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REFERENCE NUMBER TO 32-00106

High Performance Paclitaxel-Coated Balloon Catheters

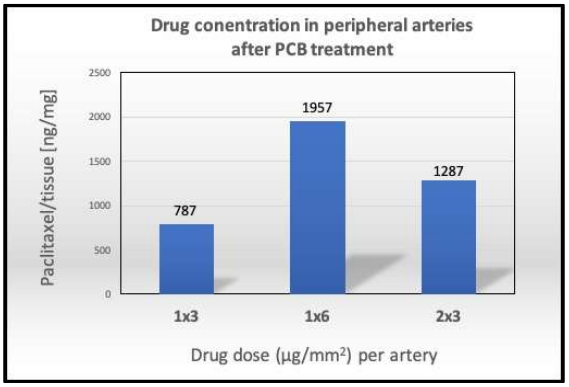
Keywords: endovascular treatment, peripheral artery disease, arteriovenous access stenosis, paclitaxel-coated balloon catheters

INVENTION NOVELTY

High performance drug coated balloon (HPDCB) catheters are a new generation of local drug-eluting devices that can deliver an increased and persistent paclitaxel concentration in the vessel wall. This technology may reduce the medico-economic costs of endovascular treatment while ensuring a more effective and durable outcome in patients with peripheral artery disease (PAD) and arteriovenous access stenosis lesions.

VALUE PROPOSITION

Endovascular treatment with balloon catheters leads to immediate relief of symptoms. However, due to vessel wall thickening caused by the forceful dilatation, this positive outcome is rarely permanent in certain types of arteries. Although improved treatment efficacy and reduction of reinterventions can be achieved with paclitaxel-coated balloon (PCB) catheters, treatment failures have often been reported at the currently available dose of 2 – 3.5 µg Ptx/mm² balloon surface. The great innovation potential of HPDCB catheters lies within their ability to deliver a higher dose (6 µg Ptx/mm² balloon surface) in one single deployment, thereby enhancing the reliability and effectiveness of endovascular treatment.



HPDCB (1x6 µg Ptx/mm2) improves drug transfer from paclitaxel coated balloons to swine peripheral arteries compared to 1x3 and 2x3 µg Ptx/mm² doses.

TECHNOLOGY DESCRIPTION

To date, increased paclitaxel concentration in the vessel wall can only be achieved by subsequent deployment in the same vessel segment of two PCBs (2x3 µg Ptx/mm² balloon surface). The HPDCB simplifies this procedure to one single deployment and allows the delivery of a high concentration dose of 6 µg Ptx/mm² balloon surface. This approach may result in a more reliable outcome of the endovascular treatment and a possible reduction of overall healthcare costs. Remarkably, no device failures or device-related morbidity/mortality were observed in animal studies. This technology may also be applied to in-stent restenosis following implantation of drug-eluting stents.

COMMERCIAL OPPORTUNITY

In-licensing or collaboration for further development.

DEVELOPMENT STATUS

Animal *in vivo* study concluded.

PATENT SITUATION

International patent application (PCT/EP2021/051156) with priority of 2020 has been filed.

FURTHER READING

Gemeinhardt O. et al. DOI: 10.1371/journal.pone.0259106; COPA CABANA Trial. DOI: 10.1177/1526602820907917

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Last updated December 2021