

Intra-renal Pseudo-aneurysm as a complication of DJS insertion: case report & literature review

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Citation

M Banakhar, H Farsi. *Intra-renal Pseudo-aneurysm as a complication of DJS insertion: case report & literature review*. The Internet Journal of Urology. 2007 Volume 5 Number 2.

Abstract

Ureteric double J stenting is one of the important urologic procedures which is not free of complications. We report a case of a 55-year-old male patient who presented with macroscopic hematuria after DJS insertion. Angiography confirmed the presence of an intra-renal pseudo-aneurysm. Selective arterial embolization was performed successfully. Because of the rarity of the case, we decided to report it and review the literature on the subject

INTRODUCTION

Renal artery aneurysms constitute 22% of all visceral aneurysms, and their prevalence in the population varies from 0.01% to 1.0% [6]. Intrarenal aneurysms constitute 17% of all renal artery aneurysms [7]; The incidence of iatrogenic renovascular lesions has increased significantly, with the increase in the performance of minimally invasive urological procedures. [14] Intra renal pseudo-aneurysms are more commonly described as a complication of percutaneous procedures [15,16], and there are few reports of this complication following endourological surgeries [17]. The objective of this paper is to report an intra-renal pseudo-aneurysm following DJS insertion. To our knowledge, there is no documented report for such a case.

CASE REPORT

A 55-year-old male patient, known ischemic heart disease, diabetic, hypertensive & hypercholesterimic, had a history of ureteric injury, at the junction between the middle & the lower third, secondary to a complicated left ureteroscopy & laser stone fragmentation. That was managed by DJS insertion.

Six weeks later, the patient underwent removal of the DJS & retrograde pyelography which showed stricture at the lower third of the ureter, at the crossing of the iliac vessels, corresponding to the previous area of perforation. A Guide wire was introduced, then ureteroscopy was performed which confirmed the stricture. Balloon dilatation was then done.

Over the guide wire, ureteric dilatation using the balloon Ureteral dilator size 7F (4cm length balloon) was done under fluoroscopy guidance. 1.5 ml of dye was used to inflate the balloon. The balloon was kept inflated for 3 minutes.

During dilatation, the balloon ruptured & fluoroscopy showed dye leaking, at the stricture area, into the retroperitoneal space surrounding the left iliac vessels course signifying ureteric perforation.

Intra operatively, the patient was vitally stable & no bleeding could be identified. Next, the balloon was withdrawn & size 6F DJS was inserted smoothly over the guide wire to bridge the site of perforation.

Post operatively, the patient was vitally stable with minimal hematuria.

At the second day post operative, the patient developed acute coronary syndrome with chest pain. Cardiac enzymes & ECG were all within normal. He was managed by Tridil (Nitroglycerin) infusion (from 10meq/min tapered to 2meq/min till discontinued) & Isordil (Isosorbide dinitrate) 5mg sublingually TID for 5 days after which the patient was discharged in a good general condition, stable vitals, clear urine & hemoglobin of 12g/dl.

Five days later, the patient presented to the Emergency department with frank hematuria with clots. There was no history of direct kidney trauma nor dysuria.

The patient was conscious, oriented with Bp 150/80, pulse

105 .

Abdominal examination was within normal. His lab investigations :

CBC: wbc's 9.95 , Hb 7.6 , Plt 424,

Coagulation profile was normal.

Creatinine 126

The patient was admitted to the surgical ward. Intravenous fluids were started & Foley's catheter (3 way with irrigation) was inserted.

Two units of PRBCs were transfused , Fortum (Ceftazidime) 1gram I.V Q12 h was started .

Because of the recent ureteric perforation near the crossing of the iliac vessels, the patient was presumed to have uretero- iliac fistula

C.T angio was done which showed left perinephric collection. The crossing point of the left ureter over the left iliac vessels , with DJS at normal position and the iliac vessels were clearly visualized. This ruled out uretero- iliac fistula.(Figure 1).There was no dye excretion in the bladder during the arterial phase .

The three dimensional reconstructive pictures of the C.T angio showed an out pouching vascular lesion in an intra-renal arterial branch. (Figure 2&3)

Angiography was then done . The left iliac artery was seen with both main branches & the crossing area under the ureter was visualized . Neither uretero-iliac fistula nor dye leaking into the ureter & bladder was identified. During selective left renal angiography , left intra renal pseudo-aneurysm (2.6x1.3mm) of an upper pole posterior interlobular artery was identified medial to the DJS coil.

Super selective embolization was done with 355-500 contour particles, which resulted into closure of the pseudo-aneurysm.

After the angio-embolization, the urine cleared up. His Hb was stable & he was discharged 72 hours after the embolization.

His DJS was removed six weeks latter.

Figure 1

Figure1: C.T shows perinephric collection around the left kidney, the DJS with its hyperdense coiled reflection is in proper position.

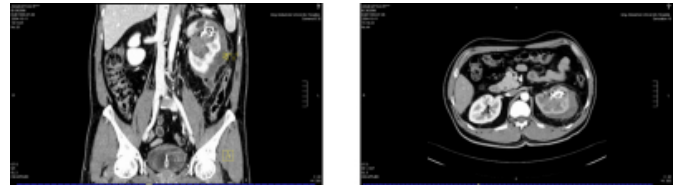


Figure 2

Figure 2: Reconstructive three dimensional C.T angiogram that shows the main vessels with its main branches, notice the DJS without any uretero- iliac fistula can be identified .A: anterior view , the intrarenal vessels here looks normal. At B; oblique view taken from the right side while the patient was tilted to the left, the posterior renal branch can be identified with the intrarenal pseudo-aneurysm at the posterior upper pole inter lobular artery.

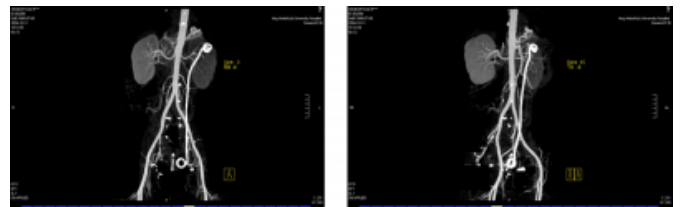


Figure 3

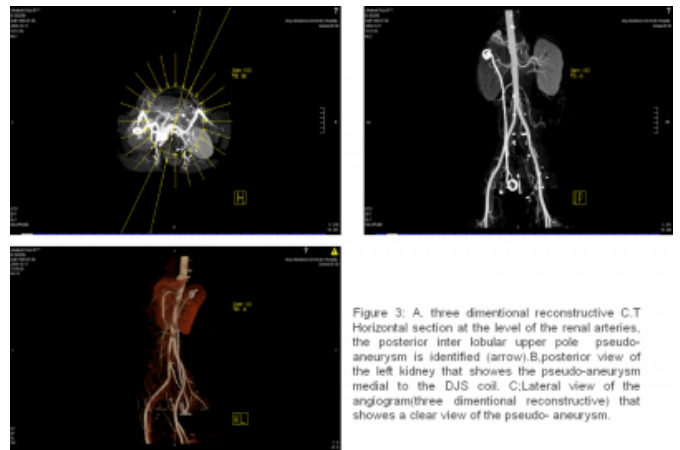


Figure 3: A. three dimensional reconstructive C.T Horizontal section at the level of the renal arteries, the posterior inter lobular upper pole pseudo-aneurysm is identified (arrow).B.posterior view of the left kidney that shows the pseudo-aneurysm medial to the DJS coil. C.Lateral view of the angiogram(three dimensional reconstructive) that shows a clear view of the pseudo- aneurysm.

Three months later, an IVP , Renogram showed no stricture & kidneys were normal.

DISCUSSION

Ureteral stents represent the most mature application of an indwelling endoluminal splint, having first been described by Zimskind et al in 1967.[,]

Certain consequences can be anticipated with implantation

of a foreign object into the urinary tract. There can also be unexpected complications.[19,20]

But no report of Intra renal pseudo-aneurysm secondary to DJS insertion has been reported.

The incidence of pseudo-aneurysm reported in the literature following percutaneous nephrolithotripsy ranges from 0.6 to 1%, and following percutaneous renal biopsy, from 2 to 3.4%. Phadke et al [14,16] in a retrospective study involving 2,108 percutaneous procedures, observed the formation of pseudo-aneurysms in only 0.9% of the cases. [14]

Heyns et al reported 17 % intra renal pseudo-aneurysm & arterio-venous fistula in adults managed non-operatively after renal trauma [2].It can occur as a result of trauma in both healthy and diseased kidney.

Ansari et al. described the occurrence of a giant pseudo-aneurysm on the posterior division of the renal artery as a possible complication of pyelolithotomy; [16] the lesion presented as a pulsatile mass and was associated with macroscopic hematuria and systemic hypertension. For which, embolization was not possible, and the authors decided to carry out a surgical procedure, namely total nephrectomy.

The main presentation of intra renal pseudo-aneurysm is frank hematuria with significant drop in hemoglobin.

The presentation can be late as long as 30 days [10].But still, patients may be asymptomatic for years and the pseudo-aneurysm may expand and rupture even before the diagnosis is made.[3]

Angiography is considered as the golden standard tool for diagnosis and treatment with selective embolization for intrarenal arterial lesions due to trauma or percutaneous procedures with non-controlled or recurrent hematuria. [5,8,9,11,12, 13]

Doppler ultrasound can be used to diagnose pseudo-aneurysm[4].

C.T angio with three dimensional reconstructive films can be diagnostic as in our case , which will eventually need angiography for confirmation & embolization.

Even in the case of uretero- iliac fistulae ,angiography is the role for diagnosis & therapy with angiographic stenting to close the fistulae tract.[18]

As the only insult to the kidney was DJS insertion ,we speculate that DJS insertion was the cause for the pseudo-aneurysm formation. This might occur due to arterial injury by the guide wire.

We were misled in the beginning because of the rarity of the case and the history of dye leaking along the course of the iliac vessels .Therefore our first working diagnosis was uretero – iliac fistula.

We can add DJS insertion to the list of causes for intra renal pseudo-aneurysms.

CONCLUSION

Intra renal pseudo-aneurysm can occur secondary to PCN, PCNL, renal biopsy and renal trauma. In our case we described another reason for intra renal pseudo-aneurysms which is DJS insertion .When suspected, doppler ultrasound or C.T angio with three dimensional reconstructive films can be used primarily, but still the golden standard is angiography for the simultaneous definitive diagnosis & treatment .Intra renal pseudo-aneurysm should be considered in the differential diagnosis in patients with massive hematuria following DJS insertion.

References

1. Zimskind PD, Fetter TR, Wilkerson JL (1967). Clinical use of long-term indwelling silicone rubber ureteral splints inserted cystoscopically. *J Urol* 97:840-844.
2. Heyns CF, van Vollenhoven P (1992) Increasing role of angiography & segmental artery embolization in the management of renal stab wounds.*J Urol* 147:1231-1234
3. Jebara VA, EL. Rami I, Achouh PE, Chelala D, Tabet G, Karam B (1998) Renal artery pseudo-aneurysm after blunt abdominal trauma, *J .Vasc Surgery* 27:362-365
4. B.More ,H Chardran, A .Pimpalwar,P. John (2004)A traumatic intra renal pseudo-aneurysm in a child. *Pediatric Surgery Int* 20:729-730
5. Calarn P, Nonent M, Fournler G ,Patin-philippel , Cledes J, Meriot P (1996) Endo vascular treatment of traumatic and iatrogenic intra renal arterial lesions by micro coil embolization, *Ann Radiol* 39:234-239
6. Bulbul MA, Farrow GA. (1992),Renal artery aneurysms .*Urology* ;40:124-126
7. Smith JN, Hinman F (1967), Intrarenal aneurysms. *J. Urol* ;97:990-996
8. Savastano S, Feltrin GP, Miotto D, Chiesura- Corona M (1990), Renal aneurysm and arteriovenous fistula management with transcatheter embolization, *Acta Radiol* ;31: 73-76
9. Kelekis D,Papageorgiou G,Brountzos EN,Kelekis N,Fezoulidis I (1994), A bleeding renal artery pseudo-aneurysm complicating renal biopsy treated with transcatheter embolization, *Int Angiol*,Jun;13(2) 170-2
10. Giannopoulos A, Manousakas T, Alexopoulou E ,Bronntzos E, Papadoukakis S, Kelekis D, (2004) Life threatening hematuria from renal pseudo aneurysm caused by blunt renal trauma treated with selective embolization, *Urol Int*;72(4):352-4

11. CorrP ,Hacking G,(1991), Embolization in traumatic intrarenal vascular injury,Clin Radiol;Apr;43(4):262-4
12. Miller DC, Forauer A, Faerber GJ, (2002) Successful angioembolization of renal artery pseudoaneurysms after blunt abdominal trauma, Urology, Mar;59(3):444
13. Saad DF, Gow KW, Redd D, Rausbaum G, Wulkan ML,(2005)
14. J Pediatr Surg. Nov;40(11):e65-7
15. Phadke RV, Swalani V, Rastogi H, et al.(1997) Iatrogenic renal vascular injuries and their radiological management. Clin Radiol;52:119-23.
16. Cantasdemir M, Adaletli I, Cebi D, Kantarci N, Selcuk D, Numan F.(2003) Emergency endovascular embolization of traumatic intrarenal arterial pseudoaneurysm with n-butyl cyanoacrylate. Clin Radiol;58:560-5.
17. Ansari MS, Dodamani D, Seth A.(2001) Giant pseudoaneurysm of posterior division of renal artery: a rare complication of pyelolithotomy. Int Urol Nephrol;32:337-40.
18. Angelsen A, Talseth T, Mjones JG, Hedlund H.(2000) Hypertension and pseudoaneurysm on the renal artery following retrograde endopyelotomy (Acucise®). Scand J Urol Nephrol 2000;34:79-80.
19. Ando S,Hattori K,Endo T, Inah H, Matsueda K, Imazuru T, Sakakibara Y, Kawai K, Shimazui T,akaza H,(2006)Bilateral uretero-common iliac arterial fistula with long term ureteral stent: a case report Nippon Hinyokika Gakkai Zasshi. 2006 Jul;97(5):752-6
20. Singh Hqbal (2003), Indwelling JJ ureteral stents-A current perspective and review of literature, Indian J of surgery;65(5):405-412
21. Raymond B. Dyer, Michael Y. Chen, Ronald J. Zagoria, John D. Regan, Charles G. Hood and Peter V. Kavanagh, (2002),Complications of ureteral stent placement,Radiographics;22:1005-1022

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