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Importance of IVUS in the treatment with retrograde approach of a long in-stent chronic total occlusion of ostial right coronary artery: A case report☆

Giuseppe Talanas [a,*], Roberto Garbo [b]

[a] Division of Cardiology-Catheterization Laboratory, SS. Annunziata Hospital of Sassari, Sassari, Italy
[b] Interventional Cardiology Unit, San Giovanni Bosco Hospital of Torino, Torino, Italy

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ABSTRACT

A 43 year-old male, with a long history of coronary artery disease, was electively admitted to our institution because of dyspnea for moderate physical efforts (NYHA 2) related to an in-stent chronic total occlusion of ostial RCA and with demonstration of a significant area of inducible myocardial ischemia at stress echocardiography. After a gentle attempt of antegrade approach, the in-stent CTO of ostial RCA was successfully reopened with a retrograde approach using a knuckle technique. After IVUS evaluation which showed that the course of the retrograde guidewire was mostly within the stent strut circumference with the exception of the ostial RCA where the guidewire past between the stent and the vessel wall, implantation of 4 drug-eluting stent was performed from mid to ostial RCA with a good final result. The hospital stay was uneventful. At 6 months clinical follow-up the patient was in good clinical condition. We discuss some aspects related to procedural technique, the importance of IVUS evaluation in the treatment of this patient.

1. Introduction

In-stent restenosis leading to coronary chronic total occlusion (ISR-CTO) is an uncommon problem in clinical practice. The reported incidence of ISR-CTO ranges from 5% to 10% of all CTO-PCI [1]. Moreover the percutaneous treatment of ISR-CTO has a lower procedural success rates than conventional CTO [2,3,4]. In this setting the use of IVUS is of paramount importance.

2. Case report

A 43 year-old man, with a familial hypercholesterolemia and a long history of coronary artery disease starting from 2006 with several hospital admissions for acute coronary syndrome treated with multiple percutaneous revascularizations, was evaluated in July 2015 because of dyspnea for moderate physical efforts (NYHA 2) and reduced exercise tolerance, but without symptoms of angina. The physical examination was unremarkable. The basal ECG showed a sinus bradycardia 54 beats per minute, with Q waves in DIII and aVF. The basal echocardiogram showed an hypokinesia of basal interventricular septum, an inferior and posterior wall hypokinesia with a globally preserved left ventricular systolic function (EF = 55%). During the last hospital admission, the coronary angiography documented a well patency of previously implanted stents in the left main, proximal left anterior descending and intermediate ramus and an in-stent chronic total occlusion (CTO) of ostial right coronary artery (RCA). Since the ECG showed the presence of Q waves, the patient underwent to stress echocardiogram with dobutamine infusion that revealed a significant area of inducible ischemia in basal and mid segments of posterior wall. The patient was scheduled for an attempt of reopening the in-stent CTO of ostial RCA.

In September 2015, the patient underwent to the attempt of reopening the in-stent CTO of ostial RCA (Fig. 1A). Two long sheats 7F 45 cm (Destination, Terumo, Japan) were positioned in right and left femoral arteries. An AL 1 7F and an EBU 4 7F 90 cm guiding catheters (Launcher, Medtronic, MN, USA), were positioned respectively in the RCA and in the left coronary artery. Despite anchoring balloon in the conus branch of the RCA, the AL 1 guide catheter was neither stable nor coaxial and was substituted with a JR 4 7F guide catheter. After achieving an increased coaxiality with this latter guide catheter and an anchoring balloon in the conus branch of the RCA, a gentle attempt of antegrade approach was performed without success (Fig. 1B). Thereafter we decided to shift to a retrograde approach. We advanced the Corsair 150 cm microcatheter on a Sion Blue guidewire (Asahi Intecc, Japan) into a third septal branch. We negotiated with the Sion Blue

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* Corresponding author at: Division of Cardiology-Catheterization Laboratory, Santissima Annunziata Hospital of Sassari, Via De Nicola 14, 07100, Sassari, Italy. Tel.: +39 079 2061521; fax: +39 079 210512.
E-mail address: giustal@yahoo.it (G. Talanas).

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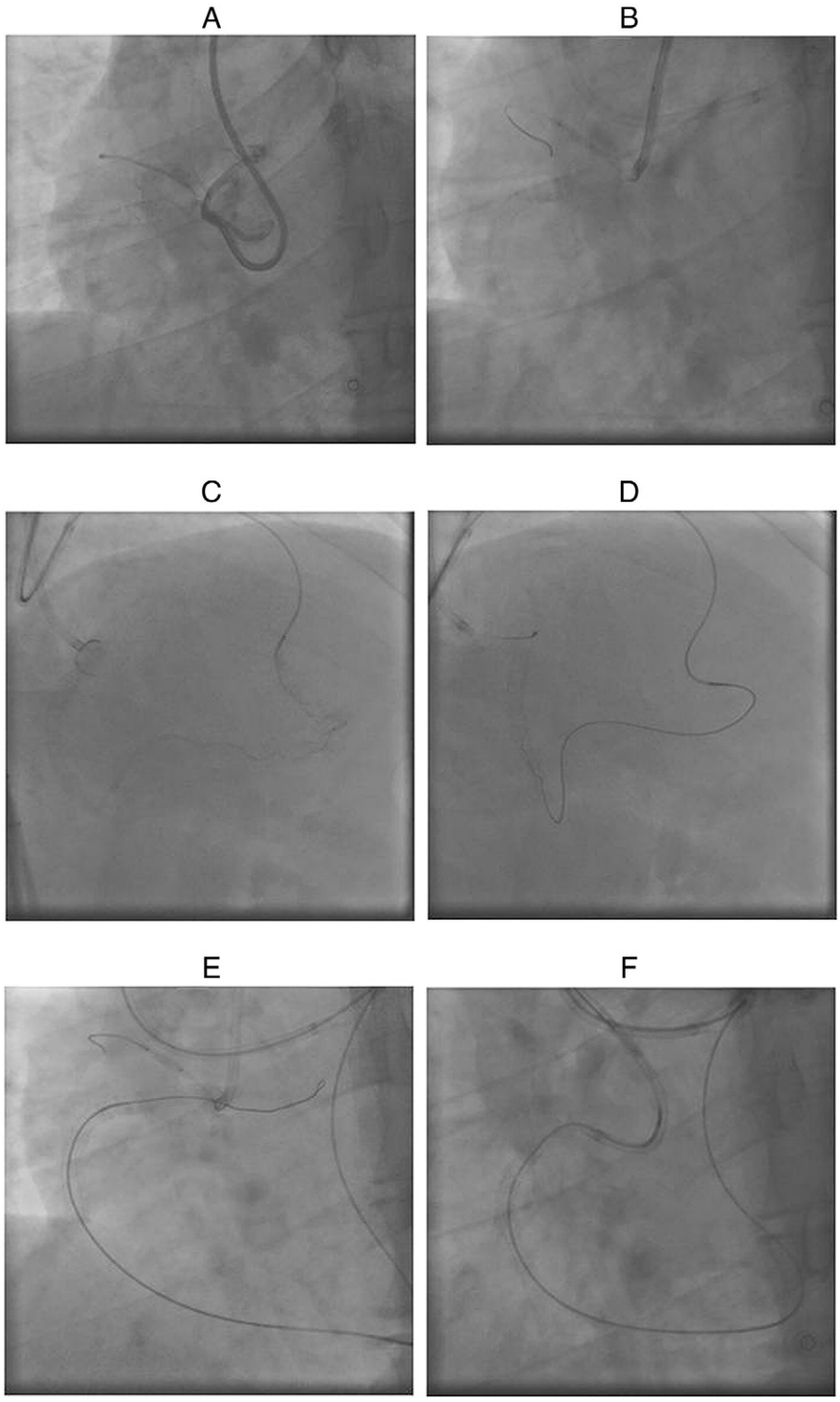

Fig. 1. A. The basal angiography showed a long in-stent CTO of the RCA starting from the ostium; interestingly the conus branch which has a critical proximal stenosis, raises near the true ostium of the RCA; B. The JR 4 guide catheter was stabilized with an anchoring balloon in the conus branch of the RCA and a gentle attempt of antegrade approach with an XT-A guidewire supported by a Finecross microcatheter was performed; C. Tip injection from the Corsair 150 cm microcatheter showed a clear connection from septal branch to posterior descending artery through a very tortuous pathway; D. The Fielder XT-R guidewire, navigating within the most tortuous pathway of the septal branch, reached the posterior descending artery of the RCA; E. The Fielder XT-R guidewire was advanced within the in-stent CTO with a close J-loop configuration according to the knuckle technique until to the ascending aorta; F. After advancement of the Corsair 150 cm microcatheter within the occlusion, the Fielder XT-R was exchanged for a Sion guidewire that easily entered the JR 4 7F guide catheter.

guidewire a secondary septal branch and the tip injection through the Corsair showed a clear connection with the posterior descending of the RCA through a very tortuous septal (Fig. 1C). The Sion Blue was exchanged for a Fielder XT-R guidewire (Asahi Intecc, Japan) which, navigating within the most tortuous pathway of the septal branch, reached the posterior descending of the RCA (Fig. 1D). The Fielder XT-R guidewire was advanced within the in-stent CTO with a close J-loop configuration according to the knuckle technique until to the ascending

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