

Procedural Success of Percutaneous Coronary Intervention in Complete Versus Functional Coronary Occlusion: A Single-Center, Single-Operator Experience

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Abstract

Background- Chronic total occlusion (CTO) of the coronary arteries includes a wide spectrum of lesions with a TIMI flow grade of 0 to 1 and more than four weeks' duration. The procedural success rate of percutaneous coronary intervention (PCI) in CTO not only depends on the anatomy and morphology of the lesion but also, and most importantly, on the angiographic TIMI flow grade of the lesion. The aim of this study was to show the procedural success rate of PCI for different subtypes of CTO, according to the angiographic TIMI flow grade of lesions.

Method- From March 2000 to March 2001, PCI was performed in 60 cases with at least one CTO lesion. Forty-six of the patients were male (76.66%), and their mean (\pm SD) age was 53.3 (\pm 10.37) years (range 35-72 years). Among these cases, 31 (51.66%) had complete total occlusion (TIMI flow grade 0) and were designated as Group I, and 29 (48.33%) had functional total occlusion (TIMI flow grade I) and were designated as Group II.

Results- The procedural success rate in complete total occlusion (Group I) was 64.5% and in functional total occlusion (Group II) was 96.6% ($P=0.002$, CI=95%). The total success rate was 80% ($n=48$) without any major procedural complications (MI, urgent CABG, or death).

Conclusion- Although there are a few predictors for procedural success for PCI in CTO lesions, it seems that the TIMI flow grade (0 or 1) of the lesion is the most important and independent predictor for procedural success (procedural success was defined as final residual stenosis less than 50% with balloons and less than 20% with stents on visual assessment, and the absence of major complications (*Iranian Heart Journal 2008; 9 (4): 6 -12*)).

Key words: coronary artery disease ■ total occlusion ■ percutaneous coronary intervention ■ TIMI flow grade

Chronic total occlusion (CTO) accounts for 5% to 15% of all angioplasty procedures in high volume catheterization laboratories.¹⁻⁶ Percutaneous coronary intervention (PCI) of CTO still remains one of the major challenges in the field of interventional cardiology. However, advances in technology of devices and operator experience have increased the procedural success rate.

The procedural success rate with conventional guidewires varies from 50% -78%,^{2,4,7-12} depending on the anatomical and morphological characteristics of CTO, duration of the occlusion (age of occlusion), and the TIMI flow grade of the lesion (0 or 1). There is no definite definition for CTO, and all the definitions that have been presented are arbitrary.