Percutaneous tissue engineered pulmonary valved stent implantation: mid-term study

Metzner A, Stock UA, Fischer G, Iino K, Boldt J, Cremer J, Lutter G.
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merging of two novel technologies:

- percutaneous valved stent implantation
- tissue engineering of autologous heart valves
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Endothelial cells of the arteria carotis after 4-6 days

21 days after explantation

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Smooth muscle cells of the arteria carotis after 14 days

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Porcine heart

Pulmonary heart valve

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1. Preparation
2. Decellularization
3. Seeding of smooth muscle cells, 3 days
4. Bioreactor for 16 days
5. Seeding of endothelial cells, 3 days
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Implantation of the valved stent

no regurgitation

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- good functional and structural outcome

n=4

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HE-staining
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α-actin: smooth muscle cells
vWF staining
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v Kossa-Staining

mammogram

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Conclusion

first time successful merging of two novel technologies:

- percutaneous valved stent implantation

- tissue engineering of autologous heart valves
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