

**The IVUS own guidewire can be used for constructing a 3D image on angiographic image by using the IVUS image**

Background: In IVUS guided wiring while observing from the sub-intimal space or DCA, a 3D image should be constructed on angiographic image by transferring the direction of IVUS image to that of angiographic image. To transfer the direction, the detector angle where the IVUS transducer and the guidewire are coincided on the angiographic image should be determined, but the reproducibility of this method has not been investigated.

Methods: We used Navifocus WR and OptiCross. A guidewire and the each IVUS catheter were inserted in the tube. By using the X-ray system, the expert operator performed rotational angiography at the direction which was the orthogonal axis against the each IVUS catheter and determined the detector angle where the IVUS transducer and the guidewire were coincided or maximally separated. Five medical staff did the same thing without knowing this angle before training and after training about it.

Results: Variation of the coincided angle was significantly less after training than before training ( $12.5 \pm 9.1$  vs.  $1.5 \pm 2.3$  degree,  $p = 0.008$ ) and after training there was no significant difference in variation of the angle between the two IVUSs ( $p = 0.656$ ). Variation of the coincided angle was significantly less compared with that of the maximally separated angle in the Navifocus WR ( $p = 0.006$ ).

Conclusions: The detector angle where the IVUS transducer and the guidewire are coincided can be determined accurately after training about it.