

Coronary stent Research Team



Director
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Major research goals

The cardiovascular disease is significantly increasing in the worldwide.

Myocardial infarction(MI) or acute myocardial infarction(AMI) occurs when blood flow stops to a part of the heart causing damage to the heart muscle.

A coronary stent is a tube-shaped device placed in the coronary arteries that supply blood to the heart, to keep the arteries open in the treatment of coronary heart disease. It is used in a procedure called percutaneous coronary intervention(PCI).

A drug-eluting stent(DES) is a peripheral or coronary stent(a scaffold) placed into narrowed, diseased peripheral or coronary arteries that slowly releases a drug to block cell proliferation. This prevents fibrosis that, together with clots(thrombi), could otherwise block the stented artery, a process called restenosis. DESs are one of the primary therapies in these patients with coronary disease. However, DESs undergo excessive inflammation by drugs or polymers. Also, endothelial cell regeneration or arterial healing may be inhibited. It is lead to cause stent thrombosis or restenosis.

It is necessary to develop a new stem cell-containing stent capable of promoting the formation of endothelial cells in the stent. The aim of this study is to conduct pre-clinical studies(large animal studies) to evaluate stem cell/out-growth endothelial cell based coronary stent in safety and efficiency.

Major research topics

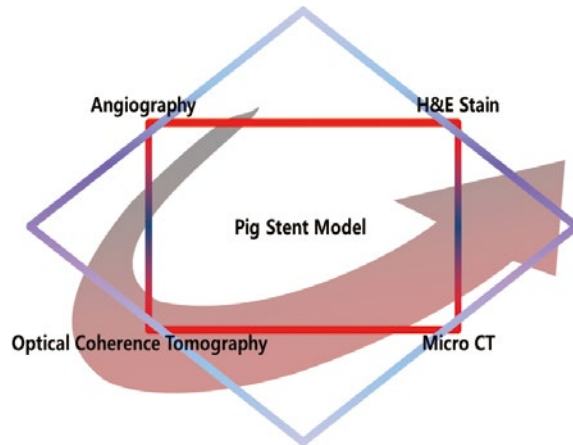
Pre-clinical study with large animal model of stem cell/out-growth endothelial cell based coronary stent

Major achievements

1. In vivo biocompatibility assessment of stent containing re-endothelialization stimulating stem cells
2. Pre-clinical studies using large animal to confirm the efficacy and safety of re-endothelializing stem cell-containing stents
3. Measure the stent strut coverage, malapposition, and neoatherosclerosis using OCT
4. Histologic analysis and hemodynamic and functional evaluation methods for evaluating the efficacy of re-endothelializing stem cell-containing

stents

Representative figures of major achievements



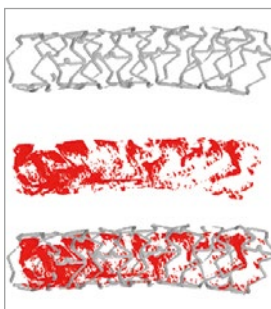
① Large animal anesthesia



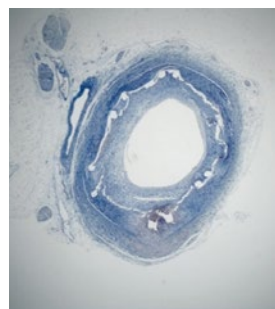
② Coronary angiography



③ Micro-computed tomography analysis of in-stent restenosis



④ Histological analysis of in-stent restenosis



Major relevant publications

1. Park H, Hong YJ, Rhew SH, et al. Effect of revascularization strategy in patients with acute myocardial infarction and renal insufficiency with multivessel disease. *Korean J Intern Med.* 2015

Mar;30(2):177-90.

2. Hong YJ, Jeong MH, Cho KH, et al. Impact of renal function on changes of plaque characteristics in non-intervened coronary segments after rosuvastatin treatment in patients with angina pectoris and hypertension. *Int J Cardiol.* 2015;187:286-7.
3. Park H, Hong YJ, Lee S, et al. Totally occluded grafted right internal mammary artery to anomalously originated right coronary artery. *Chonnam Med J.* 2015 Apr;51(1):43-6.
4. Hong YJ, Jeong MH, Kim MC, et al. Predictors of Plaque Progression in Hypertensive Angina Patients with Achieved Low-Density Lipoprotein Cholesterol Less Than 70 mg/dL after Rosuvastatin Treatment. *Chonnam Med J.* 2015 Dec;51(3):120-8.
5. Hong YJ, Ahn Y, Jeong MH. Role of Intravascular Ultrasound in Patients with Acute Myocardial Infarction. *Korean Circ J.* 2015 Jul;45(4):259-65.
6. Park H, Kim HK, Jeong MH, et al. Clinical impacts of inhibition of renin-angiotensin system in patients with acute ST-segment elevation myocardial infarction who underwent successful late percutaneous coronary intervention. *J Cardiol.* 2017 Jan;69(1):216-221.

Research networks

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