A Novel Therapeutic Approach for Dialysis-Refractory Hypotension in Massive ADPKD via Salvage Renal Artery Embolization (RAE): A Case Report

Poster No. P72
Presenter: JUNHO AN

Objectives:

In advanced Autosomal Dominant Polycystic Kidney Disease (ADPKD), refractory hypotension often complicates life-sustaining hemodialysis (HD). When alternative modalities such as peritoneal dialysis (PD) also fail and surgical intervention is precluded by high operative risk, clinicians face a therapeutic impasse.

To address the clinical challenge of refractory hypotension in advanced ADPKD patients.

To evaluate the clinical efficacy and feasibility of bilateral renal artery embolization (RAE) as a salvage strategy for patients who have exhausted conventional dialysis options and are considered ineligible for surgical intervention.

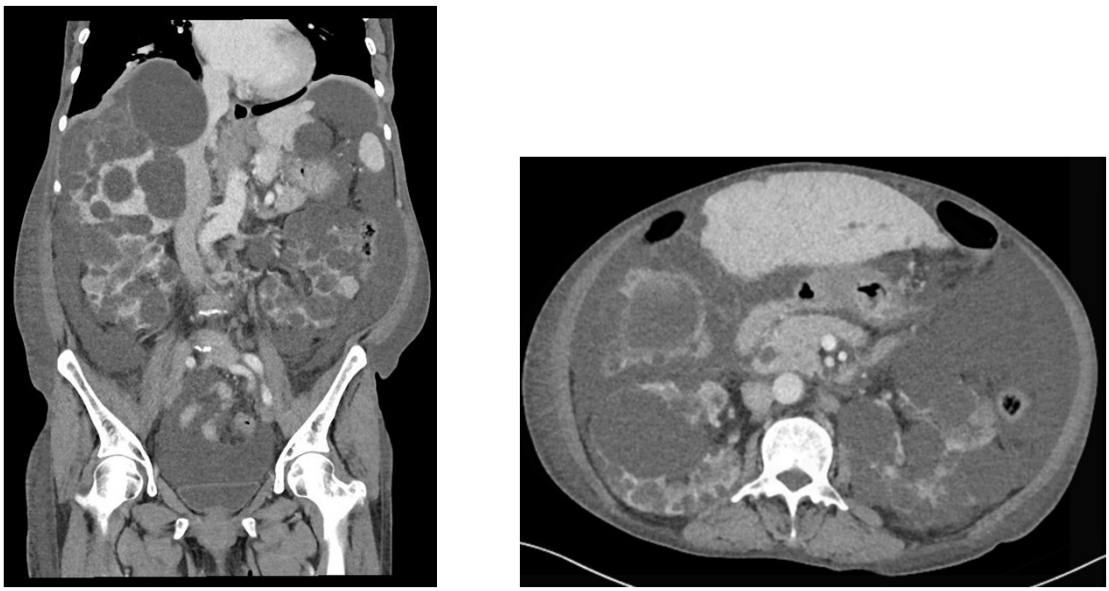


Figure 1. Preprocedural computed tomography (CT) scans.
(A) Coronal and **(B)** axial contrast-enhanced CT views demonstrate massive enlargement of both kidneys due to autosomal dominant polycystic kidney disease. The severe mass effect from the multiple cysts causes significant extrinsic compression of the inferior vena cava (IVC).

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Material(s) and Method(s):

Patient:

A 73-year-old female with massive ADPKD and polycystic liver disease.

Clinical Status:

Failed maintenance HD due to severe intradialytic hypotension (SBP < 90 mmHg).

Transitioned to PD but failed due to limited peritoneal space with abdominal symptoms and recurrent peritonitis.

A surgical liver lobectomy was proposed for IVC

decompression but was deemed unfeasible due to high surgical risk.

Procedure:

Planned bilateral RAE as a salvage strategy to alleviate bulk abdominal symptoms and attempt to improve circulatory stability.

Bilateral RAE performed using a combination of PVA particles (710–1000 μm) for distal bed occlusion and metallic coils (Nester and Tornado) for proximal trunk sacrifice.



Figure 2. Postprocedural radiograph.

The follow-up radiograph demonstrates radio-opaque metallic coils (arrows) status post bilateral renal artery embolization (RAE).

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Results:

Renal Volume:

Total kidney volume (TKV) reduced by 43.6% (1,740.2 to 980.7 mL) at 6-month follow-up.

Hemodynamic Improvement:

Mean intradialytic SBP significantly increased from 86.3 ± 7.4 to 117.5 ± 7.8 mmHg ($p < 0.001$).

Clinical Outcomes:

Successful and stable transition back to HD.

Improvement in metabolic state (Serum albumin: 2.28 ± 0.23 to 3.18 ± 0.08 g/dL).

Hemodynamic stability was achieved despite persistent mechanical IVC compression on follow-up imaging.

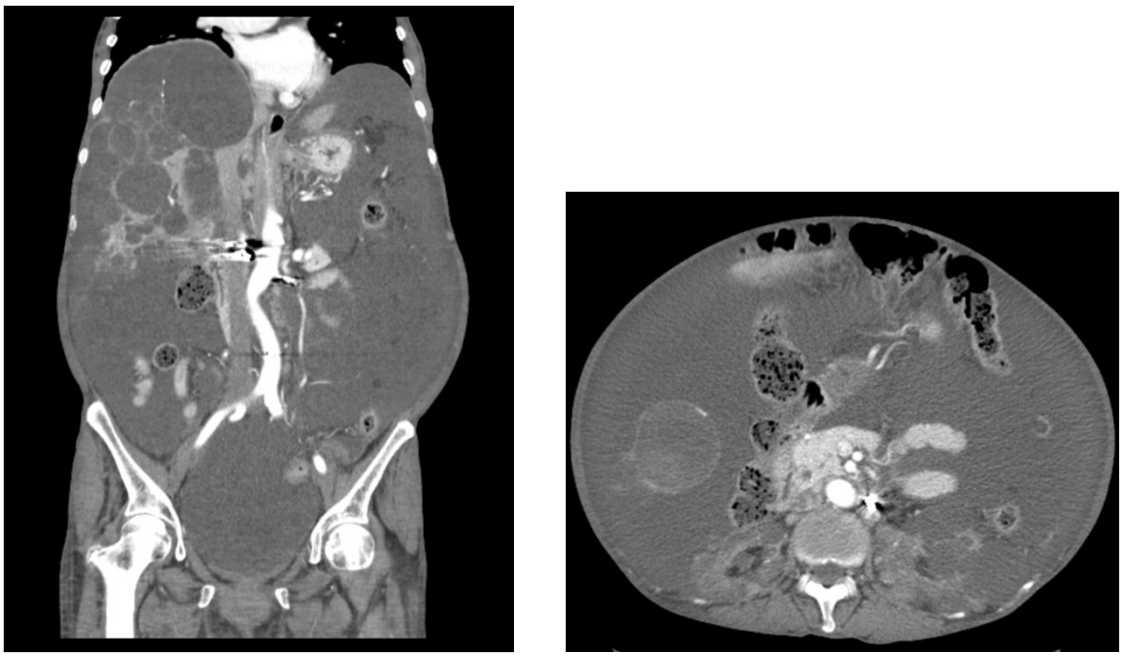


Figure 3. Follow-up computed tomography (CT) scans at 6 months post-procedure.
(A) Coronal and **(B)** axial contrast-enhanced CT views obtained 6 months after salvage renal artery embolization demonstrate a significant reduction in bilateral kidney volume.

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Conclusions:

Beyond Mechanical Decompression:

The clinical outcome in this case suggests that the benefits of RAE in advanced ADPKD may extend beyond simple volume reduction. The observed improvement in hemodynamic tolerance, occurring while IVC compression remained unchanged, suggests that RAE may impact systemic vascular parameters.

Feasible Salvage Option:

Bilateral RAE is a powerful salvage therapy for elderly ADPKD patients who have exhausted all conventional dialysis modalities and are ineligible for surgery. By addressing abnormal renal vascular architecture and potentially redistributing systemic blood flow, RAE can facilitate a successful transition back to hemodialysis through improved physiological stabilization.

Limitation:

As a single-case report, these findings do not provide definitive clinical guidelines and should be interpreted with caution.