

## **P37**

### **A uniform histopathologic scoring system to evaluate tissue engineered heart valves**

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#### **Objectives:**

Calcific Aortic Valve Stenosis is considered as the end stage of a slow but active process of the aortic valve. Once symptomatic, this disease has a devastating impact and only aortic valve replacement is symptom relieving and life prolonging. The idea to design and implant tissue engineered heart valves (TEHV) was established in the middle of 1990: heart valves were developed with an anatomical structure comparable to the native valves; i.e. the same physiological function, biomechanical adaptability and reparative growth potential. In the last decade significant progress has been made in the development of TEHV.

#### **Method:**

Research has been focused on the choice of different types of scaffolds (synthetic versus biological scaffolds) and the potential source of cells seeded onto the scaffolds. Moreover, exogenous stimulation of tissue growth factors, mitogenic factors and adhesion factors, as well as the use of process techniques like bioreactors were investigated.

#### **Results:**

In general, all these parameters might have an effect onto the complications (thrombogenicity and calcification) and hence the clinical results after TEHV implantation. A histopathological examination is helpful in the evaluation of TEHV.

#### **Conclusions:**

A structural uniform histopathological scoring system (for endothelialization, inflammation, cellular infiltration and calcification) is undoubtedly necessary to evaluate and to compare differences between different developmental approaches of TEHV, since TEHV might have a clinically impact in the future. Here, we suggest a uniform scoring system that could function as a general guideline for the evaluation of TEHV.