Is the endovascular world ready for 3D printing ... and vice versa?

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Disclosure

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I have the following potential conflicts of interest to report:

- Consulting
- Employment in industry
- Shareholder in a healthcare company
- Owner of a healthcare company
- Other(s)

- I do not have any potential conflict of interest
3D Printed Models

... reproduced from real datasets

Courtesy Materialise
3D Printed Models

- Accurate Anatomical Representation
- Physiological conditions
- Procedure planning & rehearsal
- Training & Education
- Device Testing & Development
- 3D Printed Devices

Courtesy Materialise
Anatomical Model = Isolation
Physiological conditions = Materials
Patient specific Planning & Rehearsal

TYPE I Endoleak
Patient specific Planning & Rehearsal

1. Computed simulation

2. 3D Model Rehearsal & Planning
Patient specific Planning & Rehearsal

1. Computed simulation

1. Validated **match** of the computed model and real stentgraft

2. Preoperative case planning:
   - **Suboptimal apposition** in proximal neck predicted by FEA
   - Asymmetric **contact forces**
3D Model Planning & Rehearsal

Preop CT Scan  3D Model  Rehearsal : MIGRATION

In House Enhanced 3D Printing of Complex AAA for EVAR Treatment Planning and Preoperative Simulation
Hoffman Aaron*, Nitecki Samy, et al
Hands-on Endovascular Training

Courtesy Materialise
Animal Lab Training

Almost real...

but ... Difficult Access, Expensive Healthy vessels
MEDTECH Brainstorming

Surgical needs
Materials
Engineering

3D Printing
Puncture – Closure Trainer
Procedure Training
Puncture – Closure Trainer
Device Testing & Development
Conclusion

Surgical planning and training is the core of good clinical practice ...

... maybe one day most of it will be 3D PRINTED