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Case Report

Embolization for the treatment of renal artery pseudoaneurysm following surgical nephrolithotomy: A case report[☆]

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ABSTRACT

Renal artery pseudoaneurysm is a rare but serious complication following trauma or renal surgery, leading to hematuria and deterioration of renal function. Selective renal artery embolization is an interventional radiologic procedure that can be used to treat these complications. We report a case of a 62 years old woman who developed hematuria following a segmental renal artery pseudoaneurysm after staghorn stones surgical nephrolithotomy, a selective embolization with steel coils was successfully performed.

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Introduction

Pseudoaneurysm of the renal artery or its branches is a rare but serious complication following trauma and renal procedures, with a reported occurrence of 0.6% for open renal surgery [1], the clinical presentation can widely range from asymptomatic forms to acute hemorrhagic shock.

We herein report a case of a 62 years old woman, who developed a hematuria with decreasing hemoglobin secondary to a segmental artery pseudoaneurysm following surgical extraction of staghorn calculus, that was treated successfully with selective renal artery embolization.

Case report

A 62-year-old woman treated for diabetes, developed recurrent left flank pain, a CT was performed demonstrating a staghorn calculus for which an open surgical nephrolithotomy was performed followed by a placement of a double J stent. Few days later, the patient was admitted for acute left flank pain with total and constant hematuria with blood clots resulting in an acute blood loss anemia requiring transfusion of packed red blood cells. A CT urogram was performed demonstrating a medio renal segmental artery pseudoaneurysm (Fig. 1) with a segmental infarct of the lower renal pole.

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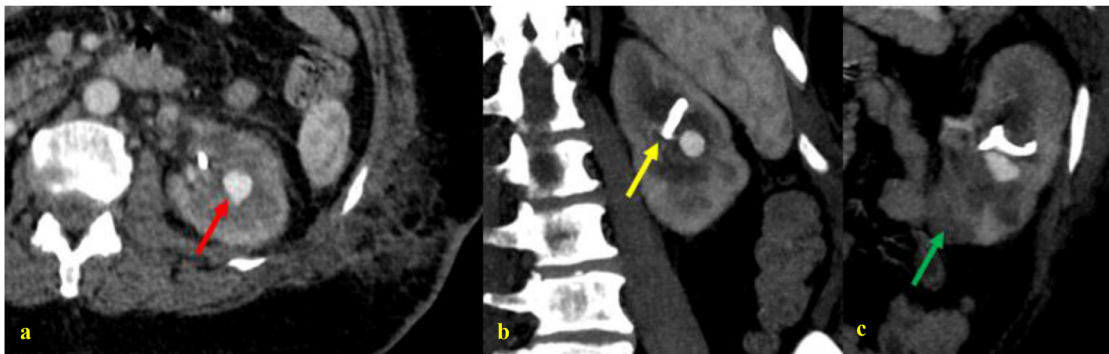


Fig. 1 – CT Urogram in arterial phase on axial (a), coronal (b) and sagittal (c) images demonstrating a medio renal aneurysm (red arrow) associated to a polar inferior infarct (green arrow) and a double J stent (yellow arrow).

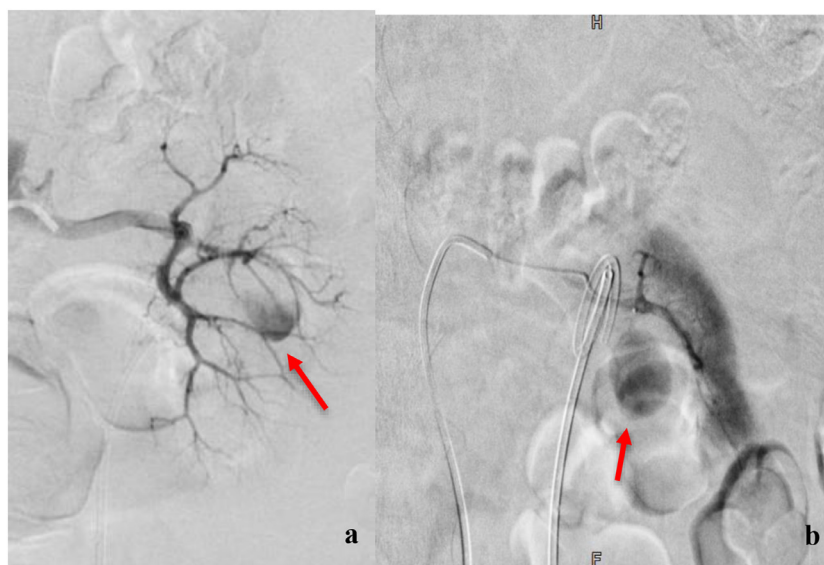


Fig. 2 – Angiogram of the left renal artery with a 5F Cobra II catheter (a) and a 2.4F Microcatheter (b), revealed a pseudoaneurysm of 15 mm originating from a segmental medio renal artery.

Transfemoral renal angiogram demonstrated a large renal artery pseudoaneurysm involving the left kidney which was supplied by a segmental medio renal artery.

An angiogram of the left renal artery with a 5F Cobra II (cook, Denmark) catheter revealed a pseudoaneurysm of 15 mm originating from a segmental medio renal artery (Fig. 2a).

A selective catheterism of the segmental branch was performed by a 2.4 F Microcatheter and advanced to the neck of the pseudoaneurysm (Fig. 2b) followed by the deposition at that level of a Micro coil (2*6 mm/6 cm; Fig. 3a).

Repeat angiogram demonstrated a complete exclusion of the pseudoaneurysm with no significant loss of vascular supply that was estimated at 10% (Fig. 3b).

No signs of post embolization syndrome were observed, after the procedure, hematuria ceased and hemoglobin stabilized, therefore, the patient was discharged two days following embolization.

A CT urogram was performed one month later showing a total exclusion of the pseudoaneurysm without extension of

the infarcted segment that occurred after surgery before the embolization (Fig. 4).

Discussion

Renal artery pseudoaneurysms are well reported in patients after penetrating or blunt abdominal trauma or post biopsy or other interventional procedures. They are frequently asymptomatic and remain self-limiting, however, in some cases, patients present with gross hematuria after rupture of the pseudoaneurysm into the renal collecting system. Clot retention with secondary partial obstruction of the collecting system is considered the reason for deterioration of renal function in some instances.

A diagnosis of the renal pseudoaneurysms can be made based on noninvasive methods and these include an ultrasonography, a computed tomography and a magnetic reso-

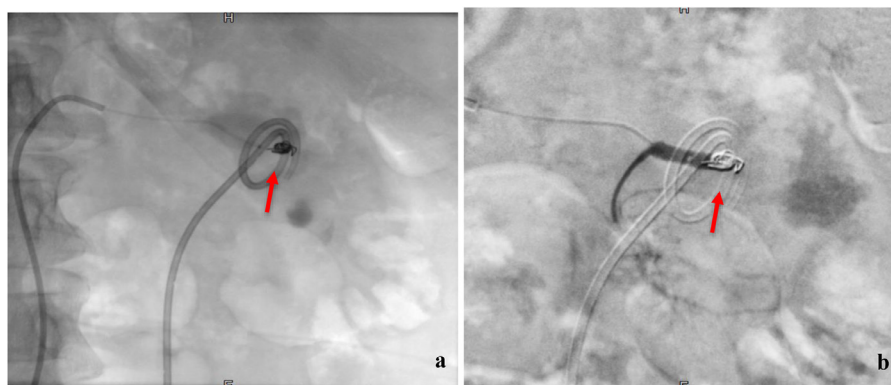


Fig. 3 – Post embolization angiographic images (a and b) demonstrating the total exclusion of the pseudoaneurysm after the placement of a microcoil (red arrow).



Fig. 4 – CT Urogram in arterial phase on axial (a), coronal (b) and sagittal (c) images demonstrating a microcoil (red arrow) resulting in a total exclusion of the pseudoaneurysm.

nance imaging. An angiography of the renal artery is an invasive method but it is useful to provide obscure anatomical data and to treat the corresponding cases [2]. In our case, a renal angio-scan was performed for evaluation of gross hematuria.

Treatment modalities for the renal pseudoaneurysm include observation, nonsurgical methods such as angiographic arterial embolization and surgical methods such as nephrectomy or partial nephrectomy [2].

Surgery, involving either clamping of the renal artery or ligating the feeding artery or arteries, has been performed to treat false renal aneurysms [3,4].

Compared with the risks associated with surgical exploration, percutaneous embolization is safe easier, more cost effective and is well reported in the literature for traumatic renal pseudoaneurysms [5].

Selective embolization of renal artery branches can be achieved by using microcatheters inserted coaxially over a guidewire. The embolization material should be chosen based on the patient's vascular anatomy and the specific clinical indication or pathologic process necessitating the procedure. Resorbable materials, coils, inert particles, and sclerosants (liquids) can be used, depending on the clinical indication and vascular structure to be occluded. The general goal is to oc-

clude the branch with hemorrhagic extravasation while sparing surrounding branches to limit parenchymal damage [6,7].

Conclusion

Renal artery pseudo aneurysm is a rare but serious complication of renal trauma and surgery, with a variable clinical presentation. The radiologist plays a crucial role in the management of pseudo aneurysms, allowing the diagnosis with CT urogram and the treatment with embolization that represents the modality of choice, offering excellent results with minimal risks.

Patient consent

We confirm that any aspect of the work covered in this manuscript that has involved human patients has been conducted with the ethical approval of all relevant bodies and that such approvals are acknowledged within the manuscript.

The consent to publish potentially identifying information, such as details or the case and photographs, was obtained from the patient.

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