

A Novel Technique for Stent Optimization: A Stepwise STENT PUFF Sign and POT PUFF Sign

Stent Optimizasyonunda Yeni Bir Teknik: Kademeli STENT PUFF İşareti ve POT PUFF İşareti

Dear Editor,

In the provisional stenting strategy, the stent size is usually selected according to the size of the distal main vessel (dmV) to avoid carina shift and dmV dissection. For this reason, the proximal optimization technique (POT) is considered a standard step for stent optimization in the proximal main vessel (pMV). In one study, POT (used in 252 of 1,191 bifurcation lesions with a side branch [SB] ≥ 2.5 mm in diameter) was found beneficial in improving long-term clinical outcomes, particularly in patients treated without kissing ballooning during the procedure.¹ On the other hand, POT might not be considerably necessary in bifurcation lesions with a small SB.

Intracoronary imaging, although not widely available, is accepted as the main tool to confirm stent apposition and expansion in percutaneous coronary interventions (PCIs). However, a recent randomized trial showed that adjusted quantitative coronary angiography-guided PCI was noninferior to intravascular ultrasound-guided PCI.² This finding is supportive for developing countries where operators depend on conventional angiography as the main imaging modality during bifurcation PCIs. Recently, Aminfar et al.³ announced a new angiographic technique described as the POT PUFF sign, confirming ideal stent optimization after POT using conventional angiography alone. The POT PUFF sign is based on the progression of contrast medium through the inflated POT balloon to evaluate coronary opacification and flow distally. In their study, a total of 187 bifurcation PCIs, excluding left main disease, were assessed using the POT PUFF sign and validated by optical coherence tomography. Stent malapposition rates were 70.5% and 6.5% in patients with positive and negative POT PUFF signs, respectively. Aminfar et al.³ concluded that the POT PUFF sign is a new, cost-free, safe, effective, and accurate angiographic sign for identifying stent malapposition in the POT segment, which occurred in more than 20% of cases. Laraichi et al.⁴ also presented two clinical cases treated with the help of the POT PUFF sign.

Aminfar et al.³ described the POT PUFF sign for confirming ideal stent apposition in provisional stenting techniques. At the international conference named Complex PCI 2020, held in Seoul, we presented a similar stepwise strategy in a case.⁵ We initially used simultaneous dilatation of the stent balloon and injection of contrast medium to decide whether POT was required or not (Videos 1-3). A POT step might not be necessary in some bifurcation lesions, particularly those with a small SB. If there is no leak toward the SB during main vessel stent balloon dilatation, stent optimization might be considered sufficient. Since we first used the stent balloon to confirm ideal stent apposition, our technique could be described as the STENT PUFF sign at the first stage. If the STENT PUFF sign is positive, POT becomes mandatory. Thus, POT was performed along with contrast medium injection to confirm stent apposition as a second step in our case (Videos 4-5), three years before the release of the POT-PUFF sign article. At this second step, perfusion in the SB was blocked, and optimal stent apposition was considered to be confirmed (Video 4).

In conclusion, our technique is appropriate, and POT might not be required in selected bifurcation lesions with small SBs. If the STENT PUFF sign did not confirm ideal stent optimization, the same method was repeated with the POT balloon, now known as the POT PUFF sign. Our two-step technique was introduced before the proposal of

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the POT PUFF sign, which is identical to the second step. To the best of our knowledge, our technique is the first to demonstrate the presence or absence of distal contrast medium penetration during post-stent ballooning and POT ballooning to confirm stent optimization in provisional stenting of a bifurcation lesion.

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Video 1. A chronic total occlusion lesion with a bifurcation at the proximal cap.

Video 2. Angiographic image after lesion preparation.

Video 3. Positive STENT PUFF sign, indicating contrast progression into the side branch when the stent balloon is dilated.

Video 4. Negative POT PUFF sign, indicating optimal stent apposition in the proximal main vessel.

Video 5. Final angiography showing no further intervention was performed on the side branch ostium.

References

1. Yang JH, Lee JM, Park TK, et al. The Proximal Optimization Technique Improves Clinical Outcomes When Treated without Kissing Ballooning in Patients with a Bifurcation Lesion. *Korean Circ J*. 2019;49(6):485-494. [CrossRef]
2. Pcr Online. ESC Congress 2023: The GUIDE-DES Trial – QCA versus IVUS guidance for DES implantation. Accessed December 25, 2023. <https://www.pcronline.com/News/Whats-new-on-PCRONline/2023/ESC/GUIDE-DES-Trial-QCA-vs-IVUS-guidance-DES-implantation>
3. Aminfar F, Rubimbura V, Maillard L, et al. The POT-PUFF sign: an angiographic mark of stent malapposition during proximal optimisation. *EuroIntervention*. 2023;18(17):1456-1457. [CrossRef]
4. Laraichi Z, Faraj R, Fellat N. The POT-PUFF Sign: A New Angiographic Indicator of Stent Malapposition During Proximal Optimization Therapy. *Cureus*. 2023;15(8):e43552. [CrossRef]
5. Vural M, Hancioğlu E. Can stent apposition be confirmed by conventional angiography in provisional stenting? Complex PCI 2020 Virtual: Make it simple! Accessed December 25, 2023. <https://www.youtube.com/watch?v=jtjEajyTWY>