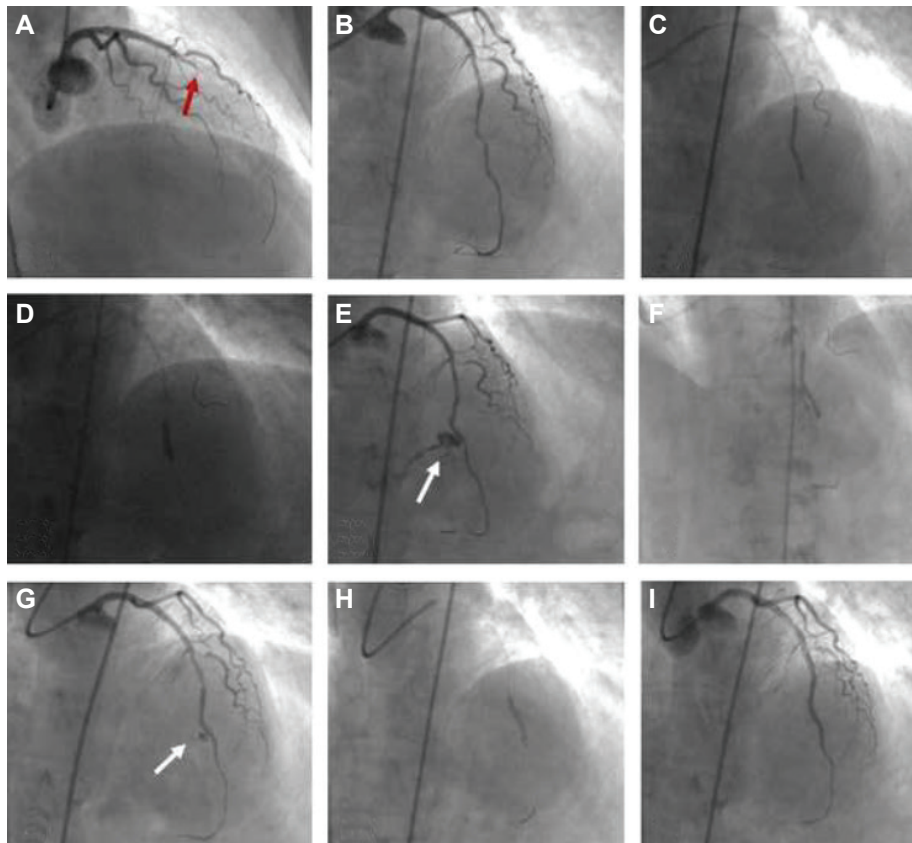


## Coronary Artery Perforation Due to High-Pressure Cutting Balloon Inflations

### Yüksek Basıncılı Kesme Balonu Şişirmelerine Bağlı Koroner Arter Perforasyonu

The coronary angiogram of a 68-year-old female with non ST-elevation myocardial infarction showed occlusion of the left anterior descending (LAD) artery just after a small-caliber first diagonal. The lesion was crossed with a standard workhorse wire (Figure 1A). After pre-dilations with semi-compliant balloons, flow restoration in the LAD revealed diffuse atherosclerotic disease in the mid-portion (Figure 1B). There was a focal calcified area where the semi-compliant balloons had a waist (Figure 1C, Video 1), and subsequent inflations with a non-compliant balloon up to 18 atm did not improve it. Cutting balloon inflations (Wolverine 3.0 x 10 mm, Boston Scientific, Galway, Ireland) up to 10 atm also failed to improve the waist. A final inflation up

### CASE IMAGE OLGU GÖRÜNTÜSÜ



**Figure 1. (A)** Mid- left anterior descending occlusion (red arrow); workhorse wire has crossed the lesion. **(B)** Diffuse atherosclerotic disease in the mid-portion of the LAD. **(C)** Pre-dilatation with a semi-compliant balloon showing a waist. **(D)** Full expansion of the cutting balloon at 14 atm. **(E)** Subsequent angiographic view showing an Ellis Grade III perforation (white arrow). **(F)** Sequential balloon inflations with the semi-compliant balloon resulted in **(G)** leak restriction (white arrow), **(H)** covered stent deployment, and **(I)** the final angiographic result.

Antonios Kouparanis <sup>ID</sup>  
Konstantinos C. Theodoropoulos <sup>ID</sup>  
Ioannis Botis <sup>ID</sup>  
Matthaios Didagelos <sup>ID</sup>  
George Kassimis <sup>ID</sup>  
Antonios Ziakas <sup>ID</sup>

Department of Cardiology, AHEPA University Hospital, Aristotle University of Thessaloniki, Thessaloniki, Greece

**Corresponding author:**  
Konstantinos C. Theodoropoulos  
✉ ktheod2005@hotmail.com

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to 14 atm (the cutting balloon's rated burst pressure was 12 atm) resulted in full expansion of the cutting balloon (Figure 1D); however, the next angiographic view revealed an Ellis III coronary perforation (Figure 1E, Video 2). We promptly withdrew the cutting balloon and re-advanced the semi-compliant balloon, performing sequential long inflations (Figure 1F, Video 3). Leak restriction was achieved (Figure 1G, Video 4), and bedside echocardiography excluded pericardial effusion. A PK Papyrus (BIOTRONIK AG, Bülach, Switzerland) 2.5 x 20 mm covered stent was then implanted to seal the perforation (Figure 1H, Video 5). Two more drug-eluting stents were implanted proximally with good angiographic results and Thrombolysis in Myocardial Infarction II-III flow (Figure 1I). The patient had an uneventful recovery and was discharged four days later.

Coronary artery perforation is a serious complication of percutaneous coronary intervention that can potentially be life-threatening. Early recognition and adequate management with balloon tamponade or covered stents are very important for patient survival; however, bail-out surgical intervention may also be required.

In conclusion, our case highlights that performing high-pressure cutting balloon inflations in native calcified coronary arteries should be avoided as the risk of coronary perforation is high.

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**Video 1.** Semi-compliant balloon inflations revealing a waist.

**Video 2.** Coronary angiogram post high-pressure cutting balloon inflation demonstrating an Ellis Grade III perforation.

**Video 3.** Re-advancement of the semi-compliant balloon to perform sequential long inflations.

**Video 4.** Leak restriction demonstrated post sequential long inflations with the semi-compliant balloon.

**Video 5.** A covered stent was implanted and the leak was eliminated.