

Case Report

Double-Vessel Coronary Stenting via 5 French Diagnostic Catheters

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The authors report on the use of 5 French diagnostic catheters to deliver a stent-on-a-wire system during a double vessel coronary intervention.

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Key words: angiography; coronary; percutaneous coronary intervention; diagnostic cardiac catheterization; direct stenting

INTRODUCTION

The use of smaller catheters for diagnostic coronary angiography and interventions is becoming increasingly popular among interventional cardiologists particularly due to the increasing trends toward the radial approach and outpatient procedures. Although 9–10 French (F) guiding catheters were used during the early years of percutaneous coronary intervention (PCI), 6 F guiding catheters have now become the standard size for most cases and countries [1]. The use of smaller catheters permits smaller arterial punctures and thus decreases morbidity, allows early mobilization and discharge [2,3] and may obviate the need for closure devices. Smaller catheters also allow the use of less contrast, which reduces potential nephrotoxicity [4]. We report a case where standard 5 F diagnostic catheters have been used for double vessel coronary stenting with a bare metal stent-on-a-wire system (Acrobat, SVELTE, Providence, NJ).

CASE

A 67-year-old female complained of chest pain on mild exertion (CCS III) and dyspnea with a high risk profile for cardiovascular disease in form of hypertension, dyslipidemia, and hypothyroidism being hitherto medically treated with betablockers, acetylsalicylic acid (ASA), statins, and l-thyroxin. She was an ex-smoker having stopped 7 years ago. Her body mass index was 38 kg/m². The resting electrocardiogram was normal and a bicycle exercise test was incomplete, so that she was referred for an elective coronary angiography to our institution.

Coronary angiography was performed using a standard 5 F diagnostic set (Judkins left and right and pigtail catheters) via the right femoral artery. It demonstrated simple lesions in the mid left anterior descending (LAD) coronary artery (60% luminal narrowing; Fig. 1) and in the proximal right coronary artery (RCA) (70% luminal narrowing; Fig. 2). The proximal vessel segments showed only mild tortuosity and calcification. The left ventricular ejection fraction was normal without any regional wall abnormalities. Ad hoc coronary intervention was performed using the same diagnostic catheters (the left and right Judkins catheters, respectively) after administering 5000 IU heparin IV. Primary stent implantation with a 3.0 × 18-mm bare metal stent-on-a-wire (Acrobat, SVELTE, Providence, New Jersey) in the LAD with an inflation pressure of 20 atm (Fig. 1) and a 3.5 × 23-mm bare metal stent-on-a-wire in the RCA (Fig. 2) with an inflation pressure of 12 atm was performed successfully with good angiographic results. Specific features of the used stent are shown in Fig. 3. The total

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Conflict on interest: AAK and BM are consultants for SVELTE.

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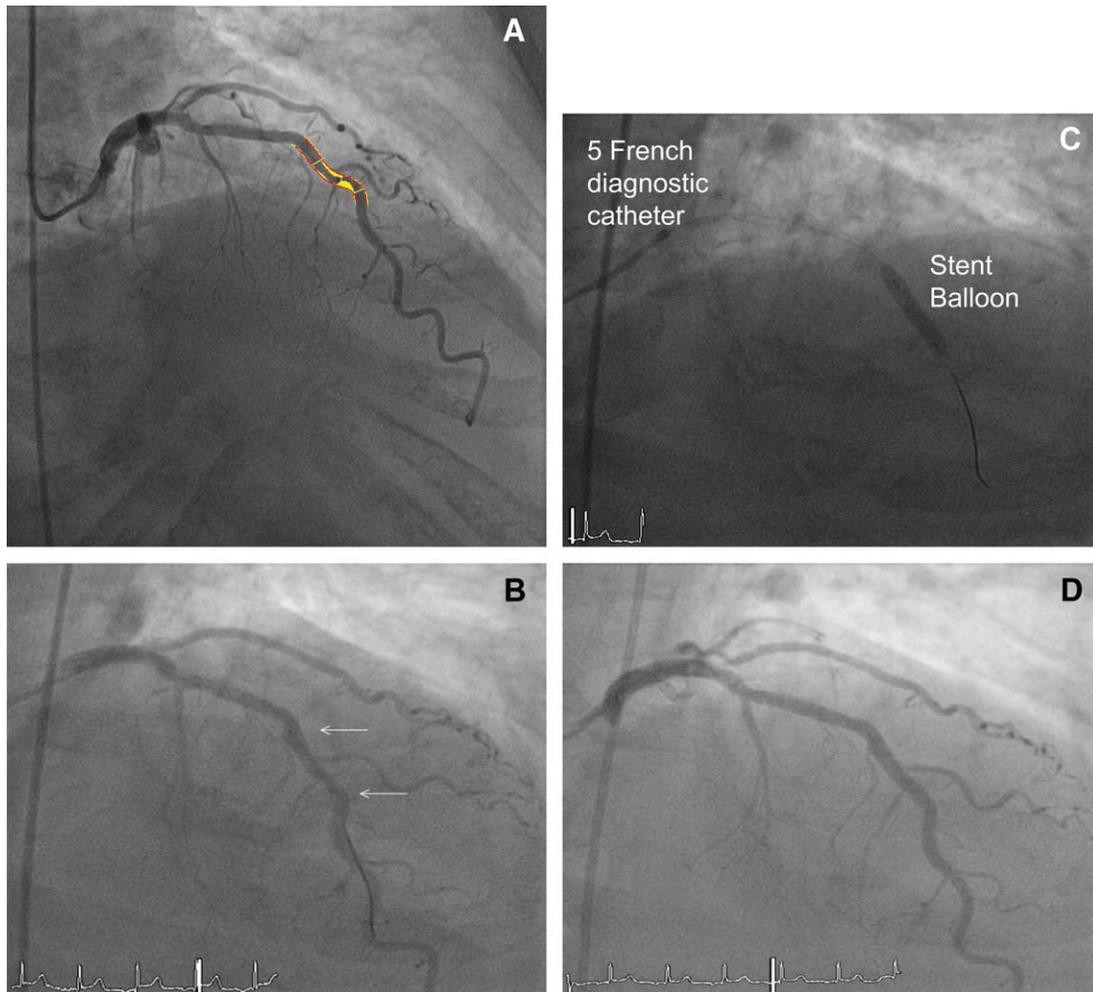


Fig. 1. PCI of the LAD with primary stent implantation using the Judkins left 5 F diagnostic catheter. (A) QCA of the mid LAD lesion; (B) adequate visualization during stent positioning across the lesion; (C) stent implantation; and (D) good final angiographic result.

radiation time for the procedure was 10 min and 217 ml of contrast dye were used. Manual compression was done for the right groin immediately after completing the procedure. The patient was discharged home on the same evening on dual antiplatelet therapy (ASA and clopidogrel) for 1 month and ASA to be continued indefinitely.

DISCUSSION

For almost 15 years, 5 F PCI has been available but it has yet to find widespread application [5]. In the past, the primary drawback with the use of 5 F catheters has been unsatisfactory vessel opacification, need for deep engagement, which may be associated with coronary dissections, and poor guide maneuverability [6]. In complex interventions, where more than one balloon and/or stent need to be advanced simultane-

ously, or when other devices such as intravascular ultrasound, optical coherence tomography, or atherectomy are needed, the 5 F system will not be large enough to accommodate such interventions.

It has been noted that guiding catheters used for PCI may sometimes not be able to selectively engage the coronary ostium even though an earlier successful cannulation with its diagnostic counterpart could be obtained. This may be due to slight differences in shape between the two catheters in form of shorter tip and lack of tip tapering for the guiding catheter, which may result in multiple guide selection attempts.

We report a case where we successfully used the 5 F diagnostic coronary catheters for both the diagnostic angiogram and the subsequent double-vessel PCI with primary stent implantation of a novel stent-on-a-wire in the mid LAD and proximal RCA with good results. We had adequate vessel opacification at all

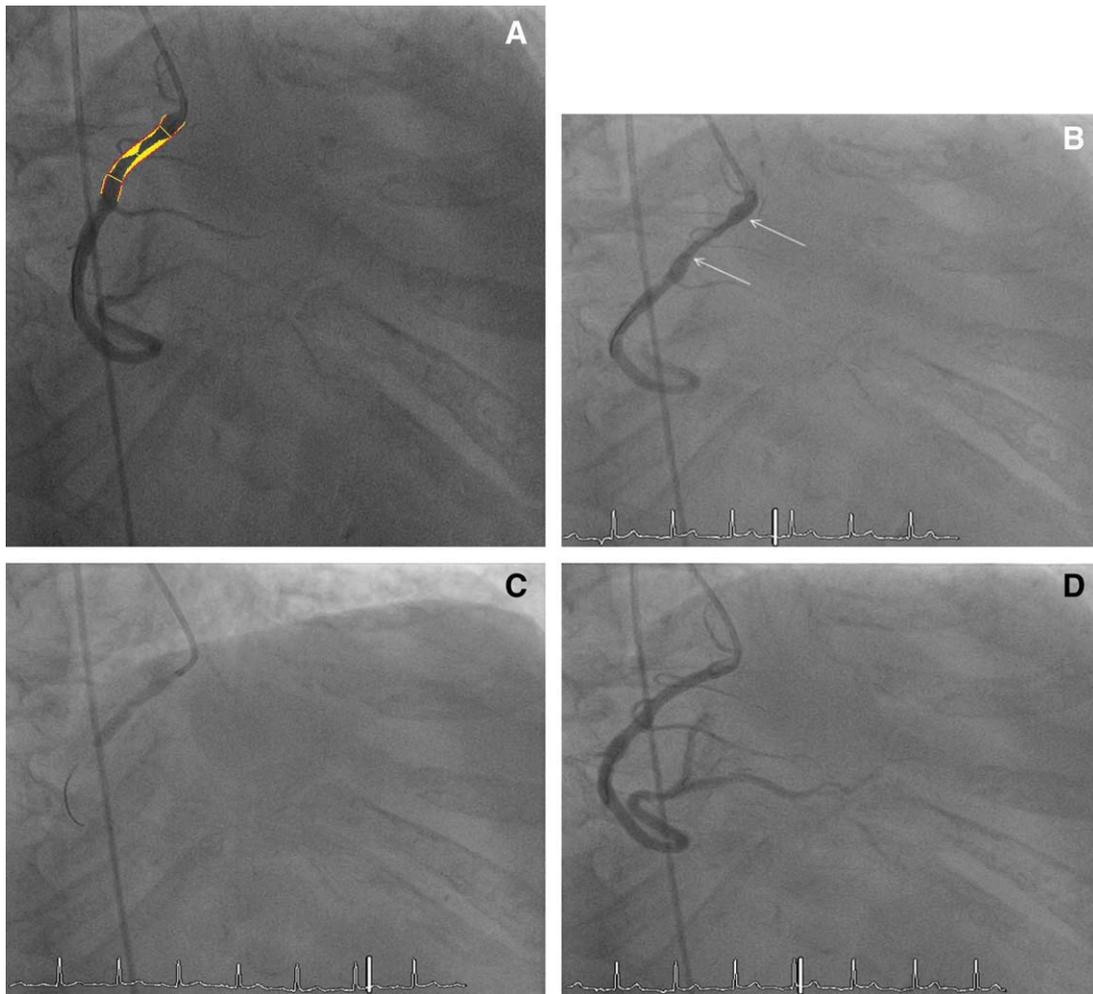


Fig. 2. PCI of the RCA with primary stent implantation using the Judkins right 5 Fr diagnostic catheter. (A) QCA of the proximal RCA lesion; (B) adequate visualization during stent positioning across the lesion; (C) stent implantation; and (D) good final angiographic result.

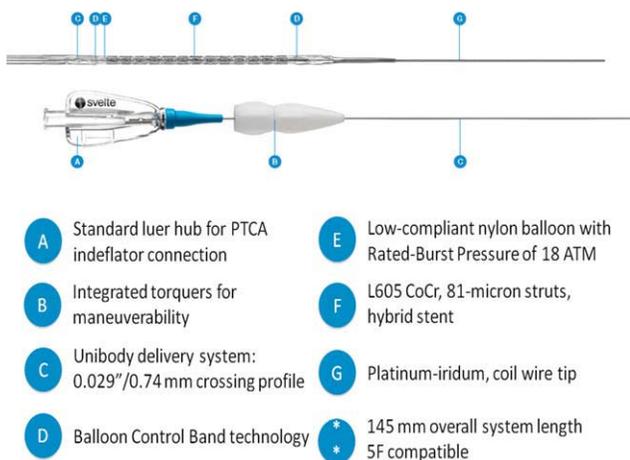


Fig. 3. Specific features of the Acrobat stent system.



Protects stent edges while crimped
 Prevents balloon "dog-boning"
 Reduces balloon protrusion outside stent's edges

Fig. 4. SVELTE stent balloon control band technology.

times enabling us to accurately position and implant the stent without increasing the total radiation time or dye consumption. Sufficient support was achieved without the need for deep catheter intubation with easy positioning of the stent across the stenotic lesion. In

the uncommon event of an occlusive dissection following such stent implantation, the need to withdraw the whole system including the guide wire may be a drawback of this technology. However, the balloon control band technology should reduce such a complication to a minimum (Fig. 4).

The use of 6 F diagnostic catheters in interventional procedures has been reported by Resar et al. where 70 patients with 84 lesions were treated with 6 F diagnostic catheters. Success was reported in 85.7% of the lesions [7]. This approach is however of limited value nowadays, as 6 F diagnostic angiograms are rarely performed anymore. Five F [8] diagnostic catheters and 4 F [9] have also been used for balloon angioplasty without stent implantation with a 92% success. With the novel low-profile stent line, this is now possible.

Conventional stents have been used with so-called 4 F [1,2,10] and even 3 F catheters [11]. However, these reports refer to the inner lumen.

In conclusion, stent implantation via a 5 F diagnostic catheter has become technically feasible, and allows for significant resource savings, taking in consideration the much higher cost of a guiding catheter compared with a diagnostic one. It is an attractive technical alternative in selected cases.

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