

Percutaneous Extraction of a Foreign Body in an Obstructed Transplanted Kidney

Aim: To address the possibility of an iatrogenic obstruction in a transplanted kidney and evaluate the efficacy of prompt percutaneous access in managing the condition.

Case Presentation: We present a case of a 64-year-old male, who is known case of renal transplant for nine years with hydronephrosis of the transplanted kidney, scheduled for a nephrostomy. During the procedure, the access Peel-Away sheath got displaced into the transplanted kidney and was difficult to visualize on KUB fluoroscopy due to its radiolucency. Successful intervention was carried out using percutaneous renal access with an endoscopic grasper.

Discussion: Percutaneous renal access is a minimally invasive method used in a variety of urological procedures. It is associated with several complications such as post-operative sepsis, hemorrhage and injuries to the collecting system. Prompt management of such complications is required to avoid undesired consequences. There have not been any reported incidences of nephrostomy access sheath displacement into a hydronephrotic transplanted kidney. Nevertheless, a similar incident that involved the displacement of a PCN catheter inside the abdominal cavity and within the bowel was reported.

Conclusion: Percutaneous renal access is a safe and efficient method to identify and remove foreign bodies in transplanted kidneys.

Keywords:

Hydronephrosis
Percutaneous Nephrostomy
Renal Transplantation

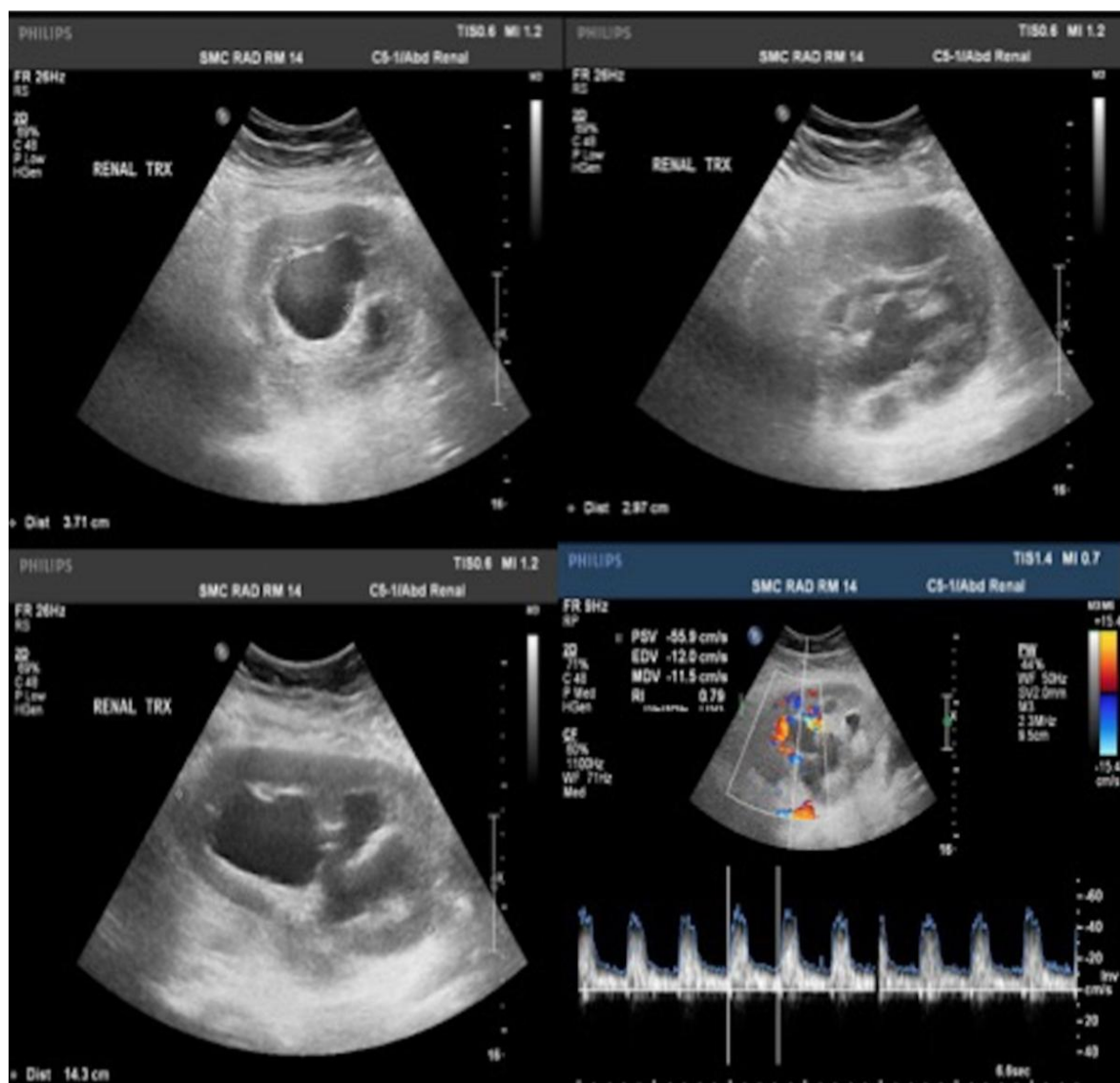
Introduction:

Percutaneous renal access is a minimally invasive method used to access the collecting system and insert endoscopic instruments to primarily view and remove stones. Furthermore, it has other beneficial uses such as decompression of kidneys. It is usually indicated in patients with a large stone burden, urinary obstruction, renal insufficiency and hard stones refractory to shockwave lithotripsy or residual stones after the failure of other modalities.¹ Percutaneous access involve the creation of a tract to access the renal collecting system by dilating a nephrostomy tract with either sequential or balloon dilators.¹ Despite its good therapeutic results, percutaneous access carries the risk of localized injury and acute ischemia to kidneys.² In this case report, we present the use of percutaneous access in an obstructed transplanted kidney due to a foreign body displaced into a during nephrostomy insertion.

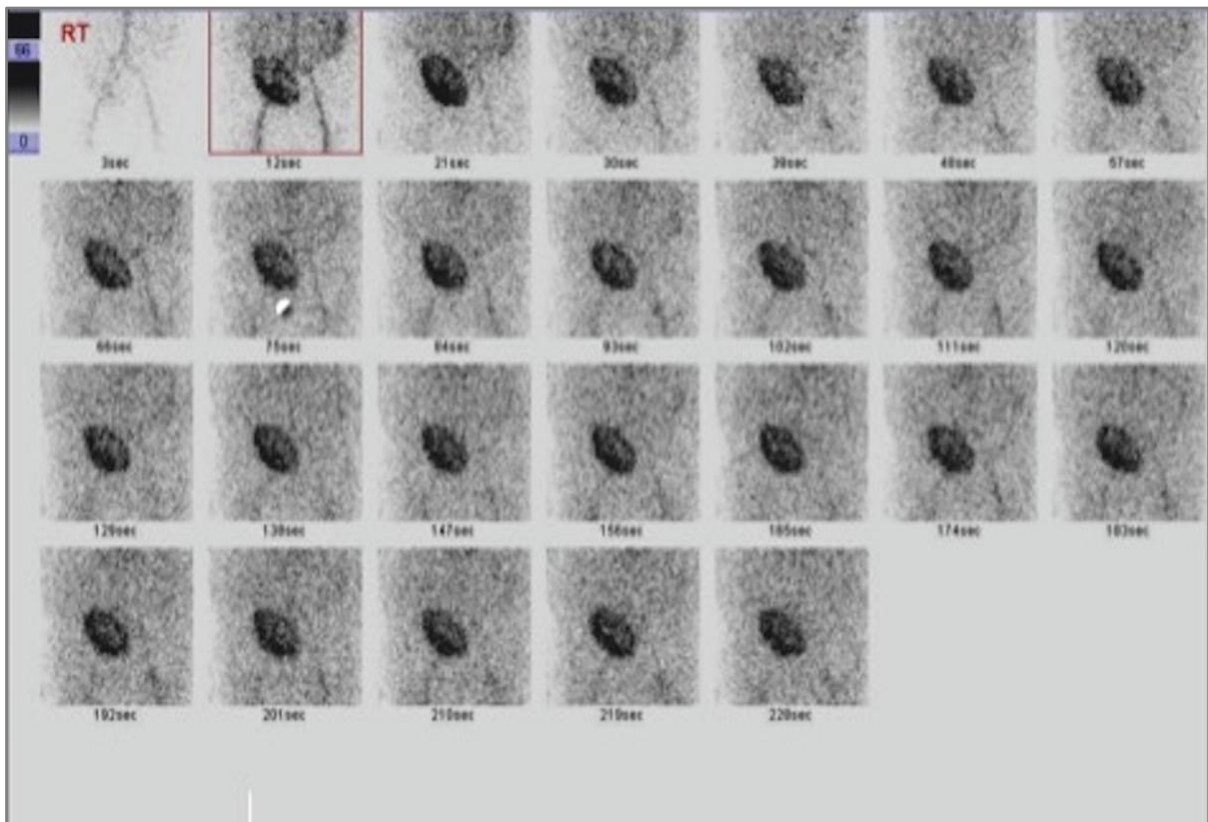
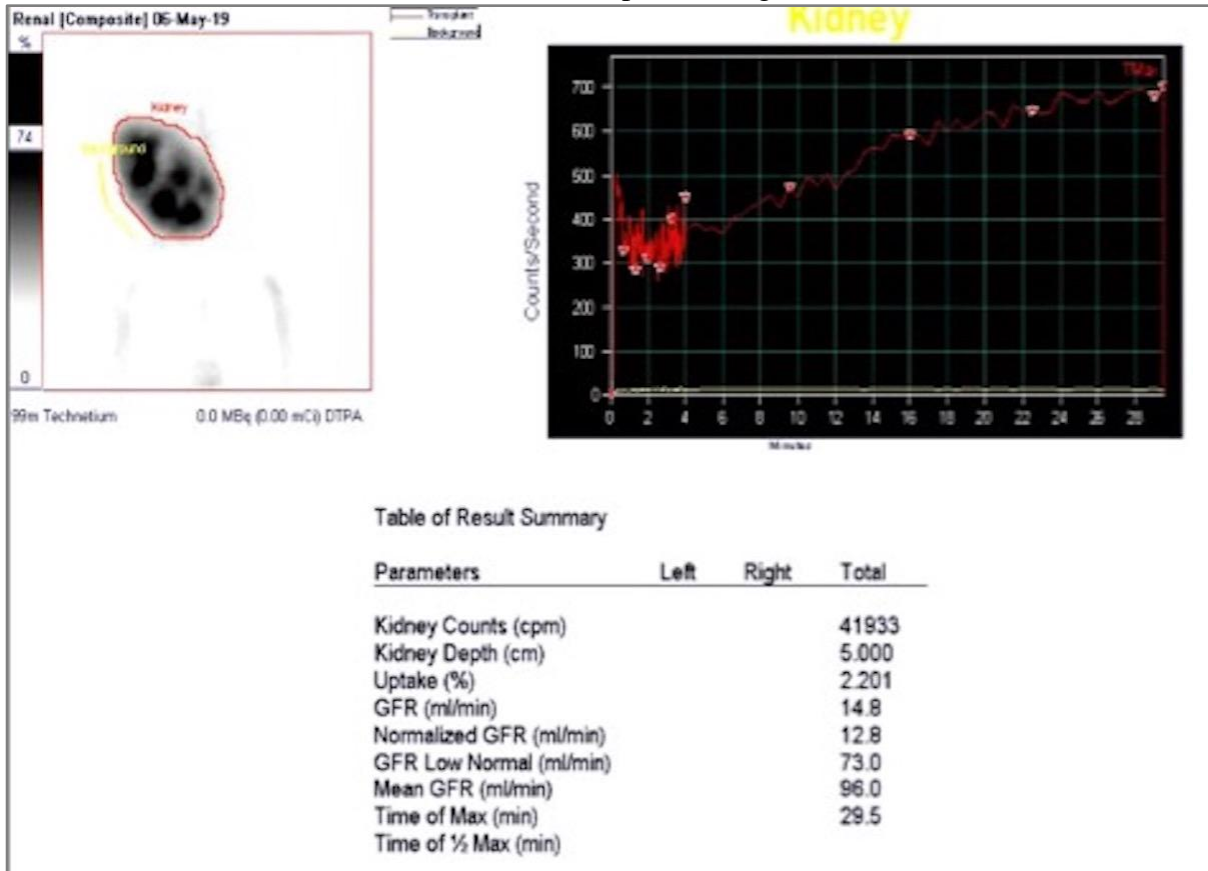
Case Presentation:

This is a case of a 64-year-old male patient, who is a known case of renal transplant from a non-related donor in 2009. He was on hemodialysis for 3 years prior to transplantation and was on immunosuppressants thereafter. Furthermore, he is a known case of diabetes mellitus type 2 and hypertension, with the former being the cause of renal failure necessitating hemodialysis and eventual transplant. His basal metabolic index (BMI) at the time of presentation as 31.59kg/m².

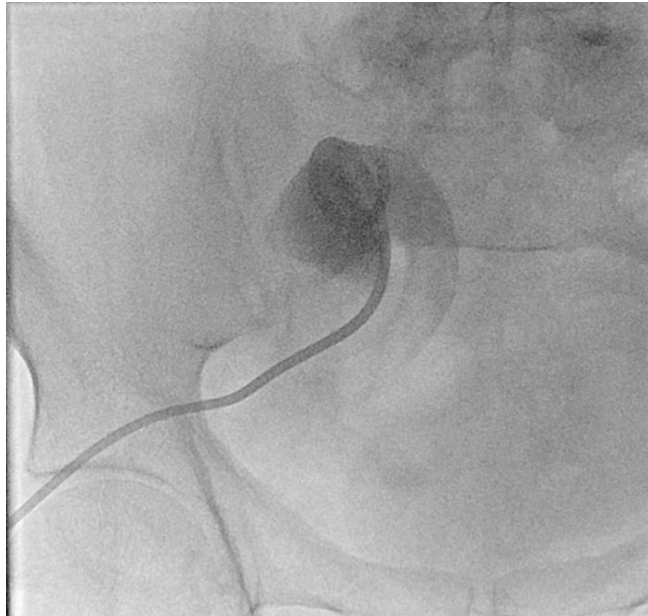
Nine years following the transplant, routine labs showed elevated urea and creatinine levels (17.3 mmol/L and 184 micromol/L) as well as persistent proteinuria (3.87 g/24h). An ultrasound-guided kidney biopsy was indicated for further investigation. Prior to biopsy, the ultrasound showed hydronephrosis in the transplanted kidney, with a renal pelvis measuring 2.9cm, and thus the procedure was aborted. [figure 1]



A DTPA (diethylenetriaminepentacetate) renogram was carried out and results showed an obstructive pattern. [figures2-3]

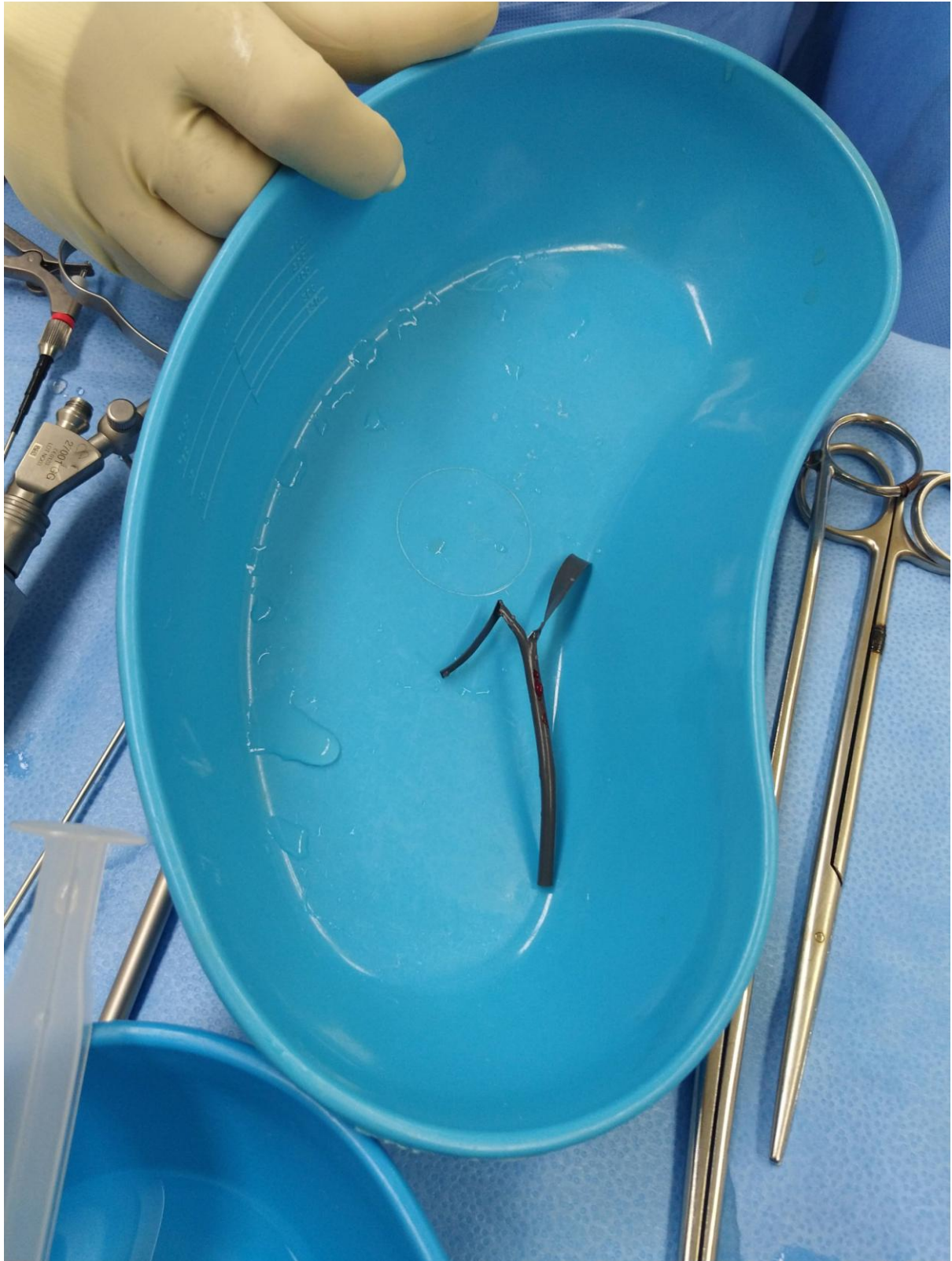


With these findings, the initial impression was possible obstruction at the level of pelvi-ureteric junction. This prompted nephrostomy and antegrade double J stent insertion for decompression. During nephrostomy insertion, the 24F Peel-Away sheath introducer was accidentally dislodged into the transplanted kidney. KUB fluoroscopy was done to locate the foreign body but was ineffective due to its radiolucency. [figure 4]



The intervention was planned via percutaneous access using 12 F Amplatz. A percutaneous tract was created through a middle calyceal puncture under ultrasound-guidance and stabilized using 12 F Amplatz sheath with the patient in supine position. To select the appropriate puncture site, contrast was injected and the calyx visualized in the direction of the foreign body was punctured. The foreign body was identified using an endoscopic camera and was successfully removed using an endoscopic grasp in a matter of seconds. [figures 5-6]





Post-operatively, the patient was stable and hospital course was uneventful. One month later, the double J stent was removed and the three month follow up of the patient revealed normalization of kidney function. The patient is currently stable on nephrostomy and is for further evaluation by the nephrology unit.

Discussion:

Percutaneous renal access is a commonly performed procedure by urologists in order to access, visualize and endoscopically instrumentalize the renal collecting system. ^[1]Its uses vary from nephrolithotomy to relieving urinary obstruction. ¹Percutaneous renal procedures have come a long way since first performed, especially with the introduction of ultrasound-assisted percutaneous nephrostomy and the continuous development of tract apparatus and endoscopic tools. ³Although such developments have rendered percutaneous renal access to be a relatively safe procedure, it is still not without risks. Complications include sepsis, hemorrhage, collecting system injuries, slippage and blockage of the tube. ³⁻⁵

Percutaneous nephrostomy in transplanted kidneys has also been deemed as a safe and efficient procedure. However, concerns regarding the possibility of a higher complication rate were raised due to technical difficulties such as predisposition to bowel injury due to the transplanted kidney's location, difficulty of tract dilation, perirenal fibrosis and the patient's state of immunosuppression which could impair healing and predispose to post-operative sepsis. ⁶Studies suggest that the major complications associated with nephrostomy in transplanted kidneys to be similar to that of native kidney nephrostomy. ^{5,7}Regardless, percutaneous nephrolithotomy in transplanted kidneys remains a feasible treatment option for larger stones and even preferred due to the more superficial position of the kidney in the iliac fossa. Furthermore, intra-operative ultrasound assistance is encouraged to avoid injury of nearby viscera and vascular structures. ⁸⁻⁹

To the best of our knowledge, there have not been any reported incidences of nephrostomy access sheath displacement into a hydronephrotic transplanted kidney. Nevertheless, a similar incident that involved the displacement of a PCN catheter inside the abdominal cavity and within the bowel was reported. It required immediate surgical intervention, however, details regarding the intervention were not mentioned. ¹⁰In our case, we didn't require a pre-intervention computed tomography (CT) scan to confirm the foreign body's location and dimensions as the interventional radiologist performing the initial nephrostomy insertion witnessed the displacement and reported it.

In conclusion, percutaneous procedures come with their own set of complications. Urologists should be aware and prepared to deal with such incidences, especially when it involves transplanted and solitary kidneys. Percutaneous renal access is a safe and efficient method to identify and remove foreign bodies in transplanted kidneys.

Consent

All authors declare that informed consent was obtained from the patient and the parents for publication of this case report and that maximal patient anonymity was ensured and maintained during the writing of the case report.

Ethical Approval

As per international standard or university standard written ethical approval has been collected and preserved by the authors.

Competing Interests

Authors have declared that no competing interests exist.

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Figure Legends

1. Figure 1: Ultrasound scan showing hydronephrosis in the transplanted kidney
2. Figures 2-3: DTPA showing obstructive pattern
3. Figure 4: KUB Flouroscopy failed to show the foreign body due to its translucency
4. Figure 5-6: Percutaneous extraction of foreign body using 12 F Amplatz sheath