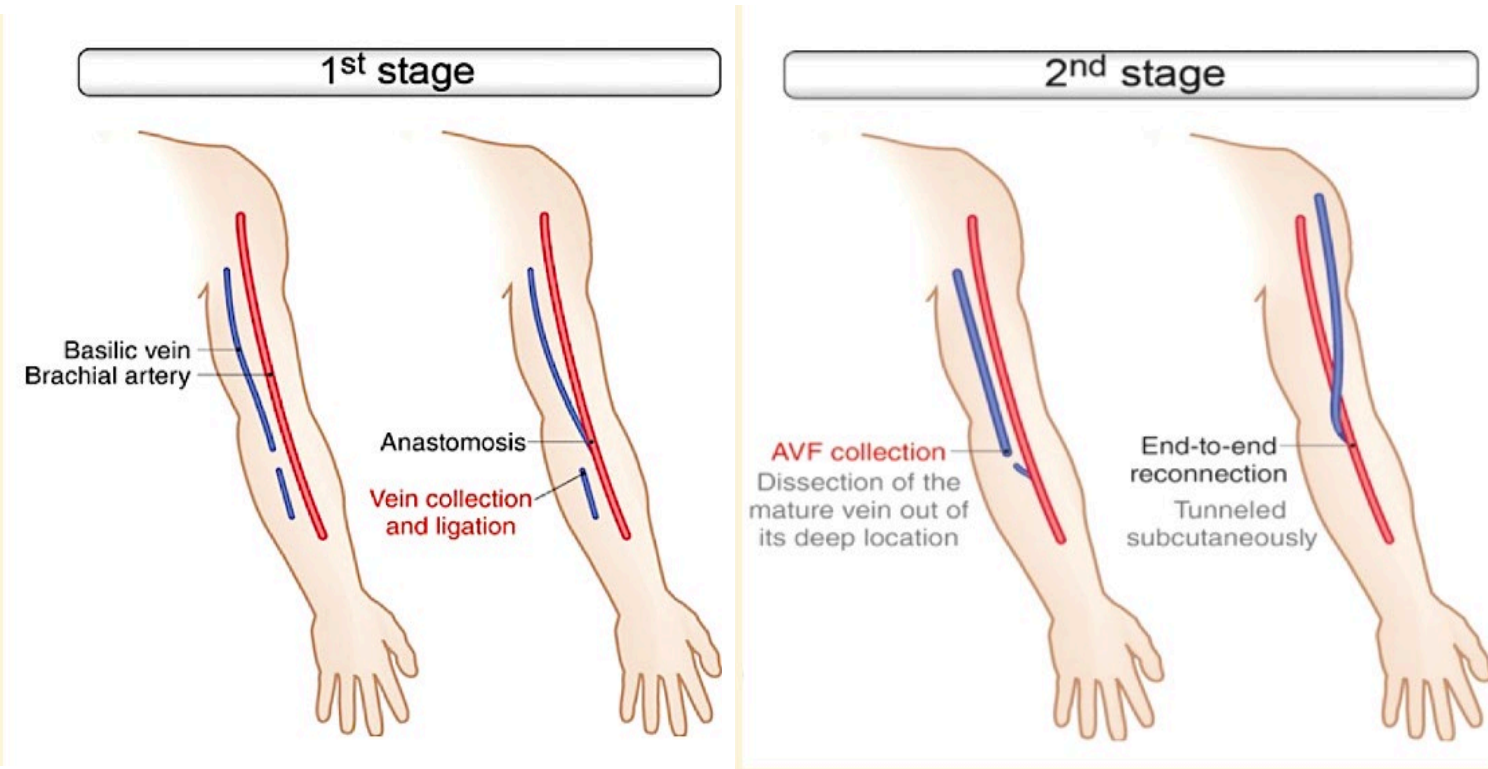
# Objectives

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- To investigate the role of CKD on vein adequacy for AVF creation by comparing morphometry of basilic veins from CKD and non-CKD participants.



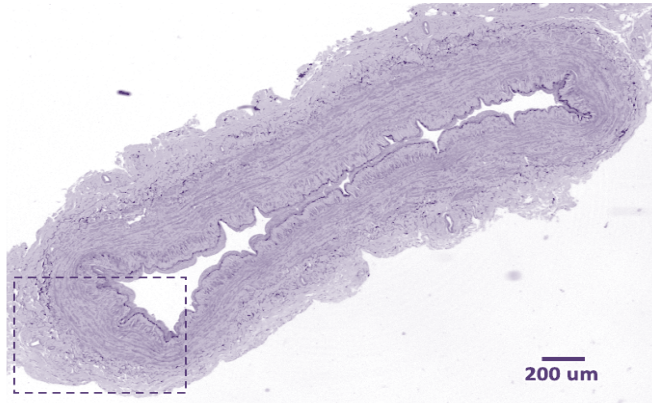
# Methods



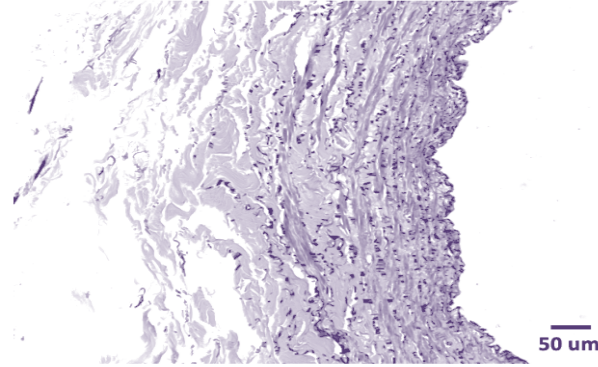
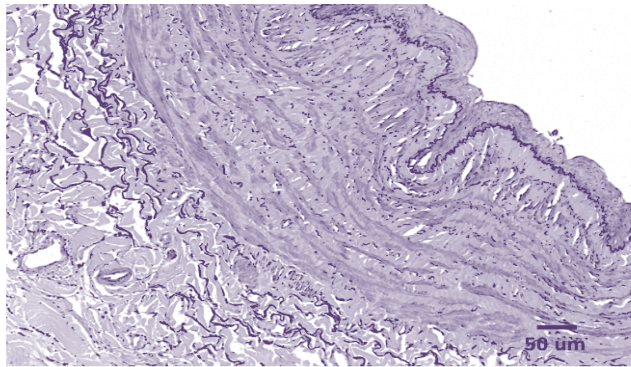
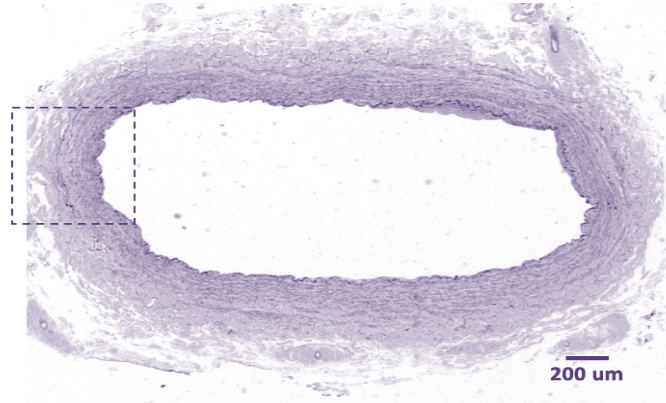
➤ A case-control study of basilic veins from 32 CKD patients undergoing AVF creation and 30 non-CKD organ transplant donors.

# Methods (continued)

Control Vein



CKD Vein



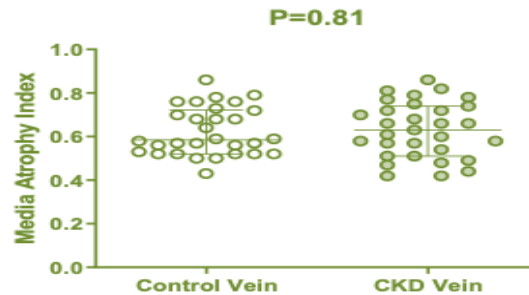
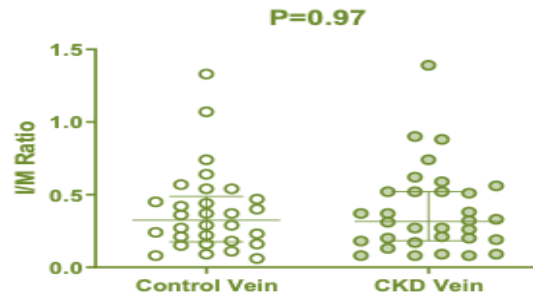
- Venous cross-sections stained in Masson's Trichrome.
- Measurements:
  - parameters of intimal hyperplasia (intimal thickness, intima/media area ratio)
  - wall thickness
  - medial hypertrophy
  - fibrosis

# Results

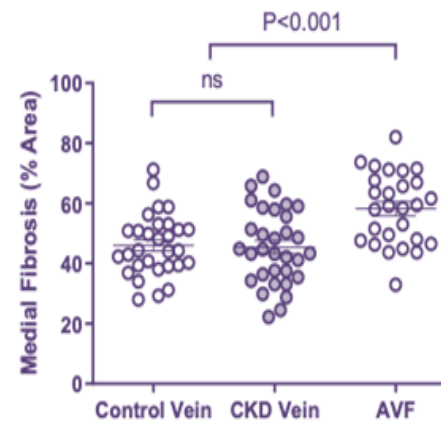
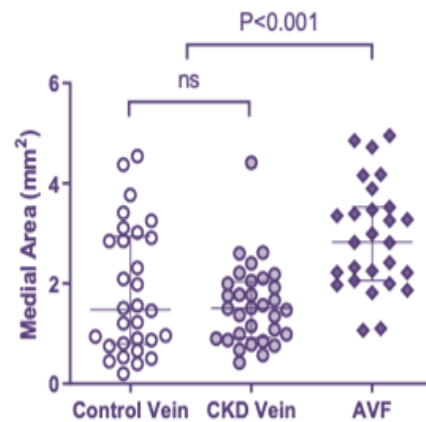
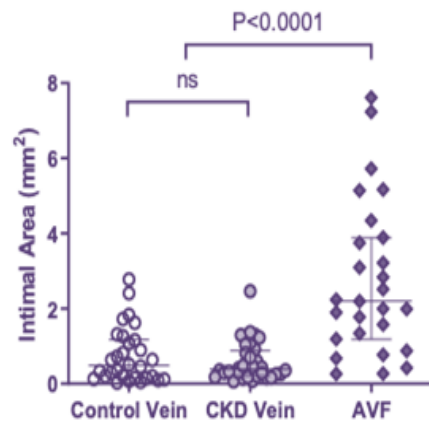
	Non-CKD Veins	CKD Veins	<i>P</i>
No.	30	32	
<b>Age – mean ± SD</b>	<b>47 ± 14</b>	<b>55 ± 15</b>	<b>0.023</b>
Females (%)	11 (37)	15 (47)	0.45
<i>Ethnicity</i>			<b>0.046</b>
<b>AA (%)</b>	<b>6 (20)</b>	<b>16 (50)</b>	<b>0.018</b>
Hispanic (%)	14 (47)	10 (31)	0.30
White (%)	10 (33)	6 (19)	0.25
<i>Comorbidities (%)</i>			
<b>HTN</b>	<b>14 (47)</b>	<b>31 (97)</b>	<b>0.0001</b>
<b>DM</b>	<b>4 (13)</b>	<b>16 (50)</b>	<b>0.0027</b>
CAD	3 (10)	7 (22)	0.30
CHF	2 (7)	6 (19)	0.26
<b>PAD</b>	<b>-</b>	<b>6 (19)</b>	<b>0.024</b>
CVA/TIA	1 (3)	4 (13)	0.36
Smoking	4 (13)	11 (34)	0.076

➤ **Table 1.**  
Demographic characteristics and comorbidities of CKD and non-CKD patients.

# Results (continued)



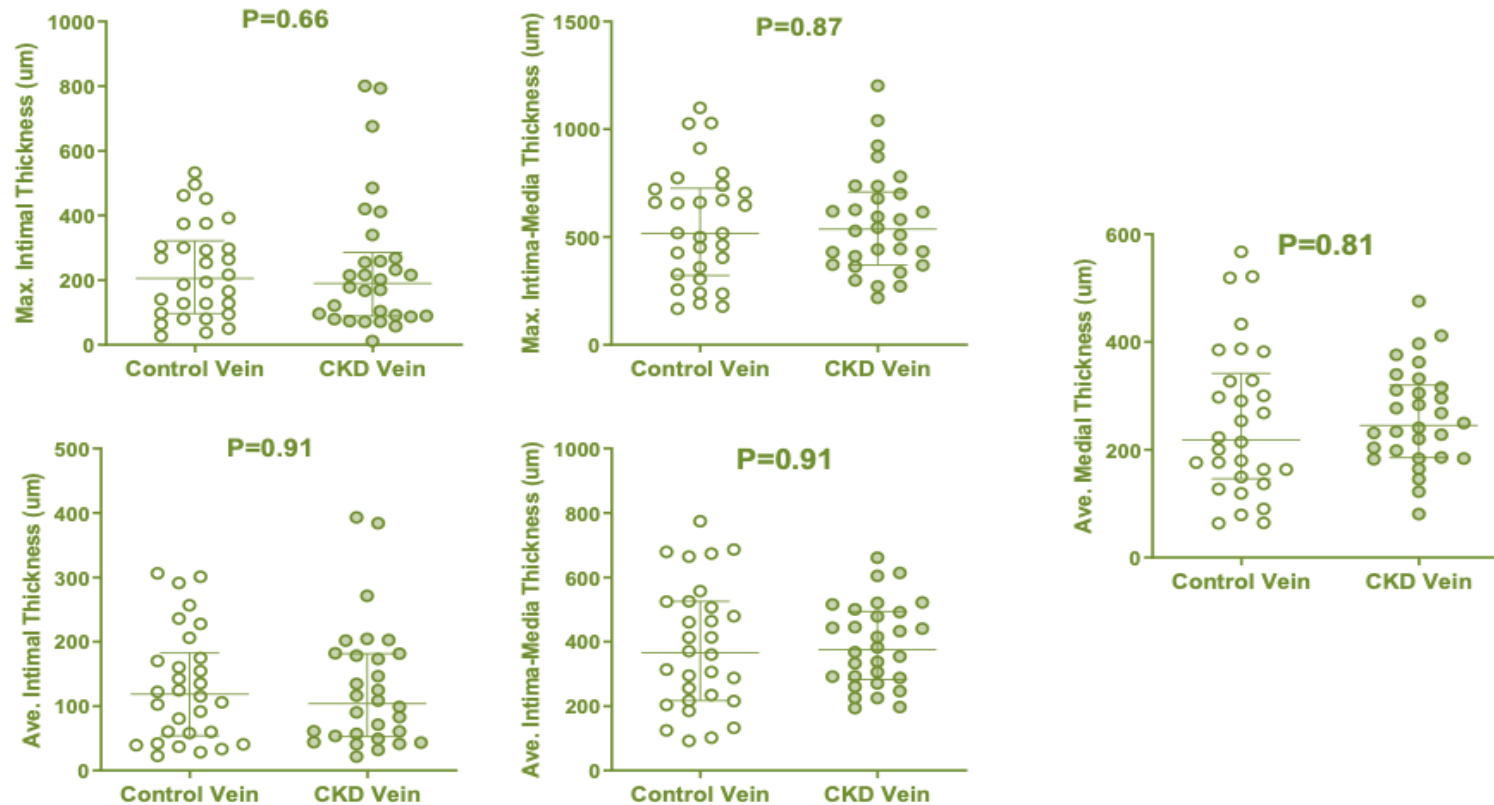
Comparing control veins, CKD veins, and AVFs. Intimal area is similar between the two type of veins, but medial area decreases in CKD veins = medial atrophy?



Comparing control veins with CKD veins that matured or failed. Medial area decreases in CKD veins but does not predispose for AVF outcome



# Results (continued)



- Differences in baseline characteristics between CKD and non-CKD are thought to contribute to worse vein morphometry.
- However, we found no significant differences in the morphometric parameters evaluated.

# Conclusions

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- CKD and its comorbid baseline characteristics did not significantly affect the morphometry of pre-access basilic veins.
- Additional studies on the postoperative response to AVF creation surgery are warranted to understand the full implication of CKD on the arteriovenous system to potentially prevent or treat vascular access complications.

# Acknowledgements

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and Blood Institute



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Drs. Martinez and Vazquez

**Martinez *et al.* 2019**  
***AJKD***

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# References

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Thank You