“DOM”
Delayed Occluding Membrane for spinal cord protection during TEVAR

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Disclosure

Speaker name:

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I have the following potential conflicts of interest to report:

☐ Consulting

☐ Employment in industry

☐ Stockholder of a healthcare company

☐ Owner of a healthcare company

☐ Other(s)

☒ I do not have any potential conflict of interest
Background

- Spinal cord ischemia (SCI) during long-segment TEVAR relevant (up to 20%)

- Protection strategies so far:
  - Staging of procedures
  - Coiling of intercostal arteries
Delayed occluding membrane
Kooperationspartner
Physiological requirements

- Biocompatible
- Durable (>200 mmHg)
- Sterilizable
- Occluding 2 weeks after implantation
Delayed occluding membrane
Components

- Fabric PET (Polyethylenterephtalat)
- Hydrogel:
  - Polyethyleneglycol- methylether-methacrylate (PEGMEMA)
  - Degradable Crosslinker DSDMA (Bis(2-methacryloyl)oxyethyl disulfide)
Proof of Principle:

- GSH (blood conc / 100 mM / 325 mM)
- 10 mol% degradable DSDMA
- 20 mol% degradable DSDMA

Degradation:
- Swelling ratio
- Mechanical behavior
Mechanical behavior of different gels?

→ DMA measurements

pouring into

stick to glass! → Surface Modification with RAIN-X®

PEGMEMA-500

PEGMEMA-950
• No great main difference between crosslinker amount
• All tested GSH concentrations show swelling ratio increment
• 100 mM GSH best results
20 mol% degradable crosslinker after 7 days degradation
Next steps

- In-vitro optimization
  Hydrogel + fabric
- In-vitro testing
- In-vivo testing
- First-in-man
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