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Successful Drug-Eluting Stent Overexpansion with Intravascular Ultrasound Guidance for Left Main Bifurcation Lesion Via Left Snuffbox Approach

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A 60 year-old man presented with a 2-day history of intermittent chest pain. Electrocardiogram showed an ST-segment elevation in lead aVR with a diffuse ST-segment depression in all precordial leads, which is suspicious for left main coronary artery disease. After loading of aspirin 300 mg and ticagrelor 180 mg, urgent coronary angiography (CAG) was performed via left snuffbox approach using 6 Fr radial sheath (Radifocus® Introducer II, Terumo Corporation, Tokyo, Japan) (Fig. 1A). CAG demonstrated the severe stenosis in the distal left main coronary artery (LMCA) that extended into proximal left anterior descending artery (LAD) (Fig. 1B, left). Therefore, intravascular ultrasound (IVUS) guided percutaneous coronary intervention (PCI) was planned. IVUS showed minimal lumen area of 2.3 mm^2 with plaque burden of 86.5%, a proximal and distal reference vessel diameter of 5.45 mm and 3.95 mm, respectively (Fig. 1C-E). IVUS image of diffuse fibroatheroma with large plaque burden led to direct stenting from LMCA to proximal LAD with a 3.5×28 mm everolimus-eluting stent (XIENCE Sierra®, Abbott Vascular, Santa Clara, CA, USA) at 16 atmospheres. Postdilation for proximal optimization technique (POT) was achieved with a 5.0×12 mm non-compliant balloon (NC Emerge™, Boston Scientific, Natick, MA, USA) at up to 18 atmospheres and repeated IVUS assessment demonstrated good strut apposition and minimal and maximal stent area of 8.0 mm^2 and 20.6 mm^2 (stent diameter of 4.9 and 5.4 mm), respectively (Fig. 1F-H). Final CAG showed good distal flow without residual stenosis (Fig. 1B, right). There was no bleeding complication at the sheath removal site with 3-hour hemostasis by compressive bandage method.

POT should be necessary due to the discrepancy of vessel diameter between LMCA and the proximal coronary artery when provisional stenting is planned for LMCA, although safety and efficacy of drug-eluting stent (DES) overexpansion still concern.[1] According to the manufacturer's recommendations, the newest generation of DES, XIENCE Sierra®, is capable of overexpansion up to 5.5 mm with a postdilation capacity for a 3.5 mm stent. Moreover, data regarding the feasibility of PCI for LMCA via snuffbox approach is still limited due to a lack of definitive indication regarding this approach.[2-5] This case highlights successful IVUS-guided DES overexpansion for the left main bifurcation lesion via left snuffbox approach.

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CONFLICT OF INTEREST STATEMENT

None declared.

REFERENCES

1. Ng J, Foin N, Ang HY, Fam JM, Sen S, Nijjer S, et al. Over-expansion capacity and stent design model: an update with contemporary DES platforms. Int J Cardiol 2016;221:171-9.
2. Kim Y, Jeong MH, Kim I, Kim MC, Sim DS, Hong YJ, et al. Intravascular ultrasound-guided percutaneous coronary intervention with drug-eluting stent for unprotected left main disease via left snuffbox approach. Korean Circ J 2018;48:532-3.
3. Kim Y, Ahn Y, Kim I, Lee DH, Kim MC, Sim DS, et al. Feasibility of coronary angiography and percutaneous coronary intervention via left snuffbox approach. Korean Circ J 2018;48:1120-30.
4. Kim Y, Jeong MH, Berezhnoi K, Lee SY, Kim MC, Sim DS, et al. Recannulation of distal radial artery for staged procedure after successful primary percutaneous coronary intervention. J Invasive Cardiol 2018;30:E105-6.
5. Berezhnoi K, Kokov L, Vanyukov A, Kim Y. Complete revascularization via left snuffbox approach in a nonagenarian patient with acute myocardial infarction. Cardiol J 2018;25:530-1.

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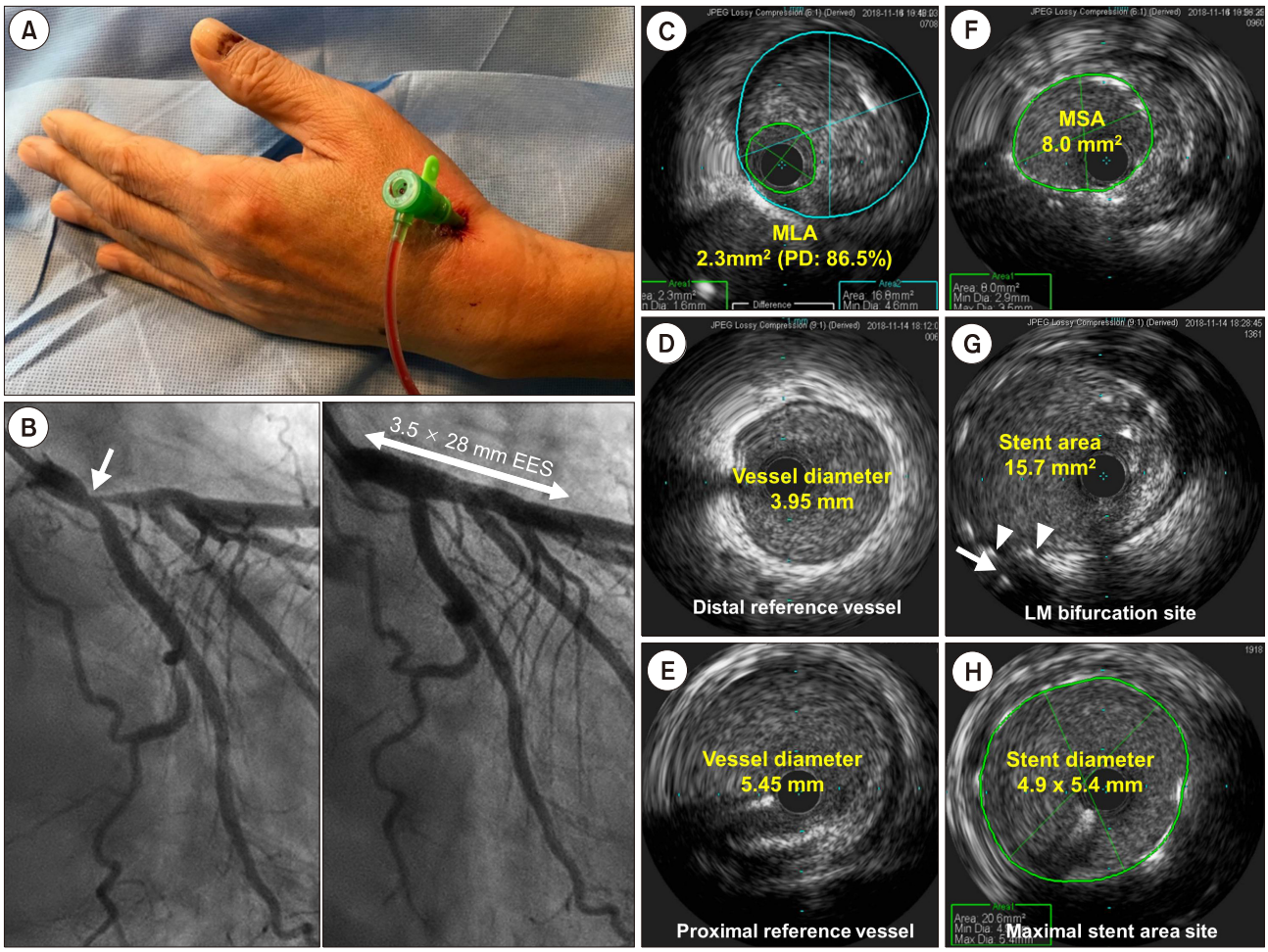

FIG. 1. (A) Inserted 6 French sheath via left snuffbox approach. (B) Urgent CAG demonstrating the severe stenosis in the left main bifurcation site (arrow, left) and post-PCI CAG demonstrating successful stenting with POT of the left main bifurcation site (right). (C) IVUS imaging demonstrating MLA of 2.3 mm^2 and plaque burden of 86.5%. (D, E) Pre-PCI IVUS demonstrating distal and proximal reference vessel diameter of 3.95 mm and 5.45 mm, respectively. (F) Post-PCI IVUS demonstrating MSA of 8.0 mm^2. (G) IVUS cross-section demonstrating stent area of 15.7 mm^2 and good strut apposition (arrowheads) in the left main bifurcation site (arrow, wire in LCx). (H) Post-PCI IVUS demonstrating DES overexpansion and stent diameter of 4.9 and 5.4 mm at maximal stent area site. CAG: coronary angiography, DES: drug-eluting stent, EES: everolimus-eluting stent, IVUS: intravascular ultrasound, MLA: minimal lumen area, LCx: left circumflex artery, PCI: percutaneous coronary intervention, POT: proximal optimization technique.