

Case Report

Rendezvous Intracoronary Technique for Treating CTO Lesion, Case Study

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Received: 📅 2023 Oct 25

Accepted: 📅 2023 Nov 13

Published: 📅 2023 Nov 22

Abstract

The rendezvous technique which previously introduced as an option for total occlusion in peripheral arterial diseases, now seems a helpful method in coronary total occlusion. It is defined as inserting an ante grade or retrograde guide wire into a contralateral micro catheter within the CTO lesion. This technique is a true lumen to true lumen crossing. By means of new devices for CTO intervention this technique is going to expand among interventionists. Here we present a case of RCA-CTO which was treated in this manner while other approaches failed. We will discuss the procedure and verify the tips in performing this newly growing technique. Learning objectives: Here in this manuscript we are going to discuss about a technique previously used to intervene in peripheral arteritis and providing this method in coronary arteries with chronic total occlusion.

Keywords: PCI, Rendezvous Technique, Coronary Total Occlusion

1. Introduction

The traditional rendezvous technique which refers to insertion of one of either ante grade or retrograde guidewires into the contralateral micro catheter within the chronic total occlusion (CTO) lesion is among the techniques used to treat long-segment CTO's in the peripheral artery percutaneous interventions [1]. This technique necessitates bidirectional wiring and is proven very useful in increasing the success rate for recanalization of CTO lesions in peripheral arterial interventions. There are few case reports on using this technique in intracoronary CTO interventions as bends and twists and a beating heart makes performing this technique more difficult and thus application of rendezvous technique must be done very carefully in coronary interventions.

With advances in devices and guide wires and micro catheters and dedicated gear for CTO interventions this method can be used with more ease and success rate nowadays. Here we present a case of intracoronary Rendezvous technique done in a patient with a complex coronary CTO lesion. The term "intracoronary Rendezvous" means that rendezvous was achieved with the coronary CTO lesion.

2. Case Report

We are presenting a 48 years old male who was referred to us as a tertiary CTO center for retry on RCA CTO. The patient

had history of PCI on diagonal and LCX -OM, 4 years back and the RCA CTO was performed since 9 years ago. He had low threshold angina despite full guideline proven medication including more than 2 antianginal medication. Pre-procedural assessment showed ejection fraction equals to 45% and viable but ischemic myocardium in RCA territory equivalent to 14% of myocardium. He had history of two failed prior attempts on this CTO lesion. CT angiographic evaluation as a part of pre procedural planning showed extreme bend in proximal to mid part of RCA and J-CTO score calculated to be 3.

Baseline coronary angiography showed patent left side coronaries and total occlusion in RCA at proximal part. The procedure started with antitrade approach and the first plan was AWS (antitrade wire escalation) technique. After unsuccessful attempt, retrograde technique was tried. In this attempt with the support of a micro catheter (coarse air pro ASAHI, Asahi Intec Co. Ltd. Japan), a Fielder XT-R wire was passed through the retrograde pathway (Figure 1). After upgrading the retrograde wire to Gaia second, rendezvous technique was performed with guidance of biplane angiography (Figure 2). For this propose, retrograde wire was pulled back partially while the distal end of retrograde micro catheter left open. Ante grade wire then advanced into the retro grade micro catheter directly. The ante grade wire

then advanced through the retrograde micro catheter at distal true lumen and the retrograde micro catheter finally retracted and after lesion preparation, stenting was performed

with this antitrade gear with a 2.75*32 Xience alpine DES. Post dilatation was performed successfully with a 3.0*12 NC balloon (Figure 3).



Figure 1: Ante Grade Wire Escalation Technique Which Failed and Changed to Retrograde Approach



Figure 2: Intracoronary Rendezvous Technique

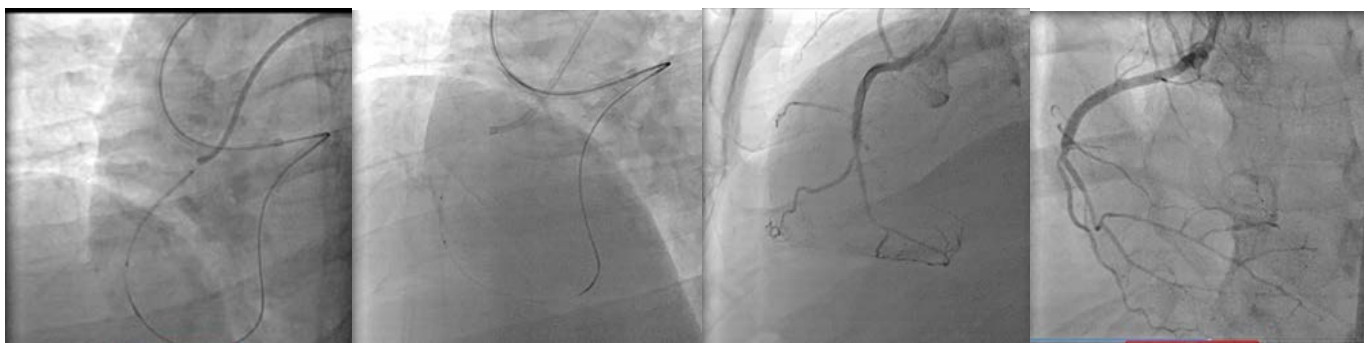


Figure 3: Ante Grade Stenting and Final Result.

3. Discussion

The rendezvous method is one of the techniques used to treat long-segment CTO of the peripheral artery [2]. The traditional Rendezvous method involves inserting the ante grade or retrograde guidewire into a contralateral micro catheter in the CTO lesion. The kissing wire technique (KWT) is often used as a suitable technique during the bidirectional approach [3]. However, if the ante grade and retrograde guidewires are located in a different intraplaque channel, the retrograde channel must be intentionally punctured by the ante grade wire to cross the CTO. This procedure is often difficult and unpromising. Muramatsu et al reported that

the success rate of KWT was approximately 70%. This difficulty may be overcome using the Intracoronary Rendezvous method [4].

With the advantage of Gaia series guidewire easily fixed in the intraplaque by the Corsair penetration into the intimal membrane and separating the ante grade and retrograde channels is possible. In a study, the success rate of intracoronary rendezvous methods was approximately 90 % since June 2013 [4]. Furthermore, in almost all cases, IVUS revealed that the guidewires crossed through the true or intraplaque of the CTO lesion.

Muramatsu et al. reported the Rendezvous method for patients with CTO after failure of the reverse CART techniques [5] and in this scenario we prefer the Gaia series superior to conquest due to stiffer tip which help navigation into the CTO body easier. The rendezvous method requires no sub intimal dissection and re-entry techniques. This method, therefore represents an ideal recanalization technique with true-to-true lumen crossing into CTO lesions. However, in coronary CTO lesions, it is difficult to penetrate a conventional guidewire to a contralateral micro catheter because of its insufficient torquability. Therefore, subintimal dissection and re-entry techniques, including CART and reverse CART, are recommended by most operators as the next strategy after the failure of conventional ante grade or retrograde techniques. In our daily practice it is not always easy to pass a guidewire from the false into true lumen even using the CART technique, indicating the importance of developing other technique for coronary CTO angioplasty. A study by Taro Nihei et al. indicate that the rendezvous technique, assisted by new devices and a biplane imaging system, represents one of the primary options to achieve successful coronary CTO recanalization [6]. Most of the reported cases in which this technique was used were RCA lesions [6], but it is applicable to LAD CTO lesions without concern for side-branch occlusions unlike reverse CART.

Using the biplane imaging system allows to select a linear section of the coronary CTO lesion and the Rendezvous point is better when it is as linear as possible. Another important issue is the length of the CTO lesion. Similar to the peripheral Rendezvous method, a long coronary CTO lesion is better suited than a short CTO lesion for the intracoronary rendezvous method, because multiple rendezvous points can be selected in a long CTO lesion. The stability of a Corsair micro catheter within the CTO lesion is mandatory to accomplish the intracoronary rendezvous under the beating heart. Therefore, the intracoronary rendezvous method is not feasible in the CTO lesion with a large sub intimal space created using a knuckle wire technique or pre dilatation including the CART technique.

4. Conclusion

This technique, assisted by the Gaia series of guidewires and combination with a Corsair micro catheter and a biplane imaging system, facilitates successful retrograde approach.

In this technique, in comparison to CART and reverse CART also lower contract usage also was noted [6]. These results indicate that the intracoronary rendezvous method is a promising option for CTO crossing.

Conflict of interest: In conducting this scientific study, all researchers involved declared no conflict of interest, ensuring the integrity and impartiality of the results presented in this manuscript.

Patients consent statements: I, here by consent to the inclusion of my medical information in the scientific manuscript titled "Rendezvous intracoronary technique for treating CTO lesion, case study" understanding that my identity will remain confidential.

5. References

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