屯 門 醫 院
TUEN MUN HOSPITAL

Right-sided adrenal venous sampling: retrospective evaluation of success rates and influencing factors

LP Ng[1], OL Chan[1], YS Lee[1], PL Cheung[1], CB Tan[1], JCW Siu[1]
[1]Department of Radiology, Tuen Mun Hospital

Introduction

- Adrenal venous sampling (AVS) is the gold standard for diagnosing and localizing adrenal adenoma in patients with primary aldosteronism. Successful cannulation of bilateral adrenal veins is crucial for diagnostic reliability. However, right-sided sampling can be technically challenging due to the small caliber and variable anatomy of the right adrenal vein. The reported success rates of right-sided sampling is generally low, ranging from 40-98%.
- Prior studies by various centers evaluated the technical success of AVS and the influencing factors, in which some found associations with sex of patient & operator experience.
- This retrospective study aims to review our AVS cases to evaluate the technical success of right-sided AVS and the influencing factors.

Materials & Methods

- All consecutive cases of AVS performed between January 2020 to June 2025 were retrieved from RIS.
- Inclusion criteria: procedure performed for lateralization of primary hyperaldosteronism aligning with our standard AVS protocol
- Patient demographics, clinical data, CT findings and AVS procedural details were reviewed.
- All procedures employed cosyntropin stimulation, technical success was defined as a selectivity index ≥5.0.
- Associations between right-sided technical success and demographic or procedural variables were then assessed using statistical tests.

Table 1. Patient demographics

Parameters	n (%)
Number of patients	41
Number of AVS procedures	43
Age (median 56 years; IQR=14)	
Sex of patient Male Female	 27 (65.9) 14 (34.1)
BMI (median 26.3 kg/m^2; IQR=5.4)	

Table 3. Procedural outcomes

AVS	Right-sided n (%)	Left-sided n (%)
Technical success	25 (58.1)	40 (93.0)
Technical failure	18 (41.9)	3 (7.0)

Table 2. Procedural details

Parameters	n (%)
Catheters used for right-sided AVS 4F S1 catheter 4F SHK catheter 4F C1 catheter Others	 22 (51.2) 10 (23.3) 6 (14.0) 5 (11.6)
Microcatheters used for right-sided AVS No Yes 2.4F Merit microcatheter 2.4F Progreat microcatheter	 36 (83.7) 7 (16.3) 6 (14.0) 1 (2.3)
Microguidewires used for right-sided AVS No Yes 0.014” Traxcess microguidewire 0.014” True Form microguidewire	 35 (81.4) 8 (18.6) 7 (16.3) 1 (2.3)

Table 4. Factors for successful right-sided AVS	
Technical factors	p value
Choice of guiding catheter	**0.047**
SHK catheter	**0.028**
S1 catheter	0.268
C1 catheter	1.000
Use of microcatheter / microguidewire	0.209
Demographic factors	p value
Age	0.877
Sex	0.856
BMI	0.988
p value <0.05 is considered statistically significant	

Fig 1. DSA showing cannulation of right adrenal vein with 4F SHK catheter

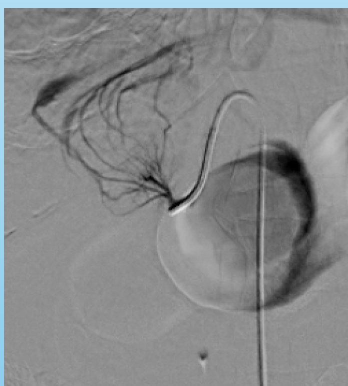

Fig 2. DSA showing cannulation of right adrenal vein with 4F S1 catheter

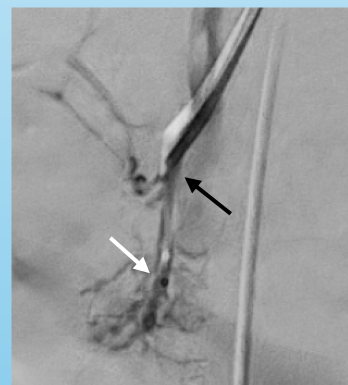

Fig 3. DSA showing cannulation of right adrenal vein with 4F S1 catheter (tip indicated by black arrow) and 2.4F Merit microcatheter (tip indicated by white arrow)

Conclusion

- Right-sided AVS success was substantially lower than left-sided success, which aligns with findings from other published studies & reflects the recognised anatomical difficulty of right adrenal vein catheterisation.
- Guiding catheter choice, in particular the use of an SHK catheter, was associated with higher success.
- No associations were observed with patient demographics or microcatheter/ microguidewire use.

References

1. Kobayashi K, Alkukhun L, Rey E, Salaskar A, Acharya R. Adrenal Vein Sampling: Tips and Tricks. Radiographics. 2024 May;44(5):e230115. doi: 10.1148/rg.230115. PMID: 38662586.
2. Chayovan T, Limumpornpetch P, Hongsakul K. Success rate of adrenal venous sampling and predictors for success: a retrospective study. Pol J Radiol. 2019 Mar 4;84:e136-e141. doi: 10.5114/pjr.2019.84178. PMID: 31019607; PMCID: PMC6479143.
3. Jakobsson H, Farmaki K, Sakinis A, Ehn O, Johannsson G, Ragnarsson O. Adrenal venous sampling: the learning curve of a single interventionalist with 282 consecutive procedures. Diagn Interv Radiol. 2018 Mar-Apr;24(2):89-93. doi: 10.5152/dir.2018.17397. PMID: 29467114; PMCID: PMC5873508.