



USUAL TO UNUSUAL VASCULAR COMPLICATIONS ENCOUNTERED DURING ENDOVASCULAR MANAGEMENT OF RENAL BIOPSY COMPLICATIONS

Dr Zoya Shaik

MD Radiology.

Dr Sravan Kumar Marupaka

DMRD, DNB Radiology.

Dr J Venkateswarlu

MD Radiology, Intervention Radiologist.

ABSTRACT

Percutaneous renal biopsy is widely used for diagnosis, prognosis, and management of nephropathies. Early identification and embolization of the involved artery aids in effective management of the vascular complications and defers the need for nephrectomy. In this study, we aimed to evaluate various vascular injuries after renal biopsy requiring interventions. Pseudoaneurysm was the most common form of arterial injury. Target vessel was identified by angiography and successful embolization was done deferring nephrectomy. Deaths occurred due to haemorrhage.

KEYWORDS : Renal Biopsy, Vascular Injury, Angiography, Embolisation

INTRODUCTION:

Renal biopsy enables effective guidance of kidney diseases. Bleeding is the most common complication of renal biopsy. Complications not related to bleeding are much less frequent, and include pain, infection, and inadvertent injury to adjacent organs. Major complications include blood transfusion requirement, angiographic intervention, nephrectomy, bladder obstruction and death. Because of considerable loss of parenchyma, surgical approaches are no longer the first choice in most circumstances of renal vascular injury (7). Interventional treatment can locate abnormal blood vessels in a timely manner and achieve occlusion without losing normal renal parenchyma. Therefore, interventional therapy has become the first choice for treatment of iatrogenic renal vascular injury.(6)

MATERIALS AND METHODS

16 patients with a mean age of 45 years were included in the study. The patients underwent ultrasound (USG) guided percutaneous renal biopsy. Hematuria was the most common symptom in the patients.

Descending aorta angiography was performed with 5F pigtail catheter to determine if there was extravasation of contrast medium from the intercostal arteries or the lumbar arteries. Angiography of ipsilateral renal artery was then performed using cobra catheter to evaluate the target vessel. Super selective microcatheterisation of the involved artery was done. Metallic platinum micro coils or N-butyl cyanoacrylate embolotherapy were used for embolization of the involved vessels. The endpoint of embolization was total obliteration of the target vessel. After embolization, posterior-anterior and oblique angiography was performed again for evaluating the hemostatic effects.

RESULTS

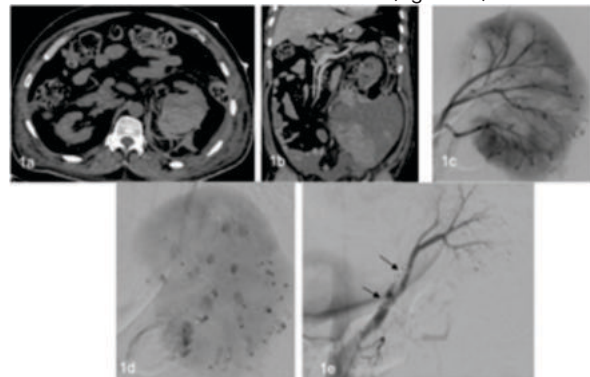
Pseudo aneurysms were the most common form of arterial injury (50%), followed by active extravasation (25%) from single (n=3) and multiple vessels (n=1) and arteriovenous fistula (18.75%). Renal arteries were the most commonly involved vessels (81.25%). Inferior mesenteric artery bleed was seen in 1 case, lumbar artery bleed at L1, L2 in one case and lumbar artery pseudo aneurysm in one case. In one case pathology could not be identified.

Embolization was performed using glue in 13(82.5%) and coiling in 1(6.25%) patient. 3 (18.75%) died due to hemorrhage. Procedure was successful in 93.75% patients (n=15).

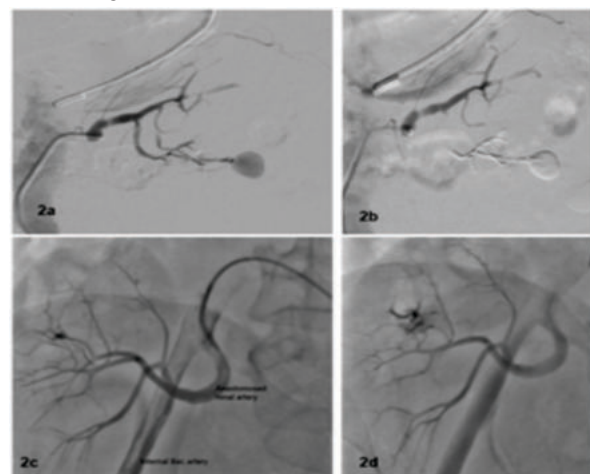
CASE STUDY

50-year-old lady presented with complaints of pain in left

lumbar region following biopsy. CECT abdomen revealed left perirenal hematoma (figure 1a) with collection in the left half of pelvis (figure 1b). Multiple micro bleeds (figure 1c,1d) were visualized in the lobar and arcuate arteries. Endovascular coils (black arrow) were placed in the left renal artery to reduce the vascular flow to the bleeders. (figure 1e).



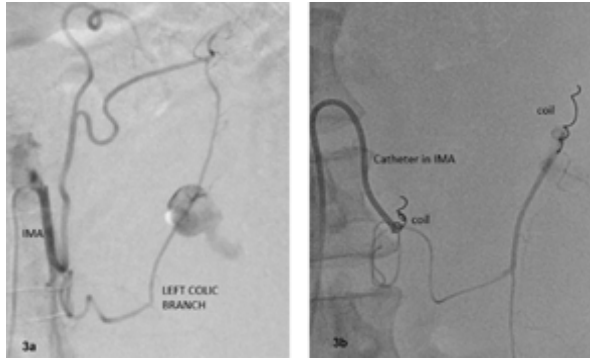
50-year-old gentleman presented with fall in hemoglobin and hypotension 2 days after renal biopsy. Digital subtraction angiography (DSA) revealed pseudo aneurysm of left lower polar renal artery which was successfully managed with glue (arrow). (figure 2a, 2b).



54-year-old gentleman presented with hematuria after biopsy of transplant kidney (figure 2c). DSA revealed aneurysm in lobar artery with active bleed (figure 2d arrow).

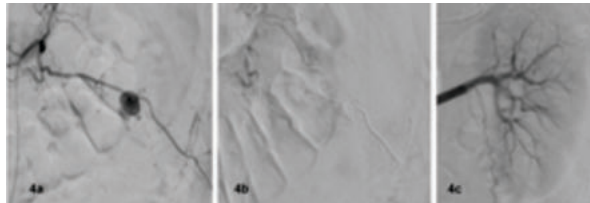
50-year-old gentleman presented with severe hypotension within 12hrs of renal biopsy. DSA revealed active leak from the

branch of left colic artery (figure 3a). Selective embolization of the artery was performed using coils (figure 3b).

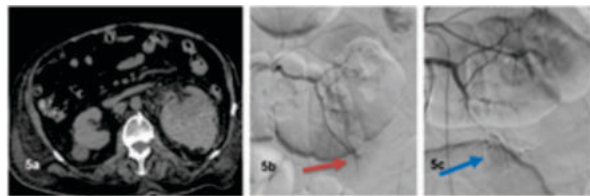


76-year-old gentleman presented with left lumbar pain after biopsy. USG of abdomen was unremarkable. DSA revealed aneurysm in left lumbar artery (figure 4a) which was successfully treated with embolization by glue

(figure 4b). Note: Renal vasculature was normal in this case (figure 4c).



38-year-old lady presented with complaints of hematuria following renal biopsy. Contrast enhanced CT scan of abdomen revealed Left perirenal hematoma (figure 5a). DSA revealed arteriovenous fistula of left lower polar renal artery (figure 5b red arrow). The feeding artery was embolised with glue (figure 5c blue arrow).



DISCUSSION

The median overall complication rate after renal biopsy has been reported as approximately 8.1% (IQR 2.7–11.1%). Of this, the most commonly reported complication is minor hemorrhage or hematoma not requiring treatment^[4,5], which is reported to be as high as 4.9% (Figs. 1a,5a)^[3]. The incidence of severe hemorrhage requiring treatment is very low at approximately 0.4% to 0.7%^[3,4]. Other less common complications include clinically significant pain (1.2%), gross hematuria (1.0%) and pneumothorax (0.6%)^[3].

CONCLUSION

Early identification and embolization of the involved artery aids in effective management of the vascular complications and defers the need for nephrectomy.

REFERENCES:

1. Trajceska, L., Severova-Andreevska, G., Dzekova-Vidimliski, P., Nikolov, I., Selim, G., Spasovski, G., Rambabova-Busletik, I., Ristovska, V., Grcevska, L., & Sikole, A. (2019). Complications and Risks of Percutaneous Renal Biopsy. *Open access Macedonian journal of medical sciences*, 7(6), 992–995. <https://doi.org/10.3889/oamjms.2019.226>
2. Bakdash, K., Schramm, K. M., Annam, A., Brown, M., Kondo, K., & Lindquist, J. D. (2019). Complications of Percutaneous Renal Biopsy. *Seminars in interventional radiology*, 36(2), 97–103. <https://doi.org/10.1055/s-0039-1688422>
3. Lee, J. S. Z., Hall, J., & Sutherland, T. (2021). Complications of renal interventions: a pictorial review of CT findings. *Insights into Imaging*, 12(1). <https://doi.org/10.1186/s13244-021-01048-9>
4. Marconi, L., Dabestani, S., Lam, T. B., Hofmann, F., Stewart, F., Norrie, J., Bex, A., Bensalah, K., Canfield, S. E., Hora, M., Kuczyk, M. A., Merseburger, A. S.,

- Mulders, P. F. A., Powles, T., Staehler, M., Ljungberg, B., & Volpe, A. (2016). Systematic Review and Meta-analysis of Diagnostic Accuracy of Percutaneous Renal Tumour Biopsy. *European urology*, 69(4), 660–673. <https://doi.org/10.1016/j.eururo.2015.07.072>
5. Parrish A. E. (1992). Complications of percutaneous renal biopsy: a review of 37 years' experience. *Clinical nephrology*, 38(3), 135–141.
6. Haochen, W., Jian, W., Li, S., Tianshi, L., Xiaoqiang, T., & Yinghua, Z. (2019). Superselective renal artery embolization for bleeding complications after percutaneous renal biopsy: a single-center experience. *The Journal of international medical research*, 47(4), 1649–1659. <https://doi.org/10.1177/030006051982852>
7. Regine, R., Palmieri, F., De Siero, M., Rescigno, A., Sica, V., Cantarella, R., & Villari, V. (2015). Embolization of traumatic and non-traumatic peripheral vascular lesions with Onyx. *Interventional medicine & applied science*, 7(1), 22–29. <https://doi.org/10.1556/IMAS.6.2014.00>