

GLUE EMBOLIZATION IN RENAL TRAUMA WITH MASSIVE HEMATURIA

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ABSTRACT

Two cases of renal trauma presented with massive hematuria. In the first case, renal angiography revealed traumatic AVF confined to the upper pole of left kidney. The renal angiography in the second case revealed two false aneurysms at the lower pole of right kidney. The super-selective angiography of the feeding arteries was done and glue embolization was performed. Post-embolized angiogram showed complete occlusion of the AVF and aneurysms. No further hematuria is observed.

AVF = Arterio - Venous Fistula.

INTRODUCTION

Approximately 80% of renal trauma are minor injury which surgery is not necessary.⁵ However persistent hematuria usually needed surgery. Surgical intervention often results in nephrectomy. Selective renal embolization is alternative treatment in order to preserve viable renal parenchyma. Gelfoam and coil have been used as embolic material for long time. Gelfoam is contraindicated in arteriovenous fistula. Coil needs available proper size. Glue can be used in arteriovenous fistula and always available. We report the successful glue embolization in arteriovenous fistula and false aneurysm. We propose glue as alternative embolic material in traumatic kidney.

CASE REPORT

CASE 1

A 23-year-old man was admitted after motorcycle accident. He developed massive hematuria and left flank pain. Upon the admission he was pale and hypotensive making blood transfu-

sion necessary. Renal angiography was performed. The study revealed traumatic AVF size 3x4 cm. confined to the upper pole of left kidney. The feeding arteries were two segmental branches supplying the upper pole of left kidney. (Fig.1). There was rapid early venous drainage to the left renal vein. The super-selective angiography to the most cranial branch was done with No.6 Fr. catheter. The pre-embolization angiogram revealed AVF with the rapid draining vein. A No.3 Fr. co-axial catheter was super-selectively applied deep into the feeding artery. Then, 0.8 cc of glue-lipiodol mixture was infused. Post-embolization angiogram revealed complete occlusion of the artery. Then super-selective angiography into another feeding artery was done and infusion of approximately 0.7cc glue-lipiodol mixture was performed. Post-embolization study revealed the complete occlusion of the artery and the complete disappearance of AVF (Fig.2). There is focal narrowing at the proximal renal artery which was suspected to be spasm. The patient tolerated the procedure well with no complication. No further he-

maturia was observed. The stable hemodynamic was achieved. Three-day follow-up color Doppler ultrasound revealed swelling at the upper pole of left kidney without the flow suggesting infarction. No evidence of AVF was seen. Follow-up renal angiogram at one-month later revealed infarction at the upper pole of left kidney. The preservation of the normal renal parenchyma was achieved. Focal narrowing of the main renal artery was disappeared. No evidence of hematuria is noted.

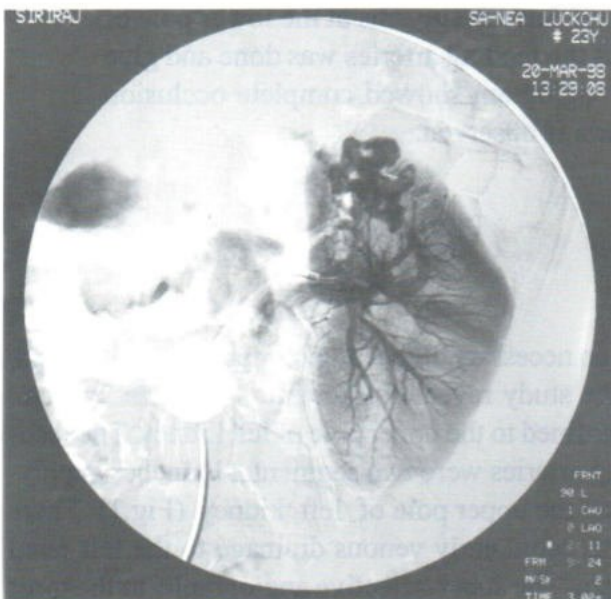


Fig.1 Left renal angiogram showing traumatic AVF size 3x4 cm. confined to the upper pole of left kidney. The feeding arteries were two segmental branches. There was rapid early venous drainage to the left renal vein.



Fig.2 Post-embolization study revealed the complete occlusion of the artery and the complete disappearance of AVF. Spasm of left renal artery is noted.

CASE2

A 19-year-old man was admitted after stab wounded at right flank. The wound was explored and cortical renal laceration was observed. The patient underwent renal repair. He was discharged without any complication. Three weeks later, he was admitted again with massive hematuria. He was pale and hypotensive needed blood transfusion. The renal angiography revealed false aneurysm size 1.5 cm. at the lower pole of right kidney supplied from two segmental branches. (Fig.3). The super-selective angiography was done into each branch using No. 3Fr.catheter co-axial system. Then infusion of 0.8 cc. glue-lipiodol mixture into each branch was performed (Fig.4). Post-embolization study revealed complete occlusion of the arteries and disappearance of the aneurysm (Fig.5). The recovery was uneventful without complication. The follow-up color Doppler ultrasonography of the traumatized kidney revealed thrombosed aneurysm with infarction at the lower pole of the kidney (Fig.6).

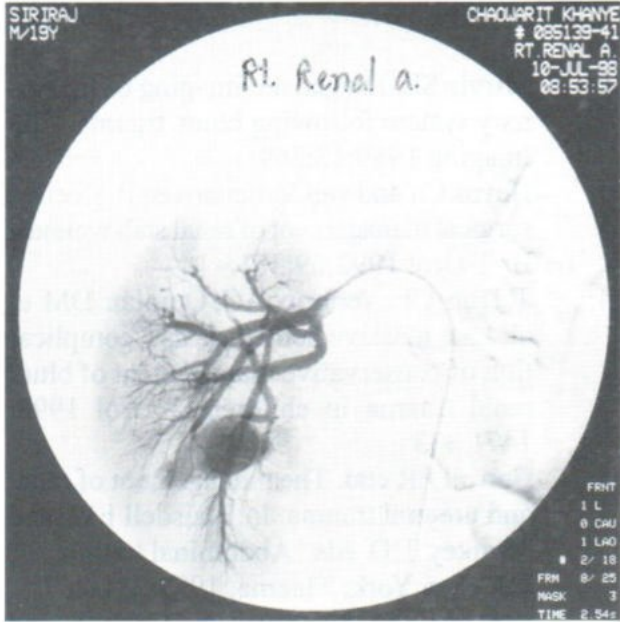


Fig. 3 Right renal angiogram showing false aneurysm size 1.5cm. at the lower pole of right kidney supplied from two segmental branches.

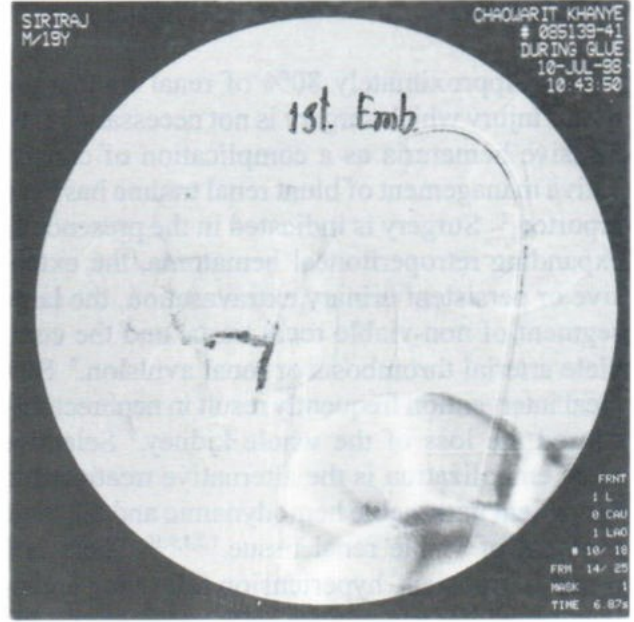


Fig. 4 Superselective into feeding arteries and infusion of 0.8 cc. glue-lipiodol mixture into each branch was performed

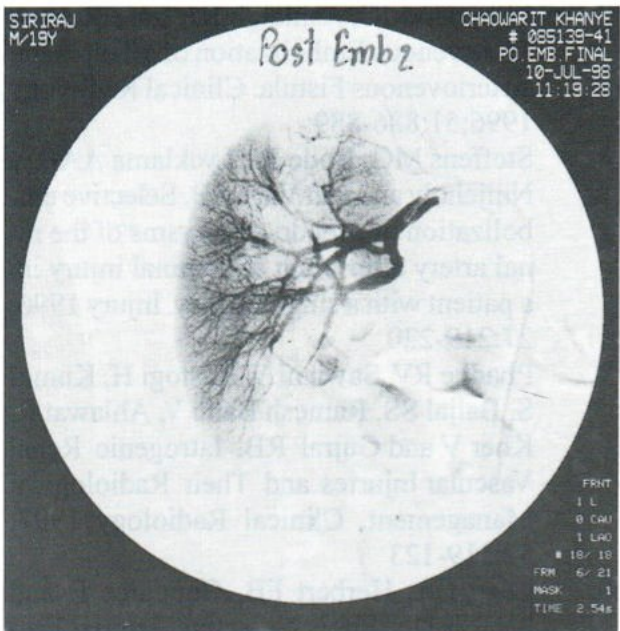


Fig. 5 Post-embolization study revealed complete occlusion of the arteries and disappearance of the aneurysm



Fig. 6 Follow-up color Doppler ultrasonography of the traumatized kidney revealed thrombosed aneurysm size 1.36x1.43cm. with infarction at the lower pole of the kidney

DISCUSSION

Approximately 80% of renal trauma are minor injury which surgery is not necessary.⁵ Late massive hematuria as a complication of conservative management of blunt renal trauma has been reported.⁴ Surgery is indicated in the presence of expanding retroperitoneal hematoma, the extensive or persistent urinary extravasation, the large segment of non-viable renal tissue and the complete arterial thrombosis or renal avulsion.³ Surgical intervention frequently result in nephrectomy caused the loss of the whole kidney.⁵ Selective renal embolization is the alternative treatment in the patient with stable hemodynamic and the large segment of viable renal tissue.^{1,2,5,9,10} There is a report of transient hypertension following embolization which can control with medication.⁶ No other complication was noted making the procedure safe for the patient.

Traumatic arteriovenous fistula (AVF) has been reported successfully treated by embolization.^{6,7,8} The embolization is preferable to surgery and accepted as the treatment of choice of AVF. The preservation of functional renal parenchyma is also required. The close follow-up is necessary in view of the risk of hypertension

Coil, gelfoam and ivalon were used as embolic material in traumatic kidney for a long time.⁹ Coil is indicated in arteriovenous fistula whereas gelfoam and ivalon are favoured in false aneurysm.⁹ In this particular cases, we demonstrated experience of glue embolization in both renal arteriovenous fistula and false aneurysm. Successful results are achieved, so we proposed glue as another choice of embolic material in traumatic kidney.

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