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LETTER TO THE EDITOR

# Reply to: Commentary to Josef Tacke, et al. The Randomized Freeway Stent Study: Drug-Eluting Balloons Outperform Standard Balloon Angioplasty for Postdilatation of Nitinol Stents in the SFA and PI Segment

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Thank you for your comment. In endovascular treatment of symptomatic peripheral arterial disease (PAD), the discussion whether to use primary stenting with bare metal stents (BMS) or with drug-eluting stent (DES) and when to use drug-eluting balloons is still open. In early days, numerous studies have demonstrated better short-term and mid-term patency rates of primary stenting as compared to balloon angioplasty (PTA) alone in the femoropopliteal artery segment [1, 2]. Later studies comparing PTA and drug-eluting stenting demonstrated the superiority of primary application of a DES [3]. However, the concern is well known that the implant of a foreign body into the artery may trigger smooth muscle cell growth and intimal hyperplasia. Therefore, the development of drug-eluting balloons and their excellent results were a major step forward in endovascular treatment of PAD. However, as you mentioned in your comment some studies have shown no difference between DEB and PTA in terms of patency rate, target lesion revascularization (TLR), and amputation rate at mid-term follow-up [4, 5]. And some studies have shown the superiority of DES as compared to DEB at mid-term follow-up of 3 years [6]. So obviously, the discussion is still open which endovascular strategy is best for patients with symptomatic PAD.

It has been shown in many DEB trials that flow-limiting dissections may occur and bailout stenting is required in up to 25% [4–6]. However, as you mentioned, the combined use of self-expanding stents and DEB may increase the risk of stent thrombosis due to delayed endothelial coverage.

At the time when the study protocol of the Freeway Stent Study was designed, no randomized trial of primary BMS followed by PTA versus DEB was published so far. Now the Freeway Stent Study has answered some open questions such as whether the use of a DEB after BMS application is useful and whether a DEB after BMS may increase the thrombosis rate. Of course more studies dealing with this topics are needed.

## References

1. Schillinger M, Sabeti S, Dick P, et al. Sustained benefit at 2 years of primary femoropopliteal stenting compared with balloon angioplasty with optional stenting. Circulation. 2007;115:2745–9.
2. Laird JR, Katzen BT, Scheinert D, et al. Nitinol stent implantation vs. balloon angioplasty for lesions in the superficial femoral and proximal popliteal arteries of patients with claudication: three-year follow-up from the RESILIENT randomized trial. J EndovascTher. 2012;19:1–9.
3. Dake MD, Ansel GM, Jaff MR, et al. Durable Clinical effectiveness with paclitaxel-eluting stents in the femoropopliteal artery: 5-year results of the zilver PTX randomized trial. Circulation. 2016;133:1472–83.
4. Grotti S, Liistro F, Angioli P, et al. Paclitaxel-eluting balloon vs standard angioplasty to reduce restenosis in diabetic patients with in-stent restenosis of the superficial femoral and proximal popliteal arteries: three-year results of the DEBATE-ISR study. J Endovasc Ther. 2016;23:52–7.
5. Zhang J, Xu X, Kong J, et al. Systematic review and meta-analysis of drug-eluting balloon and stent for infrapopliteal artery revascularization. Vasc Endovasc Surg. 2017;51:72–83.
6. Bausback Y, Wittig T, Schmidt A, et al. Drug-eluting stent versus drug-coated balloon revascularization in patients with femoropopliteal arterial disease. J Am Coll Cardiol. 2019;73:667–79.



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