

Urinary Extravasation and Leakage After Renal Transplantation: A Case Report

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Objective: This case report illustrates urinary extravasation and leakage after renal transplantation, as documented by nuclear medicine renal imaging. The extravasation and leakage were identified only on images acquired after the patient voided. The surgical wound site dressings were found to contain radioactive contamination as well.

Key Words: technetium-99m-DTPA; technetium-99m-MAG3; renal transplant evaluation; urinary leakage

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A 41-y-old man was referred to nuclear medicine for a routine renal transplant evaluation 24-h post-transplant surgery. The ^{99m}Tc -DTPA images showed normal tracer uptake in the transplant with gradual accumulation of the tracer in the urinary bladder (Fig. 1).

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The patient returned to nuclear medicine 72-h post-transplant because of leakage at the incision. A ^{99m}Tc -MAG3 renogram showed rapid uptake in the transplanted kidney, accumulation of tracer in the renal pelvis and urinary bladder by 5–10 min, and increasing activity in the bladder (Fig. 2). These findings are compatible with the DTPA study (Fig. 1). Postvoiding images (Fig. 3) showed an area of increased activity between the renal pelvis and the urinary bladder at 30 min postinjection. Diminished renal pelvis activity is observed at 60 min, with dispersed radioactivity seen in the inferolateral aspect of the transplanted kidney and the bladder (small arrows). By 110 min a broad linear accumulation of radioactivity was observed (arrows) in this location. Irregular areas of abnormal accumulation of radioactivity in the right inguinal fossa are seen at 115–120 min on supine images. The dressings that were over the wound were noted to be wet. The dressings were removed and fresh dressings placed over the wound site. The removed wet dressings were imaged using a gamma camera. The presence of radioactivity on the dressings indicated urinary leakage to the outside through the incision (Fig. 3).

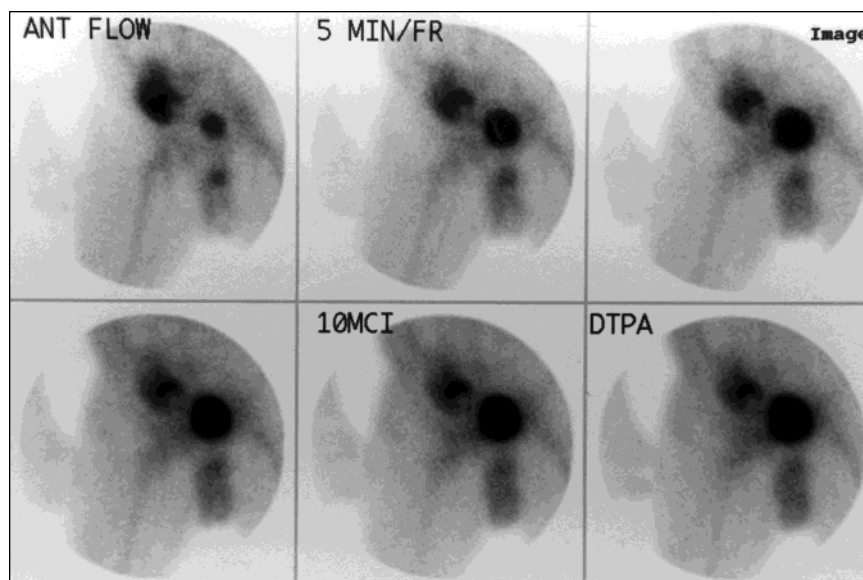


FIGURE 1. An anterior renal transplant flow study was performed after administering 10 mCi ^{99m}Tc -DTPA. Dynamic images were acquired for 5 min per frame. This study showed normal tracer uptake in the transplanted kidney with gradual accumulation of tracer in the urinary bladder.

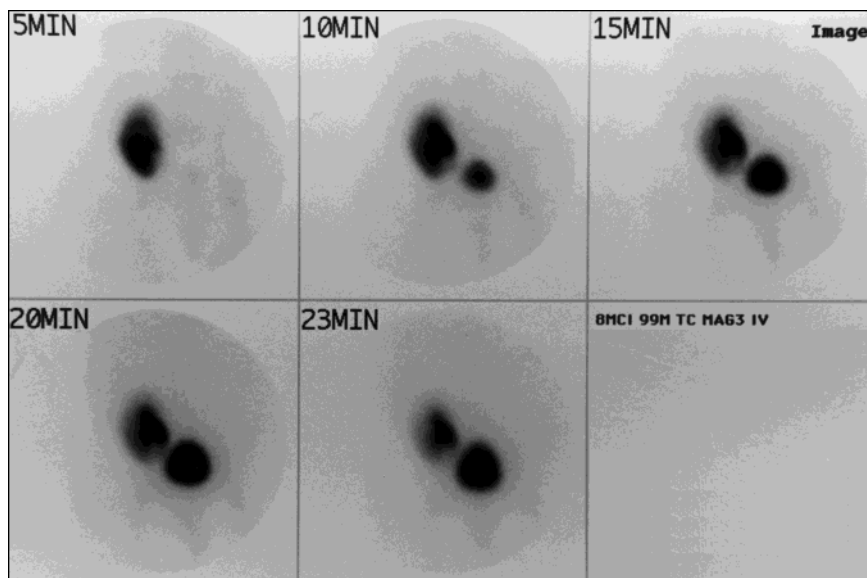


FIGURE 2. An anterior renogram was performed after administering 8 mCi ^{99m}Tc -MAG3. There is rapid tracer uptake in the transplanted kidney with accumulation of tracer in the renal pelvis and urinary bladder by 5–10 min. Bladder activity continued to accumulate.

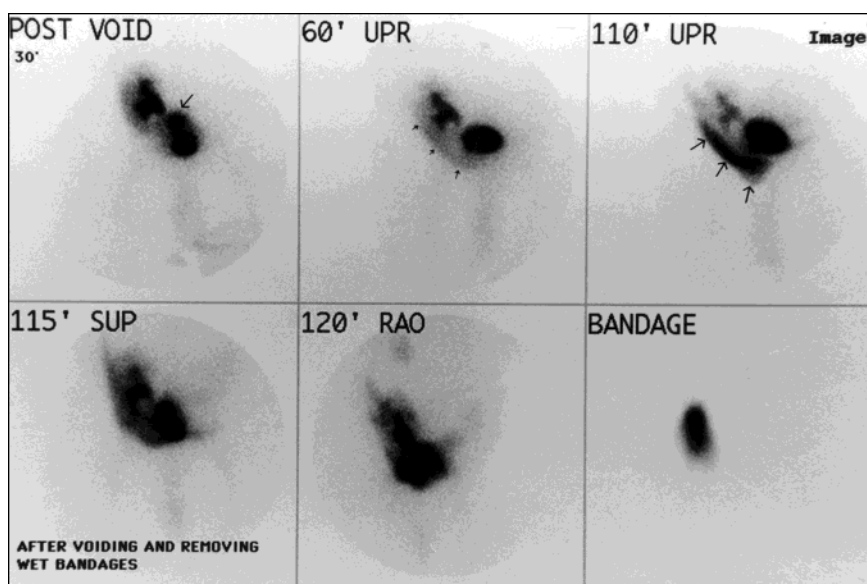


FIGURE 3. A postvoiding image demonstrated a round area of increased radioactivity between the renal pelvis and the urinary bladder (arrow). This image was acquired at 30 min postinjection. An upright image at 60 min showed abnormal radioactivity in the inferolateral aspect of the kidney and bladder (small arrows). By 110 min a broad linear abnormal accumulation (arrows) is seen in this location. Irregular areas of radioactivity are seen in the right inguinal fossa on supine images at 115–120 min postinjection. The wound dressings were changed and the removed wet dressings were imaged. The image is labeled “bandage” here. The dressings were found to be contaminated with radioactivity, which further documented the presence of urinary leakage.

The patient subsequently had a ureteroneocystostomy and over-sewing of the implantation site. No urine leakage was observed on a follow-up renogram performed 1 mo later.

DISCUSSION

Both ^{99m}Tc -DTPA and ^{99m}Tc -MAG3 have been used for detecting urinary leaks and urinomas in renal transplant patients (1–4). The urinary leak was only seen on the postvoiding images in the case presented here. This patient’s urinary extravasation and leak to the outside of the incision was observed because the surgical wound had not healed. This case illustrates 2 points. First, the acquisition of postvoiding images may be important for identifying a urinary leak and/or urinoma

in renal transplant patients. Second, the imaging, or counting, of wound dressings also may be helpful in documenting a urinary leak, especially if the dressings become wet.

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