Urinary tract interventions can lead to multiple complications in the renal collecting system, including retained foreign bodies from endourologic or percutaneous procedures, such as stents, nephrostomy tubes, and others. We report a case of very delayed erosion of embolization coils migrating into the renal pelvis, acting as a nidus for stone formation, causing mild obstruction and finally leading to gross hematuria roughly 18 years post transarterial embolization. History is significant for a remote unsuccessful endopyelotomy attempt that required an urgent embolization. [West J Emerg Med. 2012;13(1):127–130.]
essential in diagnosing the acute patient. This patient presented to the ED with complaints of left flank pain and hematuria, which in most situations would be fairly diagnostic of nephrolithiasis. This patient even had a CT showing a small density in the renal pelvis and a stent in place (Figure 1), supporting this diagnosis; however in a patient with this history, the differential is lengthened.

Any patient with gross hematuria should be evaluated for possible malignancy, such as urothelial or renal cell carcinoma (RCC). Stone disease, represented by densities on CT, can exist anywhere in the urinary collecting system, even within the renal parenchyma or embedded within the wall of the ureter, which can cause stricture. As previously mentioned, retained foreign materials from stents or nephrostomy tubes are also represented as densities on CT. These include fragments, strings, or the entire implant itself, and can be found with varying degrees of encrustation. In this case, embolization coils are the culprit (Figures 2 through 5).

Procedures such as laser lithotripsy, endopyelotomy, and pyeloplasty all have inherent risks for vascular injury. Transarterial embolization is very effective in managing such vascular injury, since it has been widely used in the treatment of

**Figure 1.** Coronal computed tomography in soft tissue window. Left ureteral stent (curved arrow) and eroded embolization coil (straight arrow) are noted within the left renal pelvis. On this window setting, these are difficult to tell apart.

**Figure 2.** Importance of appropriate window levels and window widths on computed tomography. Bone windows clearly differentiate the ureteral stent (curved arrow) from the embolization coil showing surface detail (white arrow).

**Figure 3.** Axial computed tomography computed tomography (CT) in bone window: importance of appropriate window levels and window widths on CT. Bone windows clearly differentiate the ureteral stent (curved arrow) from the embolization coil (white arrow) and stone forming due to coil acting as nidus (yellow arrowhead).
renal arteriovenous malformation (AVM), of acute extravasation in trauma patients, and for prophylaxis against operative blood loss before surgical resection of vascular tumors such as RCC and angiomyolipoma.

Complications have been widely reported for transarterial embolization during the procedure course as well as the immediate perioperative period. Commonly encountered complications are renal functional impairment and inadvertent embolizations of nontarget organs. Renal functional impairment often results from uremia, sepsis, and acute tubular necrosis owing to segmental parenchymal infarct.

Complications from inadvertent embolization of nontarget organ have been reported in the literature and include infarction and renal failure of the contralateral kidney; arteriovenous shunting within the targeted kidney, which can lead to embolization of the lungs and right-sided heart failure; adjacent bowel and skin necrosis; and thrombosis at the renal vein and inferior vena cava. With the newly designed coils, frequent complications encountered in the past, such as incomplete transcatheter expulsion of the coil and withdrawal into the aorta, have been almost completely eliminated.

Coil migration at the time of insertion happens commonly, but migration in the immediate perioperative period happens much less frequently. Patients undergoing prophylactic renal artery embolization within 24 hours before nephrectomy have had migrated coils at the time of nephrectomy. Delayed coil migration several years after the insertion is also very rare. Yoon et al reported a case of migration of coils and guidewires from a treated renal AVM to the descending colon. Reed et al reported a case of passage of coil into the collecting system at 1 year post embolization.

Savoie et al reported a case in which the patient passed a stone containing a platinum coil. This event happened 5 years after percutaneous nephrolithotomy and embolization of a lower polar artery branch due to persistent hematuria. This coil was initially deployed too distally and had floated within the pseudoaneurysm cavity. Such encrustation of the coil with renal calculi is compatible with reports of migrated coils acting as the nidus for stone formation.

In comparison to the other case reports, the erosion and migration of the coils in this patient happened at a much later time, about 18 years later. The patient was initially treated and followed up at an outside hospital in a different state for 10 years before transferring to our institution. This case underscores the need to remain vigilant for delayed coil migration beyond the intraoperative and immediate perioperative periods, and to search for the nidus of stone formation and unusual causes of obstruction as in this case.

**SUMMARY**

Our report highlights the importance of checking for unusual causes of complications in patients who have undergone prior urologic intervention. The importance of viewing a stone protocol CT in different window settings cannot be overstated.
Embolization Coil Erosion in Renal Pelvis

Phan et al

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