Embolization against the clock – strategies and techniques in the management of hemorrhage

DEEP DIVE SESSION – Innovations and new techniques in embolization therapies

M. Treitl

Radiology, Neuroradiology, Interventional Radiology

BG Trauma Center Murnau

Disclosure

Speaker name:

M. Treitl

I have the following potential conflicts of interest to report:

☒ Consulting: **Medtronic, Penumbra**

☐ Employment in industry

☐ Stockholder of a healthcare company

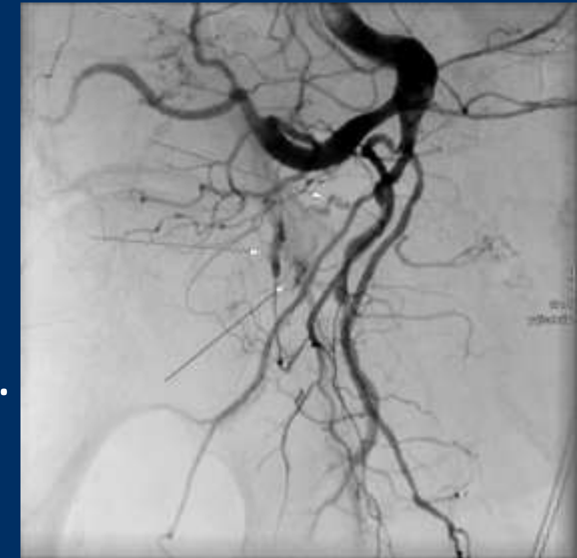
☐ Owner of a healthcare company

☐ Other(s)

☐ I do not have any potential conflict of interest

Scope and importance of hemorrhage embo

- Variety of hemorrhages that can be adressed by emergency embolization
  - Solid organ trauma
  - Pelvic trauma
  - Upper and lower gastrointestinal bleeding
  - Embolization of thoracic and extremity trauma
  - Embolization after biopsy and drainage
  - Rare: bronchial artery bleeding, epistaxis, post partum hemorrhage....



- Essential part of hospitals capabilities for emergency treatment: all eyes are on you!
- Different vessel regions, different kind of complications, different etiopathologies, different embolization strategies, different embolic agents to use

Essentials of hemorrhage embolization

- Select the best embolization material
  - Embolic should be able to act without acute clot formation
  - You want to be as fast as possible: the less embolic you need the faster you are
- Select the best treatment approach
  - Collateral perfusion: front and back doors to be occluded; UGIT, thoracic

  vs.
  - End arterial supply: embolize as distal as possible; renal, liver, ...
- Etiology (and level of vascular occlusion):
  - Acute trauma: coils / plugs proximal to capillary level

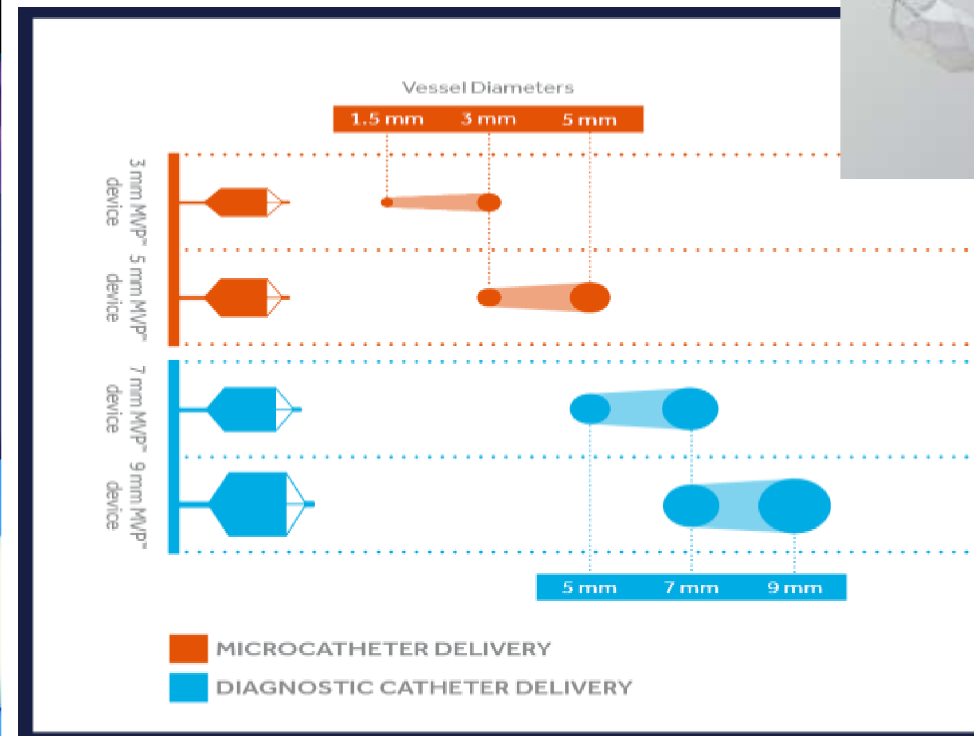
  vs.
  - Chronic inflammation / neoplastic: particles at the capillary level

Embolic materials: basics and news

- Mechanic embolics
  - Coils
  - Plugs
- Particles
- Liquids
  - Glue
  - EVOH (Onyx™)
- Temporary
  - Gelfoam slurry

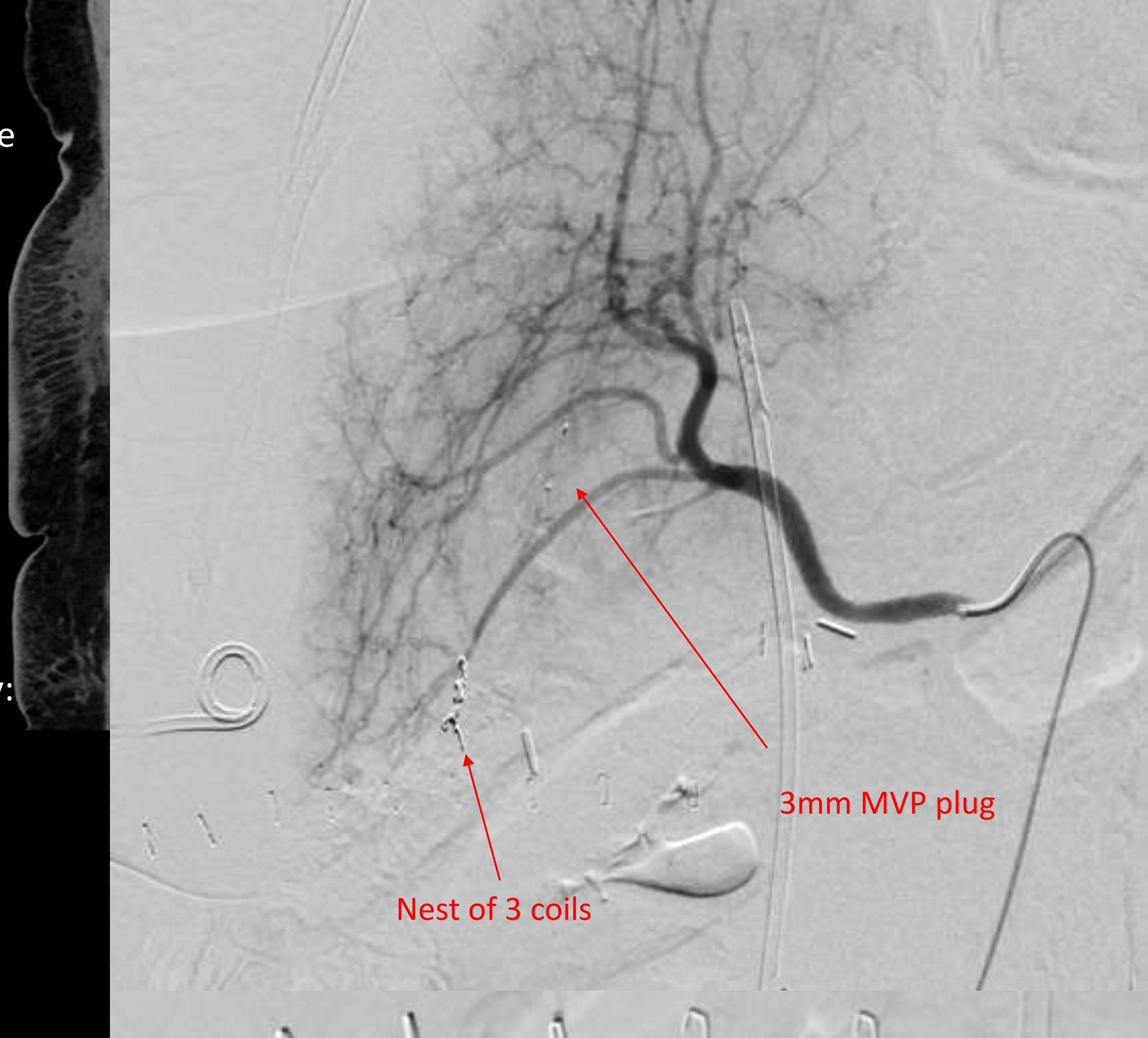
Penumbra Medtronic MVP Plug

- self-expandable plug with ePTFE covering



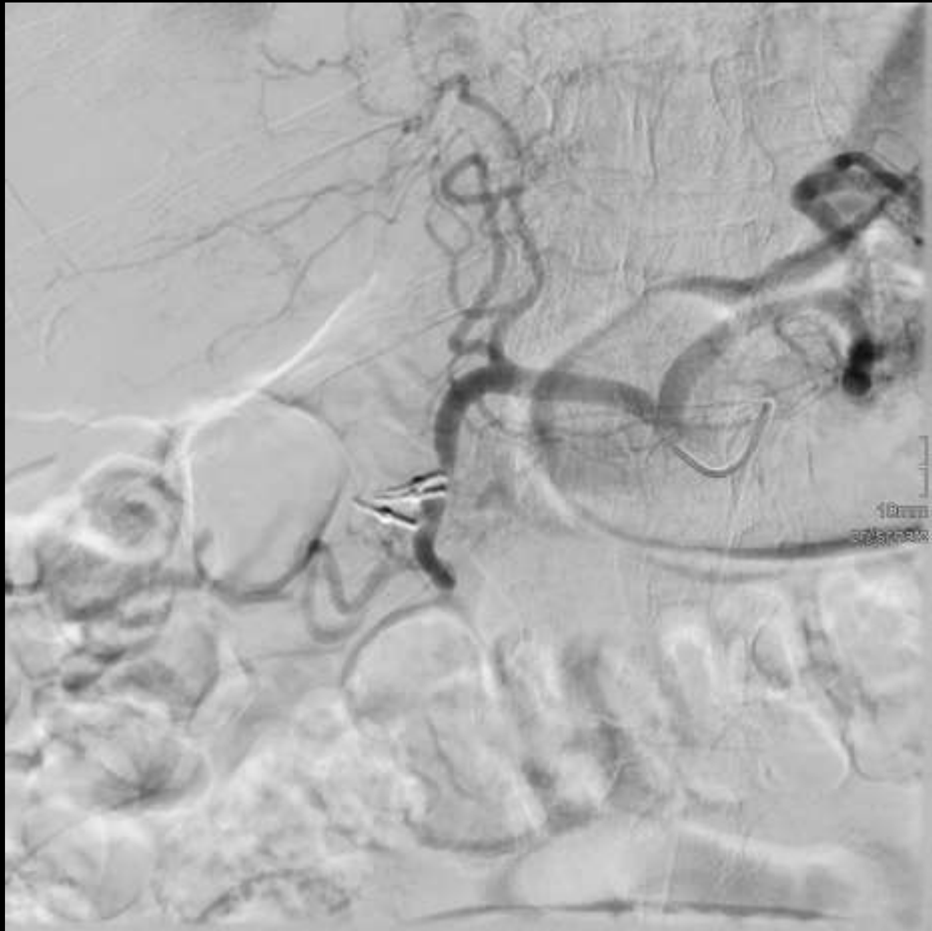
Embolization for solid organ trauma:

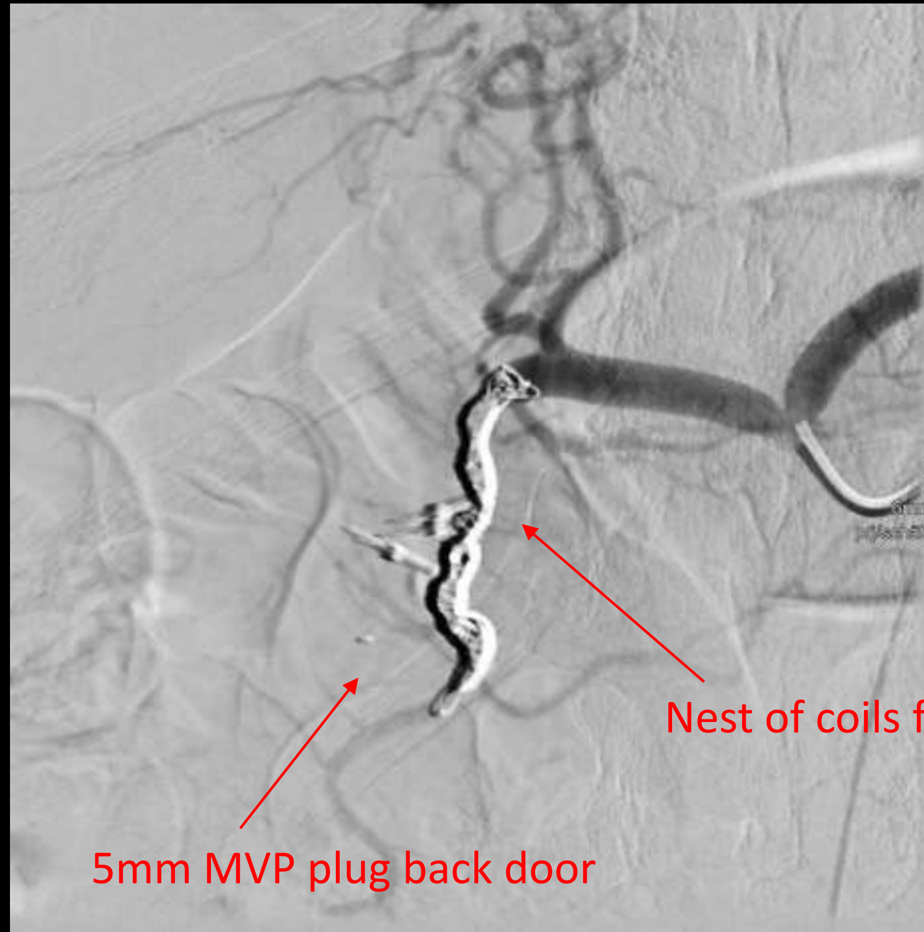
- Non operative management has become standard of care for hemodynamically stable or stabilizable patients
- Typically for abdominal mono trauma
- AAST grade I – III with active contrast extravasation on CT
- AAST grad IV – V even without active contrast extravasation
- Typically end arteries in liver and kidney: embolize as distal as possible
- Exception splenic trauma: proximal embolization faster alternative!

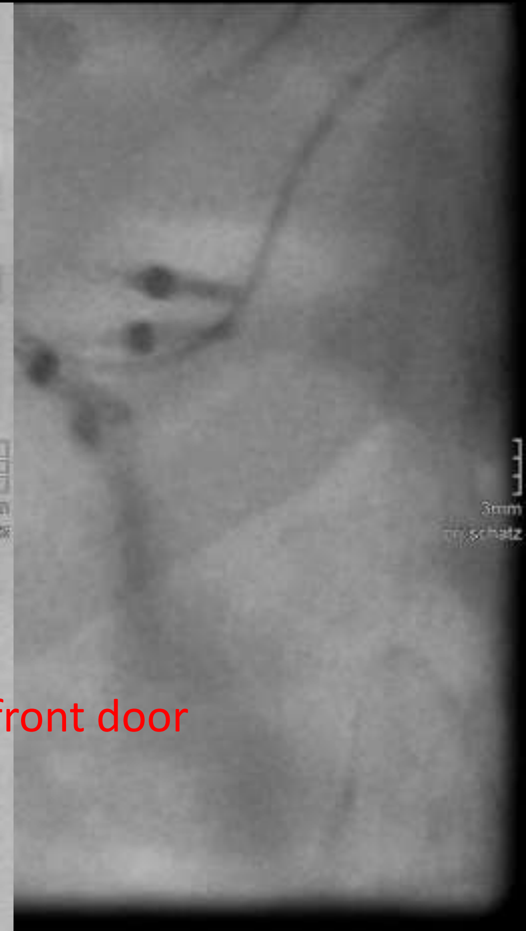


Embolization for upper gastrointestinal bleeding:

- Bleeding between lips and ligamant of Treitz, presents with hematemesis and can be life threatening
- Peptic / stress ulcers common reason
- Embolization indicated after failure of endoscopy to control the hemorrhage
- Gastroduodenal artery common target: front and back door embo often necessary

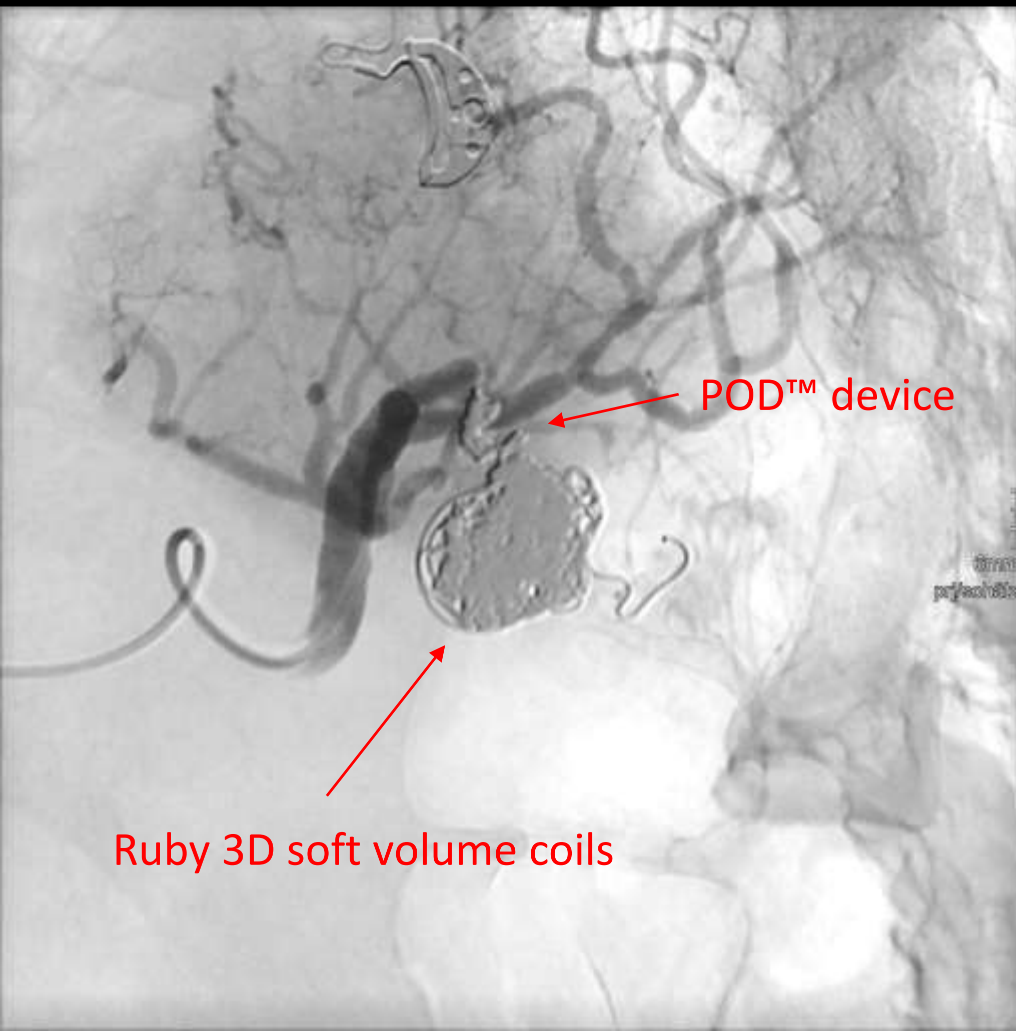






Embolization of splenic pseudoaneurysm after pancreatitis with recurrent bleeding episodes:

- Unstable pseudoaneurysm
- Filling of aneurysm with soft Ruby 3D volume coils
- Occlusion of aneurysm neck with POD™ coil device



Thank you!

Prof. Dr. med. Marcus Treitl, EBIR, MBA

Department for Radiology, Neuroradiology and Interventional Radiology

Trauma Center Murnau

Tel: +49 - (0)8841 – 48 - 3883

E-Mail: marcus.treitl@bgu-murnau.de

Internet: www.bg-murnau.de