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Musings

Deja Vu of retrograde recanalization of coronary chronic total occlusion: A tale of a journey from Japan to India

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"I know the price of success: dedication, hard work and unremitting devotion to the things you want to see happen"
Frank Loyld Wright

Having worked in Toyohashi Heart Center as guest interventional cardiologist, invited as international faculty in China, Japan, USA, Korea, Latin America, Israel, and few other countries and having done quite a few retrograde recanalization of coronary chronic total occlusion (CTO), my sincere reflections on retrograde approach are as follows.

1. Background

I returned to India in July 2005 after mastering the techniques of retrograde approach in Toyohashi Heart Center (a dedicated CTO intervention center). As an interventional cardiologist, it was indeed an honor to be associated with Dr Osmau Katoh who pioneered the technique and had no hesitation in giving me the insights into all the approaches in general and retrograde in particular adopted for percutaneous coronary intervention (PCI) for CTO. At the outset, it was unacceptable to my Indian colleagues who considered it to be a very complex, crazy, and unrewarding procedure. Although the retrograde movement was prevalent widely across the Asia Pacific, it was untouchable in Indian subcontinent because of several misconceptions such as a chronically occluded artery is clinically benign; collateral channels are sufficient for angina relief; the area subtended by the CTO is non-viable, CTO PCI is associated with high complication rate; skill sets are foreign to Indian interventionalists and may not be transferrable to practices with different standards. This reminded me of Mr Abraham Lincoln who had rightly stated that "believing everyone is dangerous, but believing nobody is more dangerous". Dr Katoh and Suzuki encouraged me to perform few CTO PCI in Japan successfully employing retrograde approach consisting of true lumen puncture, controlled antegrade and retrograde subintimal tracking (CART), reverse CART. Since then, two years elapsed before I could sow this new technique in Saibhavani Hospital located in Hyderabad. With gratifying results, the euphoria and paroxysm of CART and reverse CART continued leading to development of various CTO programs.

2. A tale of innovations and inventions

While working in Veteran General Hospital, Taipei in 2004 as a guest cardiologist and carefully weighing the risk/benefit ratio, I had no hesitation in getting convinced that CTO PCI is gratifying to both the patient and the operator. With the adopted antegrade approach, the success rate remained suboptimal, in the range of 65–70% worldwide. Later in 2005, my stay in Toyohashi Center (Japan) as a guest operator was rewarding. Dr Suzuki and Kato reiterated, "you either do CTO PCI, or you don't: there is no such thing as trying." The key to success was persistence and perseverance in this challenging subset of PCI. An enthusiastic desire to learn via all possible avenues (i.e. reading the literature, attending CTO courses, and eventually being taught by the innovators (such as Dr Katoh and Suzuki) helped me significantly. Dedicated guidewires, microcatheters with innovative methods such as parallel wire technique, anchor wire, anchor balloon technique, intravascular ultrasound (IVUS) guidance, side branch techniques, and dissection and re-entry methods played significant roles in improving the success rate via antegrade approach. The adoption of the retrograde approach has potentially improved further the success rate of complex CTO PCI to the extent of 90–95%. Initially, I used this technique as a benchmark in previous antegrade failures. Subsequently, this became the primary procedure in situations like ostial and long segment CTO, and CTO with heavy calcification, ambiguous proximal cap, and a diffusely diseased distal vessel.

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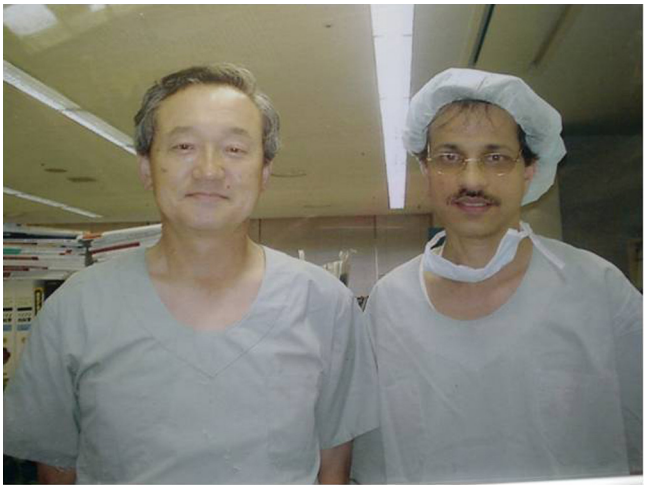

Fig. 1. The author is at Toyohashi Heart Center, Japan with Dr Takahiko Suzuki, an expert CTO operator.

3. The voyage to cross the final frontier

After completion of my tenure as guest cardiologist in Veteran General Hospital in Taiwan for nine months in 2004, I moved to Toyohashi Heart Center in 2005 which taught me CTO PCI: A to Z (Fig. 1). I returned to India subsequently and kept on visiting Kobe as an international invited faculty in complex cardiovascular therapeutics from 2005 to 2008 to moderate live cases, to present educative and exciting cases, and to give lectures. It was followed by the visit of few eminent Japanese CTO operators to India and train our cardiologists instilling the momentum of retrograde approach. Subsequently, I was invited by China, South Korea, Israel, Malaysia, Singapore, USA, and Latin America that set up an important milestone for retrograde movement in India. It was indeed an honor to get appreciated as guest cardiologist in Guangdong Cardiovascular Institute at Guangzhou in 2010. This followed my appointment as professor of cardiology at Beijing Tiantan Hospital in 2012 and professor of medicine at Tan Tao University Medical School at Vietnam in 2013.

4. The retrograde revolution

Limited success was achieved in the past with various retrograde techniques such as kissing wire, knuckle wire, and direct retrograde crossing. The CART technique improved the success rate. Reverse CART, the more reproducible and predictable technique that involved both antegrade access to the proximal cap, retrograde access to the distal cap, creation of subintimal space by antegrade balloon followed by negotiation of retrograde wire through the subintimal space into the proximal true lumen. With latest iterations such as IVUS-guided reverse CART, stent reverse CART, mother-child and contemporary reverse CART, the retrograde revolution broke out and its effects reverberated throughout much of India.

5. Reaping the benefits

It is the time to develop regional centers of excellence across the country to reap the benefits of CTO PCI by antegrade, retrograde, or hybrid (putting it altogether) strategy to every patient who needs them. While enhancing the success rate, it will decrease the risks of procedure significantly. My opinion is that "this technique should be reserved for very experienced antegrade operators (>300 CTOs and >50 per year)", although a specific threshold is hard to define. To connect and take this movement forward, e-mail: dr_dash2003@yahoo.com. This is the time when we can do much more collectively.

Conflicts of interest

The author has none to declare.