

Vascular complication after percutaneous nephrolithotomy (PCNL) in Kosar hospital

Davoud Arab¹ (M.D.), Arash Ardestani Zadeh^{2,*} (M.D.)

^{1,2} Clinical Research Development Unit, Kowsar Educational, Research and Therapeutic Hospital, Semnan University of Medical Sciences, Semnan, Iran

Abstract

Background and Aim: Percutaneous nephrolithotomy (PCNL) is a gold standard treatment of large kidney stones. Hemorrhage due to vascular injuries is the most frequent complication of this procedure.. Post-PCNL renal arterial injuries is classified into three types: PseudoAneurysm (PA), Arteriovenous Fistula (AVF), and Arterio-caliceal Fistula (ACF). Post-PCNL vascular complications included arteriovenous fistula and pseudoaneurysm can cause early or late bleeding and result in unstable condition. We studied renal vascular injuries in patients that underwent PCNL in Kosar Hospital.

Methods: This study was a retrospective study that its data was obtained from medical records of 297 patients that were underwent PCNL within the last 10 years (Between August 2014 and November 2024) in Semnan Kosar Hospital. All patients were underwent preoperative radiological evaluation such as plain x-ray urinary tract film and non-contrast computed tomography with or without intravenous urography (IVU) to estimate stone characteristics, anatomical abnormalities and degree of hydronephrosis. PCNL was performed as the standard technique in prone position and an intracorporeal pneumatic lithotripter (Swiss lithoclast) and grasping forceps was used for fragmentation and retrieval of fragmented stones. Posterior inferior or superior calyceal puncture was the commonest initial access tract.. We used combined fluoroscopic/ultrasound guidance for renal access.

Results: 297 patients were treated) 195men and 102 women(with a mean age of 53 years (range 18-81 yrs) and mean stone size of 30.5 mm (range 20-55 mm) .The mean operative time was 120±35.5min. Overall, stone clearance rate was 91.5 % after single PCNL. None of the patients had organ injury or sepsis or death. Arteriovenous fistula (AVF) was detected in one , and pseudoaneurysm (PA) in two of these patients. Arterio-caliceal Fistula was happened in one patient . while 3 of the patients improved spontaneously, only one patient underwent angioembolization to control bleeding.

Conclusion: At our center, vascular bleeding complications appear to be rare event after PCNL .A careful intraoperative good access to appreciated calyces significantly aid in the avoidance of vascular injury.

Keywords: Percutaneous nephrolithotomy; Complication; Vascular injuries