Editorial / *Editöryal Yorum*

Success in chronic total occlusion: "benefit for the patient" or "satisfaction for the operator"?

Kronik tam tıkanmada başarı: "Hastaya sağlanan yarar" mı "doktorun memnuniyeti" mi?

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Chronic total occlusion (CTO) is one of the most widely discussed lesion subgroups of percutaneous coronary interventions (PCI). It constitutes 8% to 15% of all PCI procedures.[1] The uncertainty of the balance between the expected benefit and the variety of factors influencing success keeps the discussion current. A lengthy and tiring procedure, high contrast agent consumption, and high X-ray doses are the major difficulties encountered in practice. In these procedures, the success rate is lower than in the other subgroups of PCI, and the possible complications are very bothersome when compared to those with a routine procedure.[2] With the advancement of technology, new equipment and devices have been developed, and this has also encouraged the development of new techniques to increase the success rate. On the other hand, increased usage of these materials has increased the costs of the procedure.[3]

The success of a CTO procedure is known to be influenced by a wide variety of factors. Foremost among these is the experience of the operator. Besides his overall experience, the focused experience of the operator on CTO lesions is of particular importance. On the other hand, the proper selection of the technique used and the complication rates are two major determinants of the procedure. Lesion characteristics such as tortuosity, severe calcification and long length, a blunt tip of the lesion and continuity of the tip with a minor branch, the bridging collaterals, and the duration of occlusion are known to be independent factors influencing the success rate.[4,5]

Abbreviations:

CTO	*Chronic total occlusion*
PCI	*Percutaneous coronary intervention*

A challenging topic is the duration of the occlusion. Although it is defined as shorter in some studies, the consensus among the EuroCTO Club for the definition of CTO is "the presence of TIMI 0 flow within an occluded arterial segment of greater than three months standing".[6,7] In most of the cases, it is hard to describe the exact duration of the occlusion. In general, the occlusion of a coronary artery for more than three months is recognized as CTO. However, in many of the cases, the occlusion is not accompanied by symptoms, and thus the duration of the occlusion is usually not clear in most of the cases. Some lesions can be passed more easily than previously thought, despite being estimated to be occluded for more than three months. In many studies, the occlusion duration, which is defined in the methodology, raises this doubt. This heterogeneity of lesion characteristics, operator experience and the ambiguity regarding the occlusion duration confuse the definition of success.

Do we have to attempt all CTO lesions? The answer is not that easy. It is hard to identify the width of ischemia and necrosis of the myocardium and to determine whether the collateral circulation is ad-

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equate enough to supply the myocardium using certain methods of measurement. There is no definitive method to compare the prognosis of successful and unsuccessful cases in a randomized fashion in a certain number of patients. When deciding to attempt a CTO lesion, these points must be taken into account, and the cases should be evaluated carefully before the procedure. The expected benefit might be translated as improvement in quality of life and a decrease in mortality and morbidity.

In this issue of the Archives of the Turkish Society of Cardiology, Çetin et al.[8] reported their "Results of Percutaneous Coronary Intervention for Chronic Total Occlusions of Coronary Arteries". This is an opportunity for us to discuss various aspects of CTO interventions. The success rate in their study is high enough to compare with the results of the other experienced clinics. King mentioned that the success rate in Emory Hospital's old plain balloon angioplasty data without stents between 1980 and 1988 was also comparable with some of the new data.[4] Despite the striking evolution in the tools and techniques used in CTO lesions, it is interesting to hear this confusing comparison between old plain angioplasty and the new equipment. The main reason is probably the heterogeneity of the factors influencing the success rate. As the new tools are expensive, it is reasonable to use limited numbers of catheters and guide wires in such an intervention. From this perspective, we have to congratulate the team for their excellent success rate (73%) among the other series, using limited resources.[9] We also know that some equipment, such as rotablator, laser wire and 0.9 mm laser catheter, are rarely used today. They are also not available in Turkey and some other countries. I believe that some of these old tools would contribute to the success rate.

Complete revascularization or a successful CTO procedure appears to be associated with improvement in mortality and long-term outcomes in highly selected patients who are evaluated carefully before the procedure.[9] The aim of a CTO intervention must be summarized as success in terms of "benefit" rather than "satisfaction".

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