The Usefulness of a Three Dimensional Roadmap and Pressure-Wire Assisted Angioplasty in Chronic Thromboembolic Pulmonary Hypertension

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A 78-year old male previously diagnosed with a chronic pulmonary embolism experienced difficulty in breathing. Perfusion scan showed a segmental perfusion defect in the A6–8 area (Fig. 1A and B). Computed tomography could not reveal any massive thrombus in the major pulmonary artery. A pulmonary angiography was performed to detect abnormal lesions in the peripheral pulmonary artery. Rotation angiography using DynaCT cardiac mode protocol (Artis zee BA, Siemens AG, Forchheim, Germany) allowed us to suspect pulmonary artery irregularity and intraluminal stenosis caused by organized thrombus or web formation at a trifurcation of the ostium of A6–8, which is compatible with perfusion scan (Fig. 1C, D, and E). A 6 Fr Judkins-right guiding catheter was used to engage the pulmonary artery with three dimensional roadmap guidance ("syngo iPilot" software, X-Workplace, Siemens Healthcare, Forchheim, Germany) (Fig. 1F). Pressure wire (Certus Pressure Wire, St. Jude Medical, St. Paul, MN, USA) was advanced into the A8 and confirm pressure differences (Fig. 1G). After angioplasty (7.0 mm balloon dilatation), we confirm no residual pressure gradient across not only A8, but also A6 and A7 (Fig. 1H). After the procedure, the patient's symptoms improved, with no difficulty in breathing.

Several techniques, such as pressure-wire guided intervention, have already shown efficacy in performing percutaneous transluminal pulmonary angioplasty.¹⁾ In our case, the three dimensional roadmap allowed for selection of ideal projection angles, to reduce fluoroscopic time and the number of control angiographies compared to those previously reported.²⁾ Pressure-wire was useful to evaluate which pulmonary artery was the culprit, and to determine the endpoint of the procedure as previously reported.¹⁾ These recent useful modalities and applications should be used to perform procedures safely and effectively.

References

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Fig. 1.