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Case Report

Percutaneous Treatment of a Urinary Leak with Fibrin Glue During A Radiofrequency Ablation Of A Renal Tumor

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Case

A 65-year-old female patient was previously treated with right radical nephrectomy in another institution for multiple clear cell carcinomas. Follow-up computed tomography (CT) performed four years later demonstrated four new lesions on the left kidney suspicious for renal neoplasm. A partial nephrectomy was perfomed, since three of those lesions were located on the upper third of the kidney, remaining one lesion on the lower third of the kidney. On the histopathological analysis, these lesions were consistent with clear cell carcinomas. Follow-up Magnetic Resonance imaging performed two years later demonstrated a significant increase in the size of the tumor in the lower third of the kidney and a new lesion on the middle third was identified. It was decided, on a multidisciplinary meeting, to treat the lesion on the lower third with radiofrequency ablation (RFA) as a nephron sparing treatment.

The patient was positioned obliquely, with his right side down on the CT table, and the ablation was conducted under general anesthesia with prophylactic antibiotics. For treatment planning, a non-enhanced CT scan (Brilliance 40; PhilipsMedical System, Eindhoven, The Netherlands) was acquired. Images in axial, sagittal, and coronal planes were reconstructed and an experienced interventional radiologist chose the optimal puncture approaches and sequences. A single 3 cm internally cooled electrode (CoolTip; Covidien, Mansfield, MA, USA) was percutaneously introduced into the left kidney (figure 1a).

Under CT fluoroscopic guidance and was repositioned two times to cover most of the target lesion. Using an impedance control algorithm, RF energy was applied during internal cooling of the electrode, with a maximum power of 150W for 12 minutes in each punctured site with a temperature of 60° - 70° C.

Figure 1(a): Percutaneous treatment of a urinary leak with fibrin glue. Non-enhanced axial CT image showing the probe positioned in the lower third lesion of the left kidney.

In our institution we routinely perform an enhanced CT scan with an excretory phase immediately after a renal ablation procedure. This final imaging demonstrated a urinary leak with extension to the skin through the probe track (figure 1b).

Figure 1 (b): Percutaneous treatment of a urinary leak with fibrin glue. Axial CT image in excretory phase immediately after the RFA demonstrate a nephrocutaneous fistula (arrows) adjacent to the ablation zone.

The volume of the leak was progressively increasing in a 15 minute interval scan. Therefore, we decide to place a needle in this track with the distal edge located adjacent to the calyces (figure 1c). Where the leak was identified. After this maneuver, 10 ml of fibrin glue (Tissucol; Baxter Healthcare, Deerfield, IL, USA) was injected in attempt to seal the leak. Another CT was immediately performed with no leaks identified. The patient was observed overnight and discharged home in good conditions. Control CT (figure 1d) was performed one week later and demonstrated neither signs of urinary leak or urinary fluid collection. The patient is currently followed in the urology outpatient clinics with no complaints.

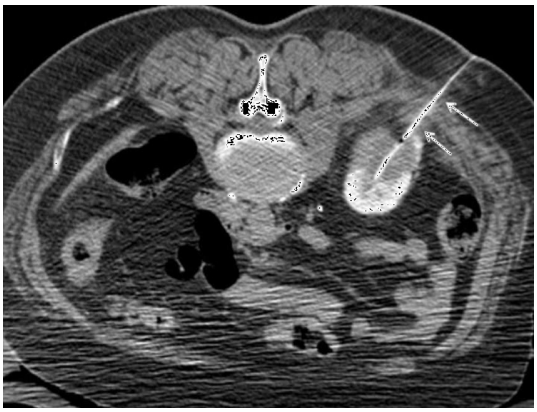

Figure 1(c): Percutaneous treatment of a urinary leak with fibrin glue. Area where the fibrin glue was injected. Note a needle (arrows) close to the calyces where the leak was identified.

Figure 1 (d): Percutaneous treatment of a urinary leak with fibrin glue. One week control axial CT image in excretory phase showing the ablation zone (arrows) with no signs of urinary leaks or perirenal collections.

Percutaneous thermal ablation is an effective minimally invasive procedure indicated for selected patients with small renal cells tumors [1]. Thermal ablation is safe with low incidence of serious complications [1,2]. A large institutional study reviewed 445 tumors in 385 patients treated with RFA and cryoablation. Major complications were found in 4.3% among the RFA procedures and 5.1% among the cryoablation procedures [3].

Urinary leak is a rare complication of thermal ablation. Atwell et al. [3] found only one case of urinary leak in his large reported experience. Although it is an uncommon complication, the treatment can be really challenging and frequently requires interventions such as ureteral stenting, percutaneous drainage or even surgical correction.

Fibrin glue has many applications in urology with an emphasis in providing support to approximate sutures in procedures such as pyeloplasty and ureteral anastomosis. There are few reports describing percutaneous administration of fibrin glue in the treatment of urinary leak. One case report described the percutaneous administration of fibrin glue for a nephrocutaneous fistula after a partial nephrectomy [4]. To our knowledge, this is the first case report of a urinary leak successfully treated during a RFA procedure with fibrin glue.

Conclusion

Urinary leak is a rare complication of thermal ablation. Sometimes it can be managed simply with observation, but often it is necessary to manage the urinary leak with ureteral stent or percutaneous drainage. We present a case in which the urinary successfully treated during the RFA procedure. However, there are limitations of not knowing whether the leak would close spontaneously. Fibrin glue appears to be leak was an option in the management of urinary leak secondary to RFA.

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