Right coronary artery CTO with unsuccessful crossing of several microcatheters: a case for IKAZUCHI ZERO™ semi-compliant PTCA balloon

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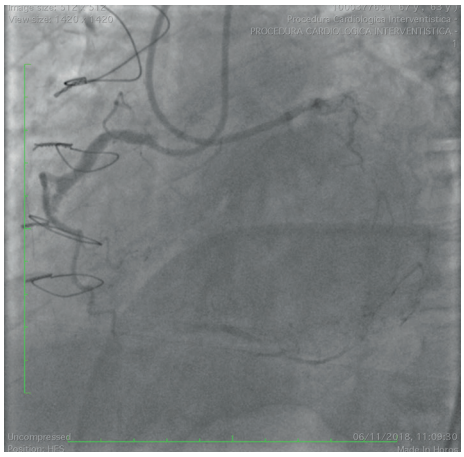
A 63 y-o gentleman was referred to our institution for congestive heart failure. His clinical history was remarkable for hypertension, hypercholesterolemia, chronic renal failure on dialysis, and a previous non-ST segment elevation myocardial infarction (NSTEMI) treated with coronary artery bypass graft (CABG) 3 months earlier. At that time two vessel disease was found on coronary angiogram and a right internal mammary artery (RIMA) to left anterior descending artery (LAD) graft was performed. A right coronary artery (RCA) chronical total occlusion (CTO) was not treated because of intraoperative finding of a severely calcified and diseased target vessel. His echocardiogram showed severe left ventricular dysfunction with diffuse hypokinesia and a 35% ejection fraction (EF). Coronary angiogram showed a patient left internal mammary artery (LIMA) with moderate disease of the native left coronary system and the known right coronary artery chronic total occlusion (Japanese-CTO score 2 for calcifications and length). Percutaneous RCA recanalization was planned.

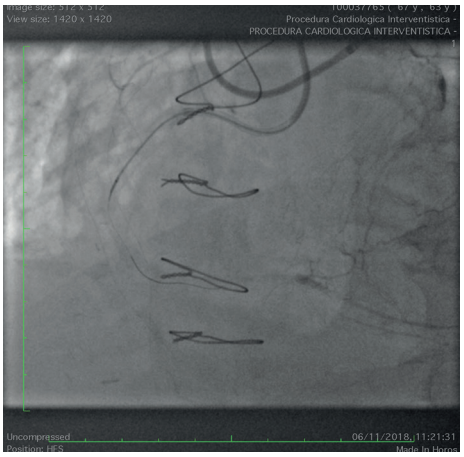
Procedural setup was bifemoral 7F access (Cordis BRITE TIP™ 45 cm long sheath), antegrade AL1 7F 100 cm guiding catheter (Cordis VISTA BRITE TIP™ Guiding Catheter) and retrograde EBU 3.75 7F 90 cm guiding catheter (Medtronic Launcher). **[FIG.1]** According to the anatomical evaluation antegrade wire escalation (AWE) technique was the planned strategy with antegrade dissection and reentry (ADR) as second option. A Corsair Pro 135 cm was used as first line antegrade microcatheter and a wire step-up was performed with Gaia Second (Asahi Intecc), Gaia Third (Asahi Intecc) and Hornet 14 (Boston Sc.). The latter achieved an intraplaque tracking advancing distally in the body of the occlusion, but still proximal to the distal cap. **[FIG.2]** Due to extensive calcifications it was not possible to follow with the Corsair. Techniques to improve support (anchoring balloon and guiding catheter extension) and a plaque modification microcatheter (Turnpike Gold Teleflex) were also ineffective **[FIG.3]**.

Fig 1



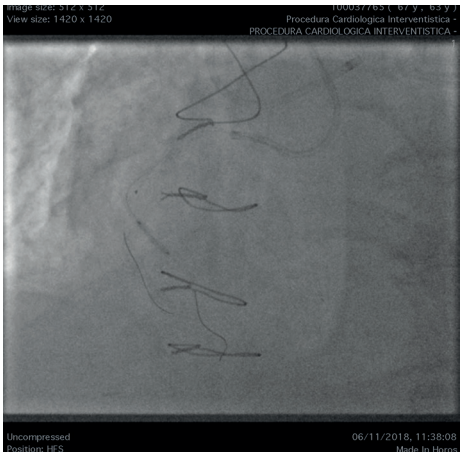
Long calcified RCA CTO with tapered proximal cap: J-CTO score 2

Fig 2



Hornet 14 guidewire in intraplaque position close to the distal cap, but corsair microcatheter cannot be advanced due to excessive calcifications

Fig 3



Ineffective Turnpike Gold microcatheter delivery with anchoring balloon technique

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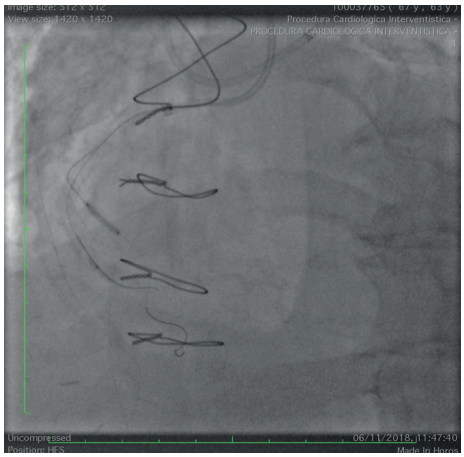
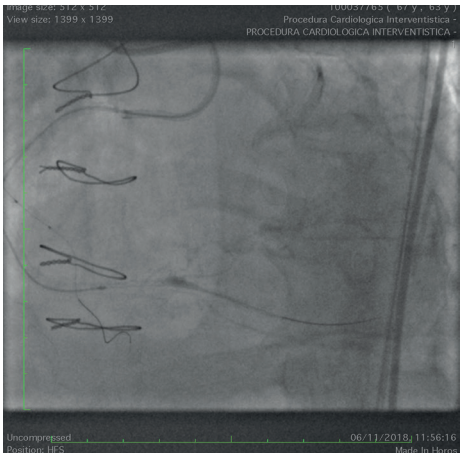
A low profile semi-compliant balloon (IKAZUCHI ZERO™ Semi-Compliant PTCA Balloon 1.5x15 mm Kaneka Corporation) advanced with a “wedging technique” was effective in dilating the body of the occlusion and could cross the severely calcified segment **[FIG.4]** allowing successful microcatheter delivery and a true-to-true recanalization with Hornet 14 Guidewire **[FIG 5]**. After guidewire exchange, rotational atherectomy (RotaPro 1.25- and 1.5-mm Boston Sc), predilatation with non-compliant balloons (Kaneka Corporation RAIDEN3™ Non-Compliant PTCA Balloon 2.5 and 3.5 mm), stenting with 4 DES (Ultimaster Tansei Terumo 3.0x33-3.5x38-4.0x38 and 4.0x24 mm) and post dilatation (Kaneka Corporation RAIDEN3™ Non-Compliant PTCA Balloon 3.5 and 4.0 mm) were performed. Good final angiographic and IVUS result was obtained. **[FIG.6]**

Fig 4



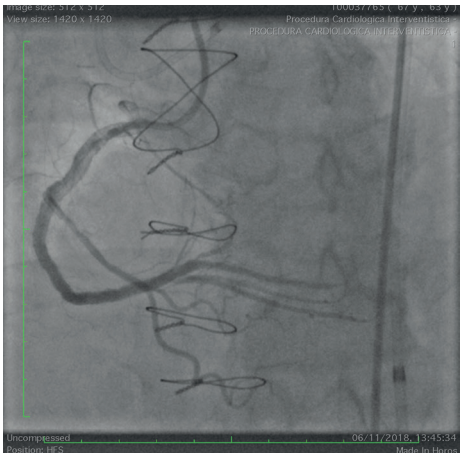
Effective IKAZUCHI ZERO™ 1,25 x 15 mm Semi-compliant Balloon advancement and dilatation

Fig 5



Hornet 14 Guidewire in the distal true lumen

Fig 6



Final result after PCI with 4 DES

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