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# Management of a Huge Dissection After PCI of Circumflex Coronary Artery Chronic Total Occlusion

Davran Cicek<sup>1\*</sup>

<sup>1</sup>Department of Cardiology, Baskent University School of Medicine, Alanya Medical Center Saray Mah, Yunusemre Cad, No. 1, 07400, Alanya, Antalya, Turkey.

### Author's contribution

The sole author designed, analyzed, interpreted and prepared the manuscript.

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Case Study

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## ABSTRACT

Percutaneous coronary intervention (PCI) of chronic total occlusion (CTO) is a complex procedure carrying the risk of complications that cause significant morbidity and mortality. The successful recanalisation of CTO approaches is 80%. Antegrade approach for the treatment of CTO is the most commonly used method. Significant complications are rare in CTO procedure. During this approach, several complications such as dissection, perforation, occlusion, device embolization or entrapment can occur. CTO operators should be aware of the available strategies for prevention and management of CTO related complications. In this case we describe a conservative management and the clinical outcome of a patient with huge and long coronary dissection in the CTO procedure of a Circumflex Artery (Cx).

**Keywords:** Chronic total occlusion; complex procedure; percutaneous coronary intervention; coronary dissection.

\*Corresponding author: E-mail: [davrancicek@mynet.com](mailto:davrancicek@mynet.com);

## ABBREVIATIONS

PCI : Percutaneous Coronary Intervention;  
CTO : Chronic Total Occlusion;  
Cx : Circumflex Artery;  
TIMI : Thrombolysis In Myocardial Infarction;  
CABG : Coronary Artery By pass Graft;  
LIMA : Left Internal Mamarian Artery;  
LAD : Left Anterior Descending Artery;  
RIMA : Right Internal Mamarian Artery;  
RCA : Right Coronary Artery;  
OM : Obtus Marginalis Artery;  
ECG : Electrocardiography;

## 1. INTRODUCTION

Chronic total occlusions are characterized by TIMI (Thrombolysis In Myocardial Infarction) grade 0 or 1 flow in a coronary artery for a minimum of 3 months [1]. CTOs are common and observed in up to 25% of patients undergoing angiography [2]. The rate of successful recanalisation of CTOs continue to improve and are 80% in practice [3]. Advances in techniques and devices to treat CTOs have also reduced the rate of complications [4]. The complications can be classified as coronary (dissection, occlusion, perforation, device embolisation or entrapment); cardiac non coronary (periprocedural myocardial infarction); extracardiac (vascular access complications, systemic embolisation, contrast-induced nephropathy and radiation-induced injury). It is critical to understand and manage the potential complications with these procedures [5].

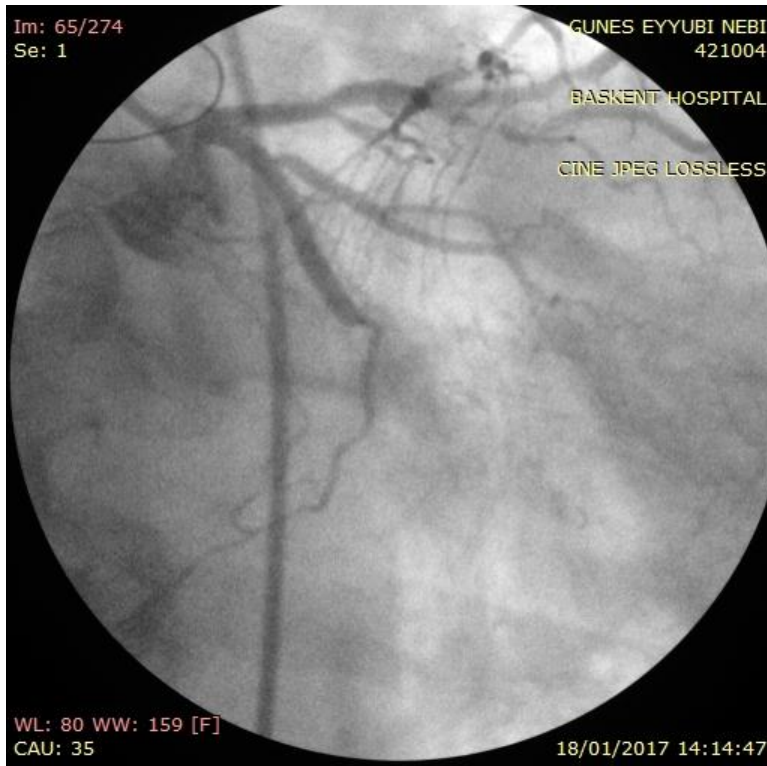
## 2. PRESENTATION OF CASE

A 61 year-old, caucasian man with previous 3 vessel CABG (Coronary Artery By pass Graft) (LIMA (Left Internal Mamarian Artery) -LAD (Left Anterior Descending Artery), RIMA (Right Internal Mamarian Artery) -RCA (Right Coronary Artery), Ao (Aort)-Cx (Circumflex Artery) OM (Obtus Marginalis Artery) in 2000 and a RCA PCI (drug-eluting stent) in 2010 without any additional cardiovascular risk factors was admitted to cardiology polyclinic with a short episode of chest, left arm pain and breathing problem. After a physical examination, we perform a treadmill test for to diagnose the ischemia and it was positive. In the treadmill test, there was 2 mm ST

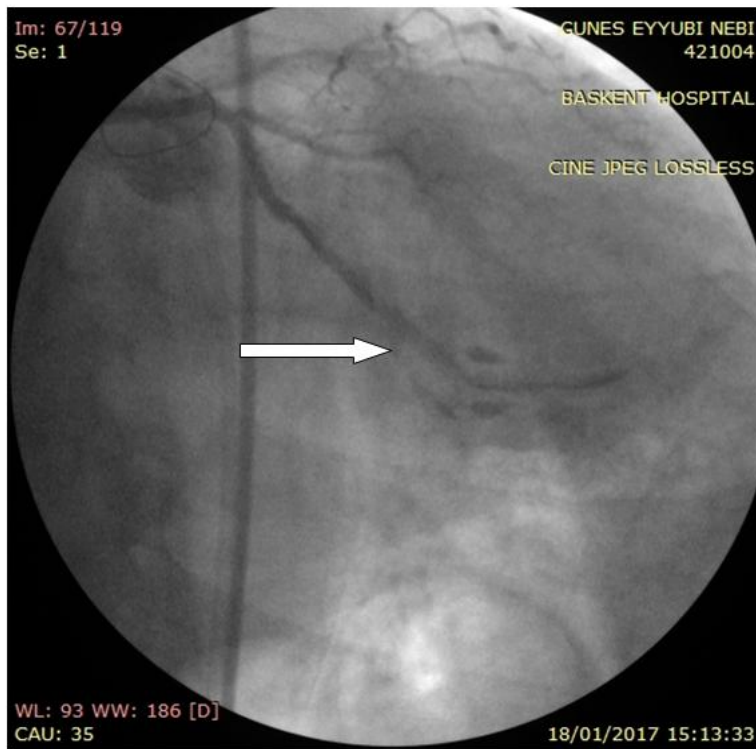
depression in D2, D3,AVF, V5-V6 derivations. After these findings, we plan a coronary angiography the next day. In the coronary angiography, Left main was normal, Lad was 100% occluded, Cx was 100% occluded (Fig. 1), RCA was 40% occluded. Only LIMA-LAD graft was patent and the Cx Om graft and RCA grefts were occluded. There was only one vessel area ischemic. It was Cx. Then we plan to open Cx CTO lesion. The procedure was started by bifemoral approach. EBU guiding to LMCA and Right Judkins to RCA were used. Antegrad approach to the chronic total occlusion to Cx was the procedure with fine cross microcatheter, GAI I wire. After crossing the total occlusion 1.0x10 mm baloon was used for dilatation. After the dilatation, a long and a huge dissection observed in Cx artery (Fig. 2). The hemodynamics of the patient was normal. There was no ECG (electrocardiography) changes. The patient was asymptomatic. We stop the procedure and plan to stay conservative. After 6 weeks of healing period we perform a control angiography. The dissection was healed perfectly (Fig. 3). We implante two stents to Cx artery (Fig. 4).

## 3. DISCUSSION

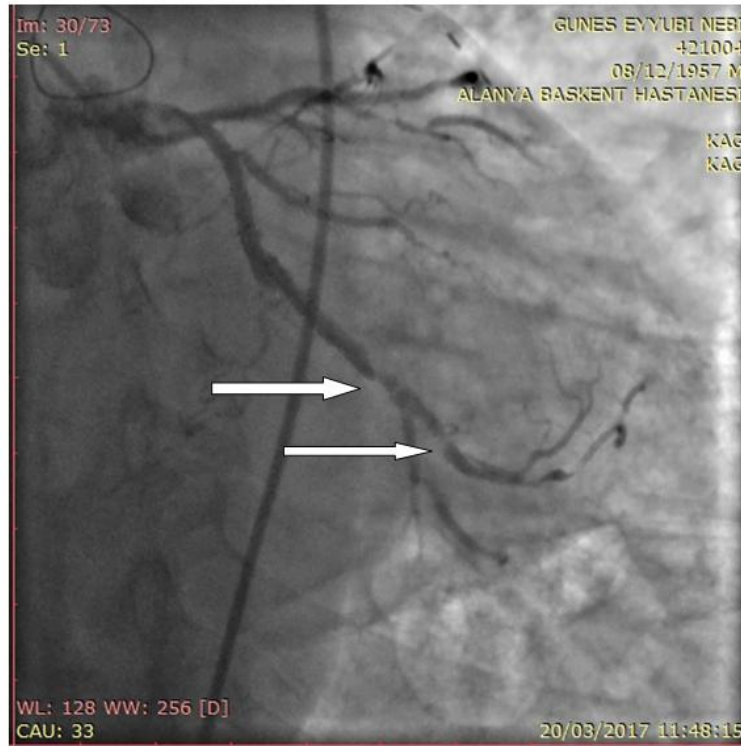
Coronary artery dissection is the one of the important complications in the course of the CTO PCI. This classification divides dissection of coronary artery into six types based on their appearance on coronary angiography NHLBI classification (The National Heart, Lung and Blood Institute) [6,7]. Table 1. The management of of baloon induced huge coronary dissection is challenging in CTO patients. Distal dissection occurs when wire crossing in subintimal position causes hematoma that compresses the true lumen. If reentry fails, it may be best to wait for 2–3 months before reattempting PCI, to allow time for healing of the dissection. IVUS may be performed and stenting is considered in case of tissue flap or flow limitation [5]. Coronary stenting is the mostly applied procedure in dissections. In our case, we describe a conservative management of a long dissection of chronic total occlusion circumflex coronary artery after PCI. The successful management of this case demonstrate us to speculate on a more conservative approach for the treatment of coronary dissection in the CTO PCI especially when the dissection involves the more distal part of the vessel.



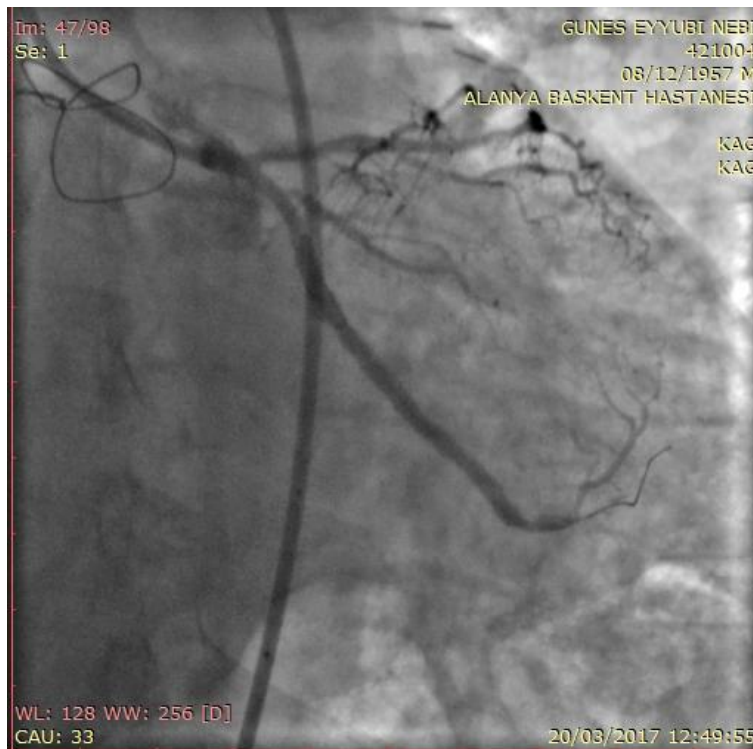
**Fig. 1. Totally occluded circumflex coronary artery**



**Fig. 2. Huge dissection in circumflex coronary artery**



**Fig. 3. Healed circumflex coronary artery with two significant stenosis after 6 weeks**



**Fig. 4. Circumflex coronary artery after 2 stent implantation**

**Table 1. Coronary artery dissection classification, NHLBI classification (The National Heart, Lung and Blood Institute)**

Type	Description
Type A	minor radiolucent areas in the lumen without impairment of flow or persistent dye staining after contrast runoff
Type B	luminal flap that is radiolucent and runs parallel to the vessel wall with contrast injection but without impairment of flow or persistent dye staining after contrast runoff
Type C	contrast appears outside of the vessel lumen as an "extraluminal cap", the staining appears even after contrast clears off the lumen
Type D	spiral radiolucent luminal filling defects, often persistent staining after contrast clears from the vessel
Type E	new and persistent filling defects in the vessel lumen
Type F	lesions that progress to impaired flow or total occlusion

#### 4. CONCLUSION

Conservative management of a huge coronary dissection in the cto pci procedure may be a favorable option instead of long stenting of the vessel.

#### CONSENT

Written informed consent was obtained from the patient for publication of this case report and accompanying images.

#### ETHICAL APPROVAL

As per international standard or university standard written ethical permission has been collected and preserved by the author.

#### COMPETING INTERESTS

Author has declared that no competing interests exist.

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