

The CTo-aBCDE score: A new predictor of success in chronic total occlusions

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Abstract

Introduction

Patient selection for percutaneous coronary intervention (PCI) in chronic total occlusions (CTOs) is crucial to procedural success. Our aim was to identify independent predictors of success in CTO PCI in order to create an accurate score.

Methods

In a single-center observational registry of CTO PCI, demographic and clinical data and anatomical characteristics of coronary lesions were recorded. Linear and logistic regression analysis were used to identify predictors of success. A score to predict success was created and its accuracy was measured by receiver operating curve analysis.

Results

A total of 377 interventions were performed (334 patients, age 68 ± 11 years, 75% male). The success rate was 65% per patient and 60% per procedure. Predictors of success in univariate analysis were absence of active smoking (OR 2.02, 95% CI 1.243-3.29; $p=0.005$), presence of tapered stump (OR 5.2, 95% CI 2.7-10.2; $p<0.001$), absence of tortuosity (OR 6.44; 95% CI 3.02-13.75; $p<0.001$), absence of bifurcation (OR 1.95; 95% CI 1.08-3.51; $p=0.026$), absence of calcification (OR 3.1; 95% CI 3.10-5.41; $p<0.001$), LAD as target vessel (OR 1.9, 95% CI 1.0-3.5; $p=0.048$), and CTO length <20 mm (OR 3.00, 95% CI 1.69-5.3; $p<0.001$). Only anatomical factors were independent predictors of success, and an anatomical score (0-11 points) with high accuracy (area under the curve 0.831) was subsequently created. A score <3 was associated with low probability of success (15%), 3-8 with intermediate probability (55%), and >8 with high probability (95%).

Conclusion

In our sample only anatomical characteristics were predictors of success. The creation of a score to predict success, with good accuracy, may enable selection of cases that can be treated by any operator, those in which a dedicated operator will be desirable, and those with an extremely low probability of success, which should be considered individually for conservative management, surgical revascularization or PCI by a team experienced in CTO.

Keywords: Ischemic heart disease, Percutaneous coronary intervention, Chronic total occlusion, Score