

**Comparison of 3D and 2D wiring in PCI for CTO**

<Background>Three dimensional wiring will be one method for accurate guide wire control in CTO lesions. To know the correct rotation directions, wiring with a mental 3D image is necessary. However the feasibility and reproducibility of this wiring has not been investigated.

<Methods>We used an experimental heartbeat model. A CTO lesion was made of 2% agar and inserted into the mid RCA. The tube was located at the exit. We performed 2D and 3D wiring for the 3 CTO lesions with a GAIA 2nd wire to cross the tube. The operation time was measured and the manipulation number of guide wire rotation from the one angle was counted. And we performed 2D and 3D wiring for the 4 CTO lesions assumed ISR which was lined lead powder in series in same way. After wire crossing, OFDI was performed and measured the distance between lead powder and the catheter in every 1 mm.

<Results>There was no significant difference in the operation time, but the manipulation number of guide wire rotation was significantly less in 3D wiring compared with in 2D ( $p = 0.04$ ). And there was significant difference in between 2 wiring forming estimates of frame level and lesion level analysis in central wiring by using 3D wiring ( $p = 0.01$ ).

<Conclusion>By using 3D wiring, we can choose the correct rotation direction and rotate the guide wire with high angular precision, which will create the minimal space in the CTO lesion and easily lead to the successful lesion crossing in the CTO intervention.