Can Percutaneous Nephrostomy Diversion be Responsible for Spontaneous Proximal Migration of Upper Ureteric Calculus?

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Abstract
Proximal migration of upper ureteric stone has been seen to happen during endo urological procedure. Spontaneous upward migration of upper ureteric stone after percutaneous nephrostomy diversion has not yet been documented. We report two cases of spontaneous proximal migration of upper ureteric stone into the renal pelvis, with a normal lower ureter, after percutaneous nephrostomy diversion.

Introduction
Proximal migration of upper ureteric stone has been seen to happen during ureteroscopy and occasionally during procedure like retrograde pyelography and JJ stenting. Spontaneous upward migration of upper ureteric stone after percutaneous nephrostomy diversion has not yet been documented. We present two cases of spontaneous proximal migration of upper ureteric stone into the renal pelvis, with a normal lower ureter, after percutaneous nephrostomy diversion.

Material and Methods
At our centre we have encountered two cases of spontaneous upward migration of upper ureteric stone after percutaneous nephrostomy diversion. The first case was a 29 year old male, who presented with right flank pain of one week duration with normal serum creatinine. His intravenous urography showed a radio-opacity at the level of the fourth lumbar vertebra on the right side, with non visualized unit; and a normally excreting unit on the left side (Fig. 1). Right percutaneous nephrostomy diversion was done. After fifteen days of having a daily output of 800-1000 ml through the diversion, the patient was subjected to a DTPA renal scan, which showed a differential function of 20% with a GFR of 32.2 ml/min. The patient was then posted for a nephrostomogram to delineate the anatomy before definitive surgery. This showed a stone in the renal pelvis (Fig. 2), with complete drainage of the contrast, without any signs of distal obstruction.

The second case was of a 59 year old male, who presented with left flank pain and symptoms of uraemia, with a serum creatinine value of 5.14 mg%. X-ray KUB and ultrasound showed a right renal stone, and a left upper ureteric stone at the lower border of the third lumbar vertebra. Bilateral percutaneous nephrostomy diversion was done, the patient underwent haemodialysis; after 12 days of diversion output was established from both the nephrostomy tubes and the serum creatinine came down to 1.78 mg%. Now an intravenous urography was done, which showed bilateral delayed function, with the initial plates showing the left ureteric...
stone at same level as before; but the delayed plate after two hours showed the same stone in the renal pelvis.

Both the cases were managed by PCNL after a retrograde pyelography to confirm that the ureter is normal.

Discussion

Proximal migration of upper ureteric stone into the renal pelvis without any endourological procedure has not yet been documented. Stone can migrate during endourological procedure due to force of irrigating fluid, use of pneumatic type of lithotripter and while manoeuvring of the ureteroscopic forcep or ureteroscope itself.\(^1\) The reason for proximal migration of stone in our cases was not known, but percutaneous nephrostomy diversion could be one of the aetiopathological factors. After percutaneous nephrostomy diversion, development of low pressure system in the renal pelvis, and resolution of oedema surrounding the stone are the probable mechanisms for this type of migration of stone. Exact aetiology of such migration requires detailed study of these types of more cases; we had encountered this type of migration first time in two consecutive cases so we are reporting it.

Conclusion

Stone can migrate proximally spontaneously after percutaneous nephrostomy diversion as we have seen in our two cases but exact aetiology is still not known for such type of proximal migration of stone and it will require further study of more such cases.

Reference