Chronic total occlusion special issue

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Since its pioneering years, interventional cardiology has faced the hurdle of dealing with the special case of chronic total occlusion (CTO). Long considered to be the 'last frontier' of percutaneous coronary interventions, it is only in the last decade that we have finally observed a significant breakthrough in this challenging field, mostly owing to new techniques and materials coming from Japan.

Chronic total occlusion procedures now constitute approximately 10–20% of all angioplasty operations at high-volume hospitals [1]. Advances, mainly in guidewire technology, and the development of new techniques have increased success rates up to an astounding 90% in specialized centers with experienced operators [2]. Concomitantly, a reduction of the CTO restenosis rate has been observed with the advent of drug-eluting stents [3].

New data have also highlighted the clinical benefits of CTO revascularization, which, in addition to angina relief, include improvement of left ventricular function, a reduction of major adverse cardiac events and perhaps increased survival rates [4]. However, an important hurdle on the road to wider utilization of CTO revascularization is that these are long, expensive procedures that expose the operators to high doses of radiation. A particularly steep learning curve also exists. Complexity of procedures and limited familiarity with new techniques may often lead to premature interruption of procedures, causing both physician and patient frustration and representing a common reason for referral to bypass surgery or for choosing medical treatment. Strict adherence to recently developed guidelines [5], especially concerning patient selection, equipment, facilities and proctoring, is thus, in our opinion, essential for an adequate set-up and maintenance of a successful CTO program.

Recent advances in CTO techniques that have broadened percutaneous coronary intervention indications and improved success rates can be categorized into anterograde and retrograde approaches [6]. In the presence of visible contralateral collaterals, operators now widely use bilateral injections to allow for simultaneous antegrade and retrograde filling of the target vessel. Antegrade, parallel wire, controlled dissection and microchannel penetration techniques have been developed [7]. Techniques for retrograde penetration of the distal CTO cap are various, with the controlled antegrade and retrograde tracking [8], especially in its 'reverse' variety, being particularly popular. However, no consensus exists for selection of the initial approach to a CTO.

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In this special issue of Interventional Cardiology, an array of high-level review articles on CTO written by experts in the field are presented. These reviews are the result of a CTO Workshop held at the Catholic University of the Sacred Heart, Italy in June 2009. The topics covered range from the access site for the procedure, with an overview of the emerging radial access [9], to the serious strategic problem of the patient with both a CTO and an acute occlusion of another vessel [10]. Technical tips and tricks are widely explored with two papers from Professor Galassi’s group [11,12], as well as the dilemma of which stent to choose in CTO [13]; whether to use additional intravascular imaging [14], or devices such as the CROSSER® [15]. Finally, Bernhard Reimers shares with us his large experience as a leading expert and organizer of CTO meetings covering the particularly thorny issue of how to avoid, and in some cases recognize and treat, the specific complications related to CTO treatment [16].
Bibliography


