

# Cutting balloon inflation for the bail-out management of coronary artery dissections: A promising option.

## Author's reply

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We sincerely appreciate the interest of Yalta et al. [1] in our paper. We are pleased that the presented case provides an opportunity to exchange opinions and clarify some issues.

We have discussed the possibility of treating coronary artery dissection using cutting balloon (CB) angioplasty [2]. This approach has been reported previously, especially in cases of spontaneous coronary artery dissection (SCAD) [3, 4]. However, the cause of coronary artery dissection in our case was not fully explained [2]. According to the definition, SCAD is a separation between the intima and media layers in epicardial coronary arteries in the absence of traumatic or iatrogenic triggers [3]. In our patient, cardiac arrest and resuscitation can be considered as traumatic factors. Additionally, acute coronary syndrome and invasive treatment could be considered as emotional triggers of SCAD. However, the diagnosis of SCAD seems unlikely. The most probable cause of dissection remains iatrogenic, despite relatively shallow catheter intubation during the initial angiogram. Therefore, our approach to the management of coronary artery dissection should not be considered the standard treatment for SCAD [1, 2].

According to expert opinion, the recommended management of SCAD is conservative whenever possible [3]. However, in patients with high-risk features, including symptoms and signs of ongoing myocardial ischemia, a large area of myocardium at risk, and reduced antegrade flow, an invasive strategy is recommended [3]. In this case, CB angioplasty was an unusual procedure due to balloon inflation in the false lumen. In a review of

32 patients with SCAD who underwent CB angioplasty, only 12 (37.5%) required additional treatment in the form of stenting of the damaged vessel [4]. This indicates that CB angioplasty is an effective and promising method in the treatment of SCAD. However, no data on false lumen CB inflation were reported in this review. Also, the technique used varied among the cases described [4]. In most cases, CB deployment was performed at the level of maximal lumen compression, making it rather focal. In contrast, in our case, CB was inflated from the crux to the ostium of the right coronary artery to relieve the true lumen's pressure and restore optimal blood flow [2]. Although some operators have opted for a 1:1 balloon size to reference diameter ratio, the most common strategy is CB undersizing [4]. Aware of the high risk of complications, including vessel perforation, we selected a 2.5 × 15 mm balloon size based on intravascular imaging, which is critical in such cases. We acknowledge the high risk of off-label use of CB within the false lumen, but it was considered the only reasonable option. It was an alternative to classical inflation or stenting due to the risk of hematoma propagation, especially at the ostium, with possible dissection of the ascending aorta [3].

The mention of the possible coexistence of SCAD and takotsubo syndrome is an excellent point [1, 5]. However, in our case, echocardiography did not show the typical picture of takotsubo syndrome. At the first examination after left anterior descending artery stenting, the left ventricular ejection fraction (LVEF) was significantly reduced to

approximately 20%, probably due to myocardial stunning. After a few days, LVEF improved significantly to 45% with persistent contractile dysfunction in right coronary artery vascularization. N-terminal pro-B-type natriuretic peptide levels were significantly elevated (8771 pg/ml [ $<125$ ]) and were not subsequently controlled.

Due to the reduced LVEF, the treatment included, in addition to dual antiplatelet therapy (DAPT) and statin, typical heart failure therapy (beta-blocker, angiotensin-converting enzyme inhibitor, mineralocorticoid receptor antagonist, sodium-glucose cotransporter-2 inhibitor). It should be noted that the use of DAPT in SCAD is controversial [3]. However, while it is mandatory in patients who have received a stent, it raises concerns about bleeding risk and healing difficulties, particularly in patients who have undergone CB angioplasty without a stent. In this case, these concerns were not applicable due to the prior stenting of the left anterior descending artery and the absolute necessity of DAPT [2].

Once again, we would like to thank Yalta and colleagues [1] for their kind comments and invite further discussion of our management. The interest in our case and the lack of established indications for the use of CB in spontaneous or iatrogenic vessel dissection underscore the need for further research in this area.

## Article information

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