Balloon postdilatation is a mandatory step in the deployment of bioresorbable vascular scaffold

To the Editor,

I read the article by Özel et al. (1) entitled "What is better for predilatation in bioresorbable vascular scaffold implantation: a noncompliant or a compliant balloon?" recently published in Anatol J Cardiol 2016; 16: 244-49 with great interest. The authors demonstrated the effect of balloon predilatation using noncompliant and compliant balloon catheter in the deployment of bioresorbable vascular scaffold (BVS). They stated that balloon dilatation with noncompliant balloon may decrease the need for balloon postdilatation.

Drug-eluting BVS is a milestone for percutaneous coronary intervention. Although commercial packing of BVS looks similar to metallic stent, deployment is more sophisticated and requires proper predilatation, postdilatation of the lesion, and use of other imaging methods, including intravascular ultrasonography and optical coherence tomography (OCT) (2, 3). Proper apposition of scaffold is one of the major predictors of scaffold failure. Thus, routine high-pressure balloon postdilation with noncompliant balloon catheter was suggested. Since BVS struts are not visible under fluoroscopy, additional imaging techniques, especially OCT, show apposition of the scaffold more clearly and enhance success rate of the procedure (4). Özel et al. (1) also stated that choice of noncompliant balloon predilation would decrease need for postdilatation. It is significant that rate of balloon postdilatation is not high, and it was approximately 50% in the mentioned investigation. It is not advisable to state that there is advantage with noncompliant balloon predilation with respect to reducing need for postdilatation without additional intravascular imaging technique. Conventional angiographic imaging cannot accurately guide proper apposition of the scaffold. Dalos et al. (5) reported that focal radial expansion was significantly reduced in BVS compared to drug-eluting metal stent in routine clinical setting without observing routine postdilatation protocol.

In conclusion, routine balloon postdilatation with non-compliant balloon catheter is as crucial as lesion preparation. Importance of balloon postdilatation should not be neglected by the authors, and all practitioners should be encouraged to perform routine noncompliant balloon postdilatation regardless of angiographic image to increase success rate of BVS deployment.

Ahmet Karabulut
Department of Cardiology, Faculty of Medicine, Acıbadem University Acıbadem Atakent Hospital; İstanbul-*Turkey*

References

1. Özel E, Taştan A, Öztürk A, Özcan EE, Uyar S, Şenarslan Ö. What is better for predilatation in bioresorbable vascular scaffold implantation: a non-compliant or a compliant balloon? Anatol J Cardiol 2016; 16: 244-9.
2. Karabulut A, Demirci Y. Cutting balloon use may ease the optimal apposition of bioresorbable vascular scaffold in in-stent stenosis. Postepy Kardiol Interwencyjnej 2015; 11: 64-6. Crossref
3. Karanasos A, Van Mieghem N, van Ditzhuijzen N, Felix C, Daemen J, Autar A, et al. Angiographic and optical coherence tomography insights into bioresorbable scaffold thrombosis: single-center experience. Circ Cardiovasc Interv 2015 May 8. Crossref
4. Caiazzo G, Longo G, Giavarini A, Kılıç ID, Fabris E, Serdoz R, et al. Optical coherence tomography guidance for percutaneous coronary intervention with bioresorbable scaffolds. Int J Cardiol 2016; 221: 352-8. Crossref
5. Dalos D, Gang I, Roth C, Krenn L, Scherzer S, Vertesich M, et al. Mechanical properties of the everolimus-eluting bioresorbable vascular scaffold compared to the metallic everolimus-eluting stent. BMC Cardiovasc Disord 2016; 16: 104. Crossref

Address for Correspondence: Dr. Ahmet Karabulut
Acıbadem Atakent Hastanesi, Kardiyoloji Bölümü
Halkalı Merkez Mah. Turgut Özal Bulvarı, No: 16,
34303 Küçükçekmece, İstanbul-*Türkiye*
E-mail: drkarabulut@yahoo.com

DOI:10.14744/AnatolJCardiol.2017.7551

Author`s Reply

To the Editor,

We appreciate the valuable comments and critique of our colleague in response to our article entitled "What is better for predilatation in bioresorbable vascular scaffold implantation: a non-compliant or a compliant balloon?" published in the April 2016 issue of the Anatolian Journal of Cardiology (1). We have some contributions to offer.

Bioresorbable stent (BRS) is novel technology that is still being refined, and technical aspects of implantation have evolved over the last several years. In our retrospective study we analyzed patients who had received BRS treatment between January 2013 and November 2013. Now, in 2016, we completely agree that proper postdilatation is mandatory when implanting BRS. In 2013, however, importance of postdilatation was not very clear and postdilatation rate was 40% to 50% in large registries (2, 3). Our postdilatation rate was similar to that of previous studies. Avoiding BRS fracture was a factor that contributed to lower rate of postdilatation in BRS procedures. Smaller minimum lesion diameter after BRS implantation was another aspect that led to higher rate of postdilatation in com-

pliant balloon group in our study. Consistent with numerous data in recent literature, we currently advise routine postdilatation with non-compliant balloon after BRS implantation.

We agree with the remarks of our colleague about use of intravascular ultrasound (IVUS), and especially optical coherence tomography (OCT) to assess scaffold apposition. Lack of use of intravascular imaging studies is a disadvantage of our study, but we have to also recall that rate of IVUS and OCT use is very low in real world practice (2) and majority of implantations were made under fluoroscopic guidance. Reimbursement difficulty in our country is another factor that limits routine use of OCT. Routine use of intravascular imaging studies will increase full apposition rate of BRS procedures.

In conclusion, using IVUS or OCT to check apposition of BRS after implantation and routine postdilatation with non-compliant balloon after BRS implantation are very important technical steps in BRS procedure.

Erdem Özel
Department of Cardiology, Tepecik Training and Research Hospital; İzmir-*Turkey*

Reference

1. Özel E, Taştan A, Öztürk A, Özcan EE, Uyar S, Şenarslan Ö. What is better for predilatation in bioresorbable vascular scaffold implantation: a non-compliant or a compliant balloon? Anatol J Cardiol 2016; 16: 244-9.
2. Capodanno D, Gori T, Nef H, Latib A, Mehilli J, Lesiak M, et al. Percutaenous coronary intervention with everolimus-eluting bioresorbable vascular scaffolds in routine clinical practice: early and midterm outcomes from the European Multicentre GHOST-EU registry. EuroIntervention 2015; 10: 1144-53. Crossref
3. Costopoulos C, Latib A, Naganuma T, Miyazaki T, Sato K, Figini F, et al. Comparison of early clinical outcomes between ABSORB bioresorbable vascular scaffold and everolimus-eluting stent implantation in a real-world population. Catheter Cardiovasc Interv 2015; 85: E10-5. Crossref

Address for Correspondence: Dr. Erdem Özel
Tepecik Eğitim ve Araştırma Hastanesi
Kardiyoloji Bölümü, İzmir-*Türkiye*
E-mail: erdem.ozel@hotmail.com

Letter to the editor regarding the article "A case of hypertrophic and dilated cardiomyopathic sudden cardiac death: de novo mutation in TTN and SGCD genes"

To the Editor,

We recently read the article entitled "A case of hypertrophic and dilated cardiomyopathic sudden cardiac death: de novo mutation in *TTN* and *SGCD* genes" by Baydar et al. (1) published in the Anatolia Journal of Cardiology in late 2016 with great interest. We commend the authors for their contribution to improving our understanding of sudden cardiac death mechanisms and suggesting potential reasons for occurrence of the condition of genetic origin. We do, however, have a number of thoughts about the study, which are outlined below.

The authors mentioned *de novo* mutation in the sarcoglycan (*SGCD*) and titin (*TTN*) genes. The article fails to mention, however, the parent-based variant approach to analysis. In human genetic diseases, the term "*de novo* mutation" by definition refers to an alteration in a gene that is present for the first time in one family member as a result of a mutation in a germ cell of one of the parents or in the zygote itself. It is only by analyzing the parents that their true contribution to the disease burden can be proven (2).

Furthermore, in the discussion section, the authors mentioned population frequencies of 2 variants using Exome Aggregation Consortium (ExAC) browser data. If those variants are *de novo*, they should not be in genetic data browsers like ExAC (3). Moreover, variant TTN:c.21758T>C was previously identified by Pugh et al. (4). The team reported this variant with a different transcript (c.41249T>C, p.Ile13750Thr NM_133378.4), and it has been identified in 5 individuals with dilated cardiomyopathy (DCM) ranging in age from early infancy to mid 30s, with one individual in their 60s who has been diagnosed with hypertrophic cardiomyopathy (HCM) (4). Therefore, as these variants were already identified by other research groups, they are no longer novel, as maintained in the current report.

Since only a single SGCD:c.15G>C variant with unknown significance was identified, it is not very likely that the *SGCD* gene is implicated in the pathology of this case. According to general variant classification assertion criteria, homozygous mutant allele of rs549319429 is classified as "likely benign" variant [December 8, 2015; GeneDx Variant Classification (06012015)] (5).

Sequencing of *TTN* gene revealed heterozygote TTN:c.21758T>C. Pugh et al. (4) described effect of this variant on both DCM and HCM in 2014 (4). Therefore, though SGCD:c.15G>C variant may be benign, in combination with possible pathogenic variant, such as TTN:c.21758T>C, clinical phenotype might produce an exponential effect.

To understand the certain effects of these variants on gene products, parent testing and co-segregation analyses should have been conducted before mentioning pathogenicity of the variants. Unfortunately, in the current article, it appears as though the authors have not completed any of these experiments.

Once again we would like to thank the authors and acknowledge their great efforts in presenting their case study. *De novo* mutation or pathogenicity of the variant family studies and segregation analysis should be conducted. Until these studies are completed the pathogenic effect of variants should not and cannot be mentioned.