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Bilateral Stent Migration: A Rare Case Report

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Abstract

Double pigtail (DJ) ureteral stents are used to prevent ureteral obstruction and allow easy passage of urine. Stent migration is a well recognized complication of stents, but migration into the renal pelvis is rarely documented. We present a case of simultaneous proximal and distal migration of a stent and discuss briefly, the etiological factors for the phenomenon and associated problems in management.

Keywords: Stent Migration; Percutaneous Nephrostomy; Stent Complication.

Introduction

Double pigtail (DJ) ureteral stent is widely used in urological practice. It was first described in 1967 by Zimskind et al [1]. Ureteric stents are not complication free. Stent related complications are primarily mechanical; including stent migration, encrustation, stone formation and fragmentation. Stents act as foreign bodies and may cause urinary tract infection, pyonephrosis that may lead to nonfunctioning kidney.

Therefore, ureteral stent should be removed as early as possible after it serves its purpose or changed frequently as per the need to reduce stent related complication and morbidity. Managing complication itself has its own inherent consequences and that led understand urologist to prevent it by timely removal or change of the stent. We present a case of simultaneous proximal and distal migration of a stent and discuss briefly, the etiological factors for the phenomenon and associated problems in management.

Case Report

A 11-year-old boy presented with history of recurrent episodes of right loin pain off and on since birth. He was investigated and was diagnosed with right PUJ obstruction with mild hydronephrosis on left side but no obstruction. He underwent right pyeloplasty with bilateral DJ stenting. He was called for stent removal after 6 weeks. A plain radiograph [Figure 1] revealed a completely coiled stent in the left pelvicalyceal system with distal migration of the right DJ stent in the mid/upper ureteric region at the level of iliac crest/upper border of sacro-iliac joint. The boy was asymptomatic on left side except mild lower urinary tract symptoms in the form of increased daytime urinary frequency and occasional urgency which were probably due to the right stent in the bladder. After consent and proper discussion with the patient's parents he was planned for percutaneous removal of the left DJ stent and ureteroscopic removal of the right DJ stent as we did not have smaller 4.5 Fr ureteroscope.The left stent was retrieved by a percutaneous nephrostomy tract

under fluoroscopic guidance and right stent under 6.5 Fr ureteroscope guidance. We used 12 Fr Amplatz sheath and 6.5 Fr ureteroscope for the percutaneous procedure. The stents could be removed intact. Restenting was not done because of minimal manipulation of the pelvicalyceal system.

Fig. 1:

Discussion

An indwelling ureteral stent is a necessary evil in urological practice because of its extensive utility but significant associated morbidity. Encrustation, migration, and fragmentation form the triad of complications of stents [2]. Proximal migration into renal pelvis is infrequently documented [2]. Proximal migration of stent occurs in 0.6 to 3.5% of cases [4]. Significant risk factors for migration are the duration of stenting - the longer the indwelling time, the more likely the stent will migrate.However, almost no complications have been reported with an indwelling time of less than 6 weeks. Other factors for proximal stent migration are a low stent-to-ureter length ratio (a stent length shorter than the ureteral length), proximal curl in the superior calyx as opposed to renal pelvis, inadequate distal curl, if stent fail to curl greater than 180 degree after placement, and the 'jack' phenomenon wherein a ureteric stone alongside the stent acts like the jack of a car, allowing only proximal migration and preventing distal movement during respiration [5,6].

Management can be complicated, often requiring a combination of multiple procedures including ureteroscopy, percutaneous nephroscopy, or open procedures [2]. In most cases, the distal end of migrated stent lies in the ureter and can be removed by ureteroscopy [7]. However, percutaneous access may be required in the rare event of complete coiling in the pelvis, which occurred in our case.

In our case the stent length was adequate with proximal and distal ends adequately curled and properly positioned. Yet, proximal migration of the left stent and distal migration of the right stent were observed after 6 weeks. The reason for this was not clearly understood. It could be the growth spurt of the child and the abnormal ureteral peristalsis that could have resulted in the proximal and distal migration of the left and right stent respectively.

Migration can be prevented by choosing appropriate length and material (polyurethane stents) of the stent and with proper placement. Polyurethane stents fragment and migrate less readily than silicone stents but encrust more rapidly [2]. Breau and Norman [7] advocated direct measurement of ureteric length from the X-ray for selecting optimal stent length. They postulated that the optimal stent-to-ureter length ratio is 1.04, which reduces migration as well as bladder irritation. Migration can also be prevented by adding a retrieval suture to the distal end, frequent stent changes when longer indwelling times are required [7]. Patient education and accurate documentation are important [2,9].

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Conflict of Interest: NIL

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