



CASE REPORT

Detection of ureterocele in distal ureteric stump following nephrectomy on diuretic renal scan and SPECT/CT

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ABSTRACT

A 10 years old girl with complain of hematuria and recurrent febrile urinary tract infection (UTI), with a history of bilateral vesicoureteric reflux (VUR) leading to nephrectomy as a result of a non-functional left kidney 3 yrs previously , was referred to our department for diuretic renal scan. The study showed normal function of the right kidney, normal excretion of the tracer from pyelocalyceal (PC) system, along with a small ipsilateral cortical defect. No active renal tissue was noted on the left side. Post void images showed a collection of activity on the left side of the bladder. The SPECT/CT also demonstrated this collection of activity on the same region compatible with post nephrectomy distal ureteral stump. Our case study revealed the diuretic renal scan can be of help in detection of ureterocele in post nephrectomy remained distal ureteral stump which might present with symptoms such as pain and hematuria. In addition our case underscores the importance of SPECT/CT for reaching a correct diagnosis in these patients.

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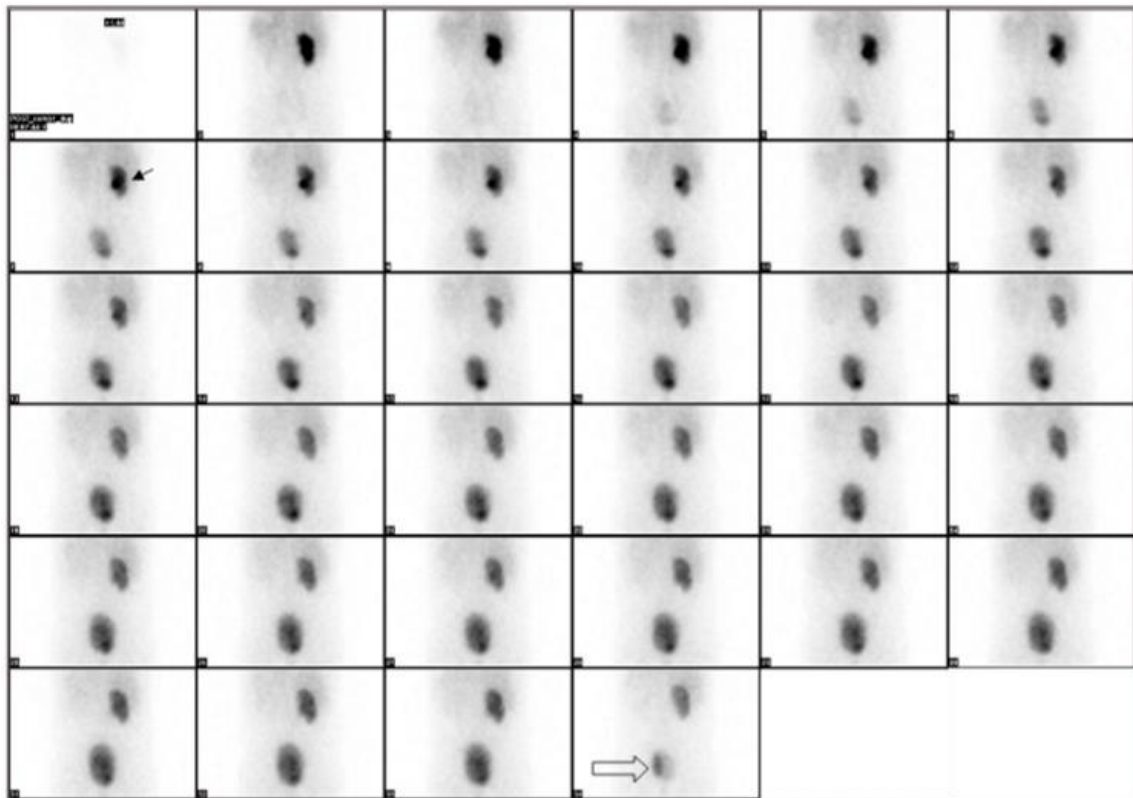
**INTRODUCTION**

Diuretic renography is a non-invasive, imaging modality with ability to evaluate renal function and urinary drainage in a single procedure. Tracer accumulation in unusual areas can be a problematic clinical scenario during diuretic renal scan [1, 2]. SPECT/CT hybrid imaging are increasingly performed in nuclear medicine departments, but it's not routinely applied in diuretic renal scintigraphy, although as in our case can have a very helpful role.

**CASE PRESENTATION**

A 10 years old girl with complain of hematuria, with a history of open nephrectomy 3 years ago for a non-functional left kidney was referred to our department for diuretic renal scan. Before surgery, she had recurrent febrile urinary tract infection (UTI) with bilateral vesicoureteric reflux

(VUR). In the current admission, ultrasonography showed a focus of urine collection postero-lateral to bladder. The imaging was performed using 92.5 MBq (2.5 mCi) [<sup>99m</sup>Tc]Tc-EC augmented by furosemide injection. The scan revealed normal perfusion and function of the right kidney with normal excretion of the tracer from PC system except for a small lateral border cortical defect. No active renal tissue was noted on the left side. Delayed post void images showed a collection of activity on the left side of the bladder (Figure 1). SPECT/CT of the abdominopelvic area showed a collection of activity on the left side of the bladder compatible with post nephrectomy remained distal ureteral stump [3, 4] (Figure 2). Cortical defect of the right kidney was also better visualized on the SPECT/CT images (Figure 3). The patient underwent distal ureterectomy with resolution of hematuria.



**Figure 1.** Normal function and excretion of the tracer from pyelocalyceal (PC) system of the right kidney were detected in the dynamic phase of diuretic renal scan. Also small cortical defect was noted in the lateral border of this kidney (arrow). No active renal tissue was noted on the left side. Post void images showed a collection of activity on the left side of the bladder (open arrow)

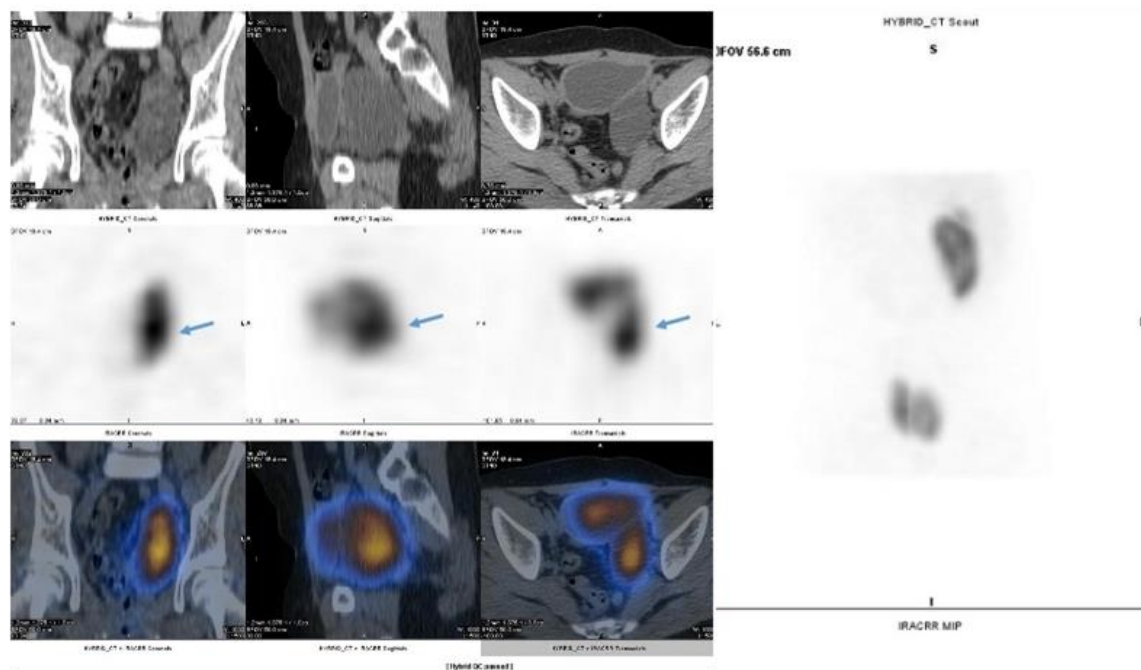


Figure 2. SPECT/CT of the abdominopelvic area showed a collection of activity on the left side of the bladder compatible with remained distal ureteric stump (arrows)

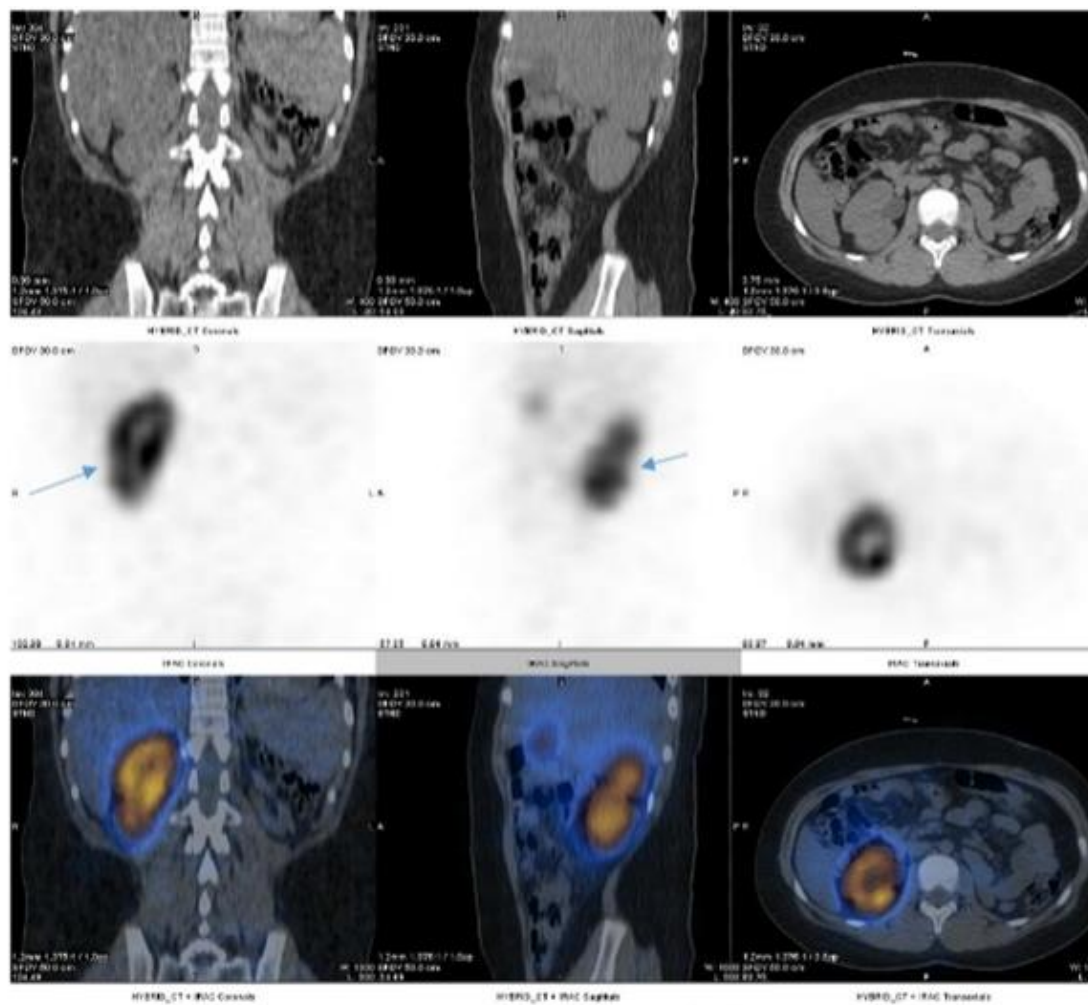


Figure 3. Cortical defect of the right kidney was also better visualized on the SPECT/CT images (arrows)

## DISCUSSION

Ureteral stumps left after nephrectomy for primary vesicoureteroreflux, usually demonstrate a low complication rate and most patients remain asymptomatic. However recurrent bacteriurea, hematuria, urolithiasis and malignancy have all been reported. Due to low incidence of complications associated with a refluxing ureteral stump, nephrectomy and proximal ureterectomy has been recommended as the procedure of choice for treatment of reflux into a non-functioning kidney. In addition if an asymptomatic ureteral remnant is present, then distal ureterectomy decreases the rate of symptomatic UTIs in patients, whom suffered from recurrent episodes of haematuria and bacteriurea despite being on antibiotic treatment [5-7]. Several imaging methods including intravenous pyelography, voiding cystoureterography, have all been used for evaluation of ureteral stump syndrome. Diuretic renal scan can also be of help in this clinical scenario. Our case also underscores the importance of SPECT/CT for reaching a correct diagnosis [8-10].

## CONCLUSION

Our case study demonstrated diuretic renal scan can be of help in detection of ureterocele in remained post nephrectomy distal ureteral stump in patients returning with symptoms such as hematuria. In addition our case underscores the importance of SPECT/CT for reaching a correct diagnosis in these patients.

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