

# Post PCN Tube Removal Bleeding in a Horseshoe Kidney - A Case Study

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## ABSTRACT

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Post operative bleeding following Per Cutaneous Nephro Lithotomy (PCNL) is one of the most dreaded complications of PCNL. Even though most of the post-PCNL bleeds subside with conservative management, Super-selective Angio Embolisation (SAE) is an effective means of controlling post-PCNL bleed. We describe a case presenting with bleed after removal of nephrostomy tube. Evaluation revealed pseudoaneurysm in segmental renal artery. SAE relieved the symptoms.

**Keywords:** PCNL, Horseshoe Kidney (HSK), SAE (Selective Artery Angioembolization)

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## INTRODUCTION

Percutaneous nephrolithotomy (PCNL) for renal calculi was first described by Fernstrom and Johansson. The complications of PCNL include fever and infection, but the most dreaded one is bleeding, which occurs in 14–24% of patients. Simple supportive care and transfusions control most episodes of bleeding. However, in 0.8% of cases, surgical intervention with angiographic embolization or open exploration is required. Horseshoe kidney (HK) presents several anatomical issues. This is due to incomplete cephalad migration and malrotation of the kidney, a consequence of entrapment of the isthmus under the inferior mesenteric artery. The Pelvi Ureteric Junction (PUJ) is commonly deformed because of high insertion of ureter into a typically elongated renal pelvis.

## PCNL IN HORSESHOE KIDNEY

As the kidney is lower and centrally oriented, abnormal blood supply may be present. Puncture of dorsal or dorsolateral aspect of kidney will be well away from major renal vessels. Lower pole calyces lie in coronal plane, angled medially and are seldom suitable for direct puncture. The upper pole calyces are more posterior and lateral and often sub coastal, providing a convenient and relatively safe route for PCNL access. In normal kidney anatomy, upper pole calyces are in

front of 11 & 12 ribs; entering them needs a supra-costal approach that may cause thoracic complications such as pneumothorax. However, in HK, as the kidney is placed lower than normal, there is usually no need for supracostal approach.

## CASE REPORT

A 53 year-old male hailing from Trivandrum was admitted with chief complaints of left side flank pain for 3 months which was intermittent, dull aching, nonradiating and used to get relieved after taking medications, not associated with fever and chills, nausea or vomiting. Patient complained of 1-2 episodes of hematuria which

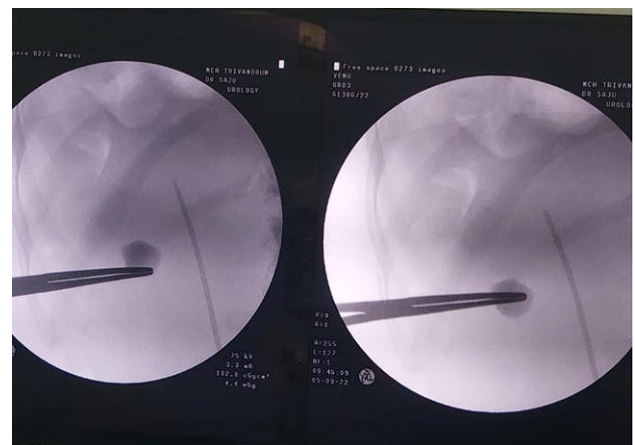


Figure 1. Immediate Pre operative C-Arm image showing calculus with ureteric catheter in situ

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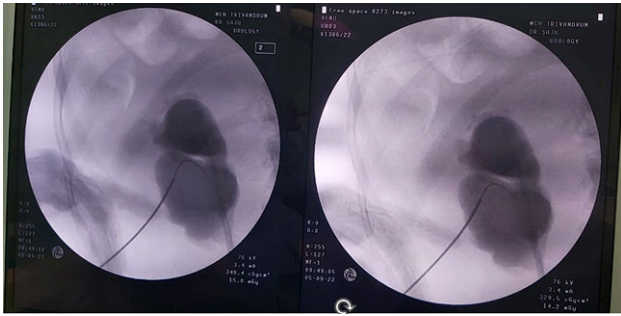


Figure 2. Post RGP and middle calyceal puncture with glide wire in situ

was painless and not associated with passage of clots. No complaints of pyuria, lithuria or dysuria. Subsequently, he was evaluated with CTUrogram which was suggestive of Horseshoe Kidney (HK), with both renal pelvis and ureters arising from kidney anteriorly with ureters having normal insertion into urinary bladder. 3 x 2 mm calculus was visualised in inter polar region of Right kidney (Figure 1). Left kidney showed approximately 4-5 calculi in upper and lower pole, largest measuring 21 x 16 mm in lower pole.<sup>1</sup> No extension into renal pelvis. Patient was worked up for left PCNL. All pre op parameters were within normal range and left prone PCNL was done (Figure 2 & 3).

Post op period was uneventful. On removal of PCN tube on post op.<sup>2,3</sup> day 3, there was profuse bleeding from nephrostomy site. Compression dressing was



Figure 4. 3 mm pseudo aneurysm in segmental branch in lower pole

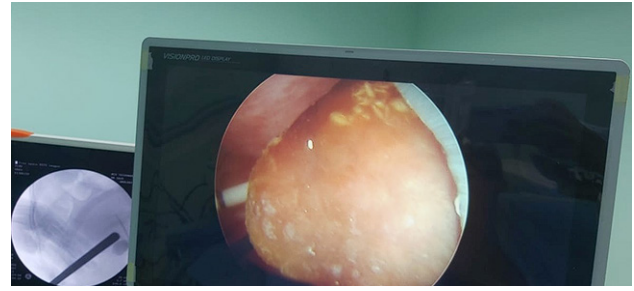


Figure 3. 2.5 cm calculus in renal pelvis

done and 1unit PRBC transfusion was done. Patient developed hematuria after that which was gross and associated with passage of clots leading to PUC block multiple times. Pt also had drop in haemoglobin which was managed with 4 units of PRBC transfusion. As patient had persistent hematuria, CT Angiogram was done to look for the cause of Hematuria.

### CT ANGIOGRAM

It showed horseshoe kidney with post-surgical left PCS dilatation and hyper dense clots within, more towards left lower pole. There was no definite pseudo aneurysm / AVF visualised. The vessels to the lower pole showed evidence of diffuse spasm. Prominent vein was present in left lower pole. Hematuria was persistent and there was hemoglobin drop. After discussion with Interventional Radiology team, Renal angiogram and angi-embolisation was done. Through right Radial Artery access, Angiogram of left renal artery and accessory renal artery were done. It showed a tiny (3mm) pseudo aneurysm in one of the segmental arteries in left lower



Figure 5. Post embolization check angiogram showing normal renal vessels

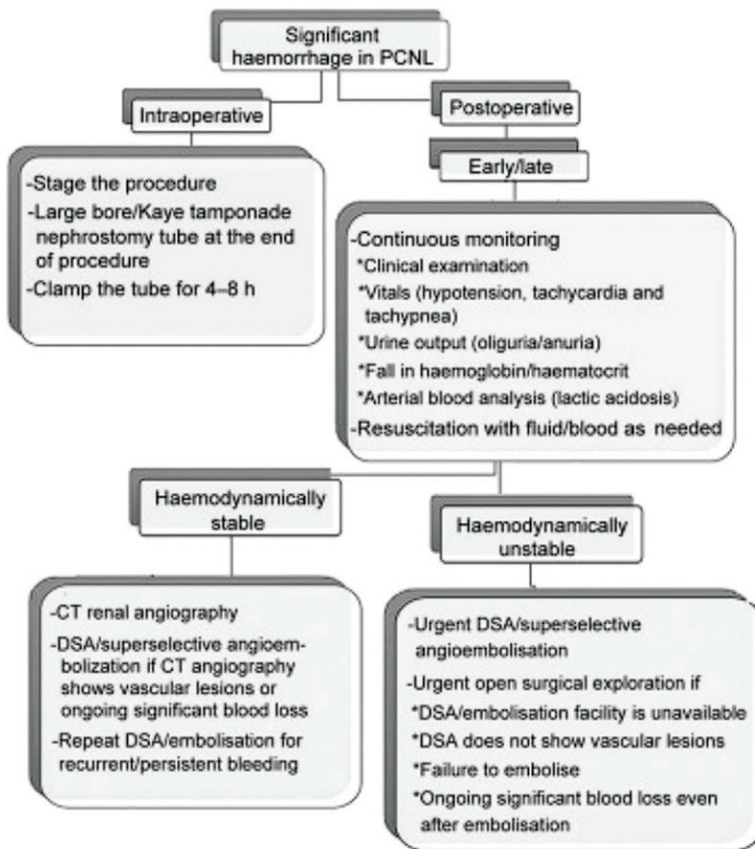


Figure 6. Management of Post PCNL bleeding<sup>4</sup>

pole (Figure 4). Feeder branch was embolised with 250-500 U PVA particles till complete obliteration of pseudo aneurysm and feeder. Post embolisation check angiogram showed no opacification of feeder segmental branch and no fresh changes in remaining arteries (Figure 5).

## DISCUSSION

Alarming variables for post op bleeding following PCNL were addressed in Arab journal of Urology. 17 patients out of 200 developed post op bleeding. Most of the patients responded to conservative treatment. 2 patients developed bleeding from tract after removal of nephrostomy tube. Bleeding through tract after removal of nephrostomy tube were managed immediate reinsertion of nephrostomy tube and observation, bed rest and IV crystalloids. 1 patient required angioembolisation after failure of conservative treatment.

The aim of any endovascular intervention for post PCNL bleeding is to achieve SAE (super selective angioembolisation). The success of SAE has been described as the arrest of bleeding by blocking the offending

vessel and maintaining normal vascularity to the surrounding normal kidney. The success rates exceed 80% in most of the series.

Richstone et al. reported pseudoaneurysm as the commonest finding in 53% of the patients; this was followed by lacerated renal vessels and venous malformations.

Jain et al. also found arteriovenous fistula to be marginally commoner than pseudoaneurysm (43.9 vs. 41.5%). Jain et al noted that among the common bleeding sites identified, the commonest was lower pole (48.6%), followed by the upper pole (31.4%) and the midpole (7%).

The complications of SAE include postembolization syndrome, coil migration, and risk of renal deterioration.<sup>5</sup> Postembolisation syndrome has been described as flank pain and raised white blood cell count with nausea and vomiting. Ninety percent of the patients experience this syndrome in varying degrees of severity. The most common symptom of concern for the patient is severe pain, which has onset within an hour of embolization and

may at times also require narcotic analgesics. Our patient also complained of this.

## CONCLUSION

Post-PCNL bleeding is a life-threatening complication. Most of post-PCNL bleeds subside with conservative management. SAE is an effective means of controlling post-PCNL bleeding. A skilled interventionist can achieve successful control of bleeding with a variety of agents available, which include gel foam and coils.

## END NOTE

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**Conflict of Interest:** None declared

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