A³ - Shield

A Translational Approach Towards Small Abdominal Aortic Aneurysm (AAA) Therapy

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Disclosure

I have the following potential conflicts of interest to report:

- [x] Consulting
- [ ] Employment in industry
- [ ] Stockholder of a healthcare company
- [x] Owner of a healthcare company
- [ ] Other(s)

- [ ] I do not have any potential conflict of interest
Current therapy: Large AAA exclusion

Prevent small AAA progression?
Wall stress as a trigger of early AAA growth?

Wall stress (?) → Wall stress (Laplace)
AAA induction – Elastase model
Segmental aortic stiffening precedes aneurysm formation.
Aortic stiffness gradients induce significant wall stress

**Diastole**

- Segmentally stiff aorta
- Homogeneous aorta

**Systole**

- Red arrows indicate direction of stress changes.
Aortic stiffness gradients induce significant wall stress
Aortic stiffness gradients induce significant wall stress
Segmental Aortic Stiffness (SAS)

- Segmental Aortic Stiffness (SAS) vs. Time after surgery (days)
  - PPE
  - Saline

- AA Diameter vs. baseline (%)
  - PPE
  - Saline
Can we reduce aortic stiffness gradients therapeutically to prevent AAA formation/progression?
Segmental Aortic Stiffness
Interventional stiffening of the AAA-adjacent aorta reduces wall stress
Interventional stiffening of the AAA-adjacent aorta stops AAA progression

![Graph showing AA Diameter vs. baseline (%) over time after surgery (days)].

- **Sham**
- **Glue**

The graph illustrates the progression of AAA diameter after surgery, comparing Sham and Glue interventions. The graph indicates that intervention with glue significantly slows the progression of AAA compared to the Sham group.
Interventional stiffening – Impact on AAA pathophysiology

Wall remodeling

Oxidative Stress

Inflammation

Apoptosis
Stiffness gradients develop in the aging human aorta
Translational concepts

Conventional approach

Exclude big AAA

+ 

Novel approach

Treat small AAA
Molecular and Translational Vascular Medicine

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