

A Novel Use for the Nitinol Stone Retrieval Basket: the Removal of a Catheter Tip from the External Iliac Artery

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ABSTRACT

Nitinol retrieval basket is an instrument used by urologists to retrieve stones from the upper urinary tract. We report the innovative way of using an instrument purposely designed for endourology, by a urological surgeon in endovascular surgery. After an initial failed angioplasty, a 62-year-old man with peripheral vascular disease had a second right groin cross over catheterization angioplasty of the calcified left iliac stenotic disease performed by a radiologist. This procedure was complicated by the fracture of the catheter tip in the external iliac. With no snares available at the time of the second angioplasty, a Urology Consultant successfully used a Zerotip 2.4 F × 120 cm Nitinol Stone Retrieval Basket, avoiding an open laparotomy.

KEYWORDS: Stone retrieval basket; Urology; Endourology; Angioplasty

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INTRODUCTION

Transluminal iliac angioplasty is a very useful and common procedure for treating suitable lesions. Complications of this procedure are uncommon.

Urology is at the forefront of surgery with innovative technology. We describe a case of fragmentation of the angioplasty catheter and an innovative method of retrieving the fragment by an urologist using urological instruments.

CASE REPORT

A 62-year-old plumber presented with 2-year intermittent claudication and rest pain at night in both his legs. He had very calcified vessels in the groin and pelvis with absent pulses below the femoral arteries. MRA and Duplex scan showed significant stenosis of both common iliac arteries [LCIA & RCIA],

left external iliac artery [LEIA] and right superficial femoral artery (RSFA).

Initial management with conservative measures and left groin angioplasty failed. Subsequently, a right groin angioplasty with 8 mm balloon dilatation of the calcified iliac stenotic disease and cross over catheterization was performed through a 6F sheath under heparin cover. Unfortunately, during the procedure the tip of the catheter sheared over the aortic bifurcation and became detached. The dislodged fragment appeared stable and remained impacted in the right external iliac artery. Retrieval of the detached fragment is usually removed using snares but they were unavailable.

A Urology Consultant, available at that time, successfully used an endourological instrument. To start with, the 6F sheath was kept in the RSFA. A Zerotip 2.4 F × 120 cm Nitinol Stone Retrieval Basket was inserted, rotated and moved backwards and forwards under fluoroscopic control. The basket was

closed, engaging the tip of the catheter. Once trapped in the basket, the fragment was moved backwards and forward to confirm a good grip on continuous screening. It was then easily retrieved with minimal resistance. Ten milligrams of Alteplase were injected into the artery through the catheter and a good flow was seen within the profunda and popliteal artery. The patient made a satisfactory recovery.

DISCUSSION

Catheter complications are very rare and occur in 0.6% of cases according to Axisa et al. [1]. Fractured catheter tip is reported in coronary angioplasty [2, 3, 4] but is very rare in angioplasty of large vessels such as femoral or iliac arteries.

A search of English and Spanish language literature using Medline and PubMed during the period from 1970 to 2011 was performed. The use of a Zero Tip Nitinol Retrieval Basket in vascular surgery has not been reported in the literature.

As an instrument purposely designed for endourology, Zero Tip Nitinol Retrieval Basket features a flat distal surface for atraumatic manipulation. The nitinol wire offers kink-resistance and flexibility. Close stone or catheter tip as in our case proximity could be achieved by the tipless basket configuration.

The use of urological instruments outside urology such as the rigid cystoscope in the anus and rectum has been described previously for the closure of genitourinary fistulae [5] and the resection of rectal villous adenomas or adenocarcinomas [6, 7].

Our case report illustrates the novel use of urological instruments and techniques in endovascular surgery. Urology is a speciality which encompasses a wide variety of skills and its techniques can be easily and safely used for the benefit of other specialities.

In our opinion, these steps can be reproduced and the stone retrieval basket can replace the use of snares in endovascular procedures.

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