Recanalization of prostatic artery chronic total occlusion prior to prostatic artery embolization

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ABSTRACT

Urinary obstruction secondary to benign prostatic hyperplasia is a late manifestation of the disease, and a poor prognostic sign for responding to conservative therapies. Prostatic artery embolization – when performed successfully – can be an effective treatment for reducing obstructive urinary symptoms. Outlined in this report is the successful recanalization of a prostatic artery chronic total occlusion prior to embolization in an 89-year-old man with benign prostatic hyperplasia, who initially presented with urinary obstruction. Prostatic artery recanalization was possible using a specialized crossing technique from peripheral arterial disease interventions, and allowed for more distal embolization of the prostate gland. This technique may be useful when advanced atherosclerotic disease limits the feasibility and clinical success of prostatic artery embolization.

Introduction

Prostatic artery embolization has recently gained traction for the treatment of benign prostatic hyperplasia; however, it is also technically challenging. While severe tortuosity is a notorious source of technical failure, concomitant arterial occlusive disease is often overlooked [1]. Due to increasing risks for both benign prostatic hyperplasia and atherosclerotic lesion formation in the aging male population [2], prostatic artery occlusive disease poses a potential challenge that interventionists will need to address moving forward. This report outlines traversal of a prostatic artery chronic total occlusion as a means to achieve prostatic artery embolization.

Case report

An 89-year-old man developed urinary obstruction due to benign prostatic hyperplasia with a prostate volume of 195 cm³. He was initially managed with a suprapubic catheter, but was then referred to interventional radiology for prostatic artery embolization for definitive management. The left prostatic...
artery was successfully catheterized (Fig. 1) using a 0.014-inch Synchro wire (Stryker Neurovascular; Kalamazoo, MI) and Echelon-10 microcatheter (Medtronic; Minneapolis, MN) with subsequent prostatic artery embolization; however, the right prostatic artery was unsuccessfully catheterized due to a chronic total occlusion of the obturator and/or prostatic trunk (Fig. 2). The patient returned 1 month later for attempted recanalization of the right prostatic artery. After selecting the right internal iliac artery with an SOS Omni catheter (Angiodynamics; Latham, NY), attempts were made to cross the chronic total occlusion of the obturator and/or prostatic trunk using a 0.014-inch Synchro wire and 0.014-inch Transcend wire (Stryker Neurovascular), both of which were unsuccessful. Finally, the chronic total occlusion was successfully recanalized using a 3.5-g tip load 0.014-inch specialized chronic total occlusion crossing wire (Hi-Torque Command ES; Abbott Vascular, Abbott Park, IL) (Fig. 3) and a 2.0-F Progreat microcatheter (Progreat Alpha; Terumo; Somerset, NJ). Angiogram demonstrated good prostatic blush (Fig. 4a), which was confirmed with cone-beam CT (Fig. 4b). Right prostatic artery embolization was then performed using 300-500 micron Embospheres (Boston Scientific) to complete stasis. No further advancement of the catheter was performed (i.e., PErFectED technique [1]) due to the difficulty in crossing the chronic total occlusion. A total of 5 mL of reconstituted embolic material (1 vial diluted to 20 mL) was delivered proximally from the prostatic artery.
artery, which was similar to the nonoccluded left prostatic artery embolization (total of 7 mL). The patient’s symptoms improved, and the suprapubic catheter was successfully removed 1 month later.

Discussion

The prevalence and severity of lower urinary tract symptoms caused by benign prostatic hyperplasia is progressive over time. 25% of men in their fifties are symptomatic compared with nearly 50% of men in their eighties presenting with moderate to severe lower urinary tract symptoms [3]. Similarly, aging is the dominant risk factor for clinically significant atherosclerotic lesion formation [2] and is therefore often seen in this aging cohort. Prostatic artery embolization (PAE) is a technically challenging procedure, with a technical failure rate of approximately 20% [4]. If only unilateral embolization is performed, this results in a 30% decrease in clinical success compared with bilateral embolization [5]. Prostatic artery occlusions and severe tortuosity are the most common etiologies for technical failures of PAE [6].

Crossing of chronic total occlusions have been extensively described in the peripheral arterial system during recanalization of complex lesions. Bagla et al. recently described the use of a standard microguidewire to traverse a prostatic artery chronic total occlusion [5]; however, to the authors’ knowledge, this is the first reported case of using a specialized chronic total occlusion wire to cross a recalcitrant prostatic artery chronic total occlusion during PAE. Possible complications of using such a technique and wire include vessel spasm, dissection, and even rupture or perforation. Interventionalists performing PAE in an elderly or atherosclerotic population should be aware of this tool to add to their armamentarium in difficult catheterizations, in order to achieve optimal clinical success.

Supplementary material

Supplementary material associated with this article can be found, in the online version, at doi:10.1016/j.radcr.2019.01.017.

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