

An evaluation of the drug application to the vessel walls of DCB for in-stent restenosis lesions

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**Background**The use of drug-coating balloons (DCB) represents an attractive alternative in the treatment of in-stent restenosis (ISR). In patients with bare-metal stent and drug-eluting stent ISR, DCB provide superior long-term clinical and angiographic results as compared with conventional balloon angioplasty. After balloon dilatation of ISR lesions, neointimal dissections frequently can be detected and make irregularities in the surface of neointimal plaque. Optical coherence tomography (OCT) is a intracoronary imaging device that can provide in vivo high-resolution image. And OCT can detect the drug on the vessel wall after immediately DCB angioplasty. We hypothesized that irregularities in the surface of neointimal plaque after balloon dilatation might correspond to less drug application to the vessel walls of DCB. **Methods and Results**Study population consisted of 10 patients presenting with angiographically documented focal DES restenosis (within 10mm in length). All of them were treated with balloon angioplasty and then DCB angioplasty, and received OCT examination after DCB. To evaluate the irregularities in the surface of neointimal plaque after balloon dilatation, standard deviation of neointimal thickness was measured in each cross sectional area, and to evaluate the drug application to the vessel walls of DCB, the angles of drug application to the vessel walls was calculated in each cross sectional area. The standard deviation of neointimal thickness was reversely correlated with the angle of drug application to the vessel walls ( $y = -0.74X + 0.7526$ ). **Conclusions**Eliminating irregularities in the surface of neointimal plaque after balloon angioplasty, drug application to the vessel walls of DCB.