Imaging Deep Inferior Epigastric Artery (DIEA) using VR technology in DIEP Flap operation

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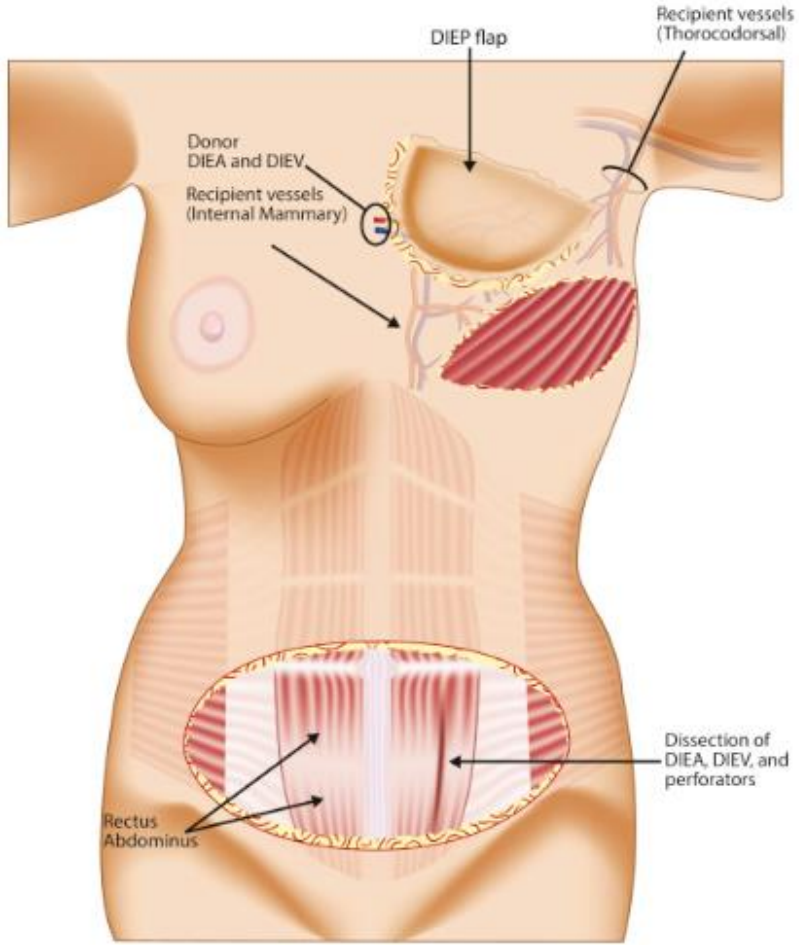
Introduction

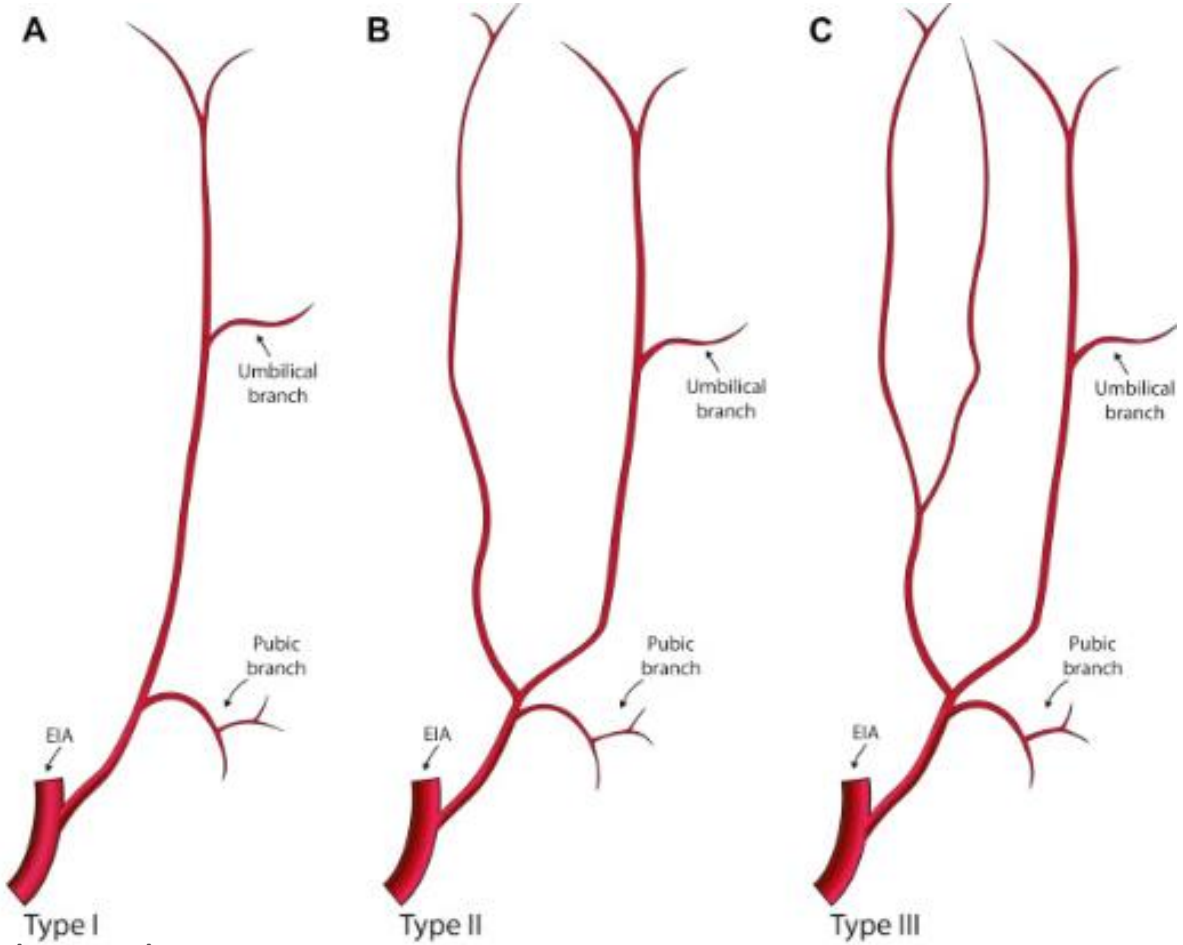
- DIEP Flap surgery planning-Today is performed using CT 2D scan.
  - A CTa for arterial imaging is **routinely performed**
  - The surgeon **identifies the deep IE arteries** that will be used to construct the FLAP
  - **Measurements are made from the Umbilicus** to the arteries which will be used for surgery
  - During surgery the surgeon cuts the abdominal section which includes the arteries and later performs vascular anastomosis



Introduction

- Using VR tech:
  - Allows **easy recognition** of the deep and superficial IE arteries
  - Using the VR tech, the surgeon **can measure the position of the arteries in 3D** allowing better positioning of the tissue

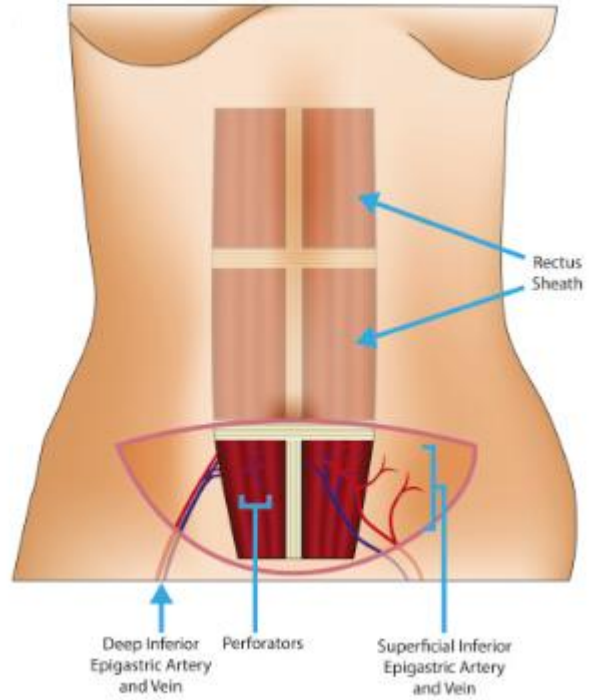
Operation- DIEP Flap

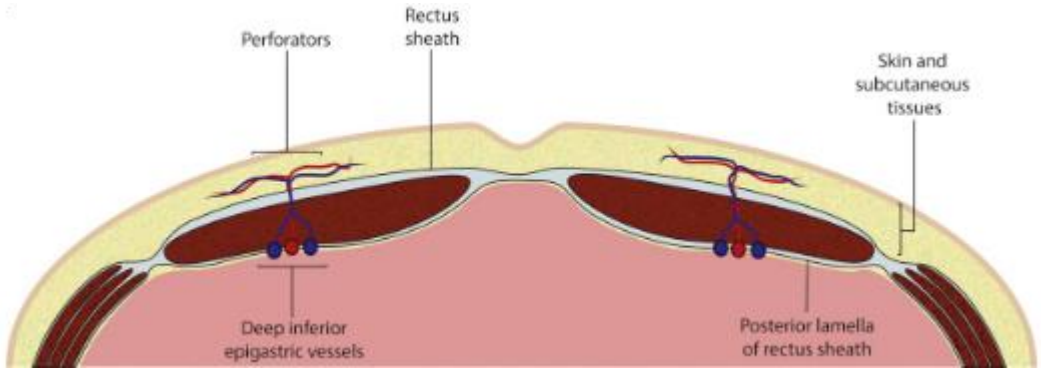


Single trunk

Bifurcation above arcuate line

Division into 3 or more branches

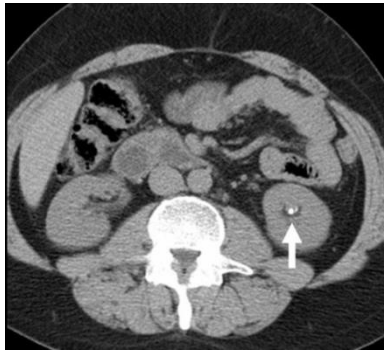




Objective

The aim of the this study is to evaluate if preparation time and operation time can be shortened by the use of a 3D model created by VR

Method



Scanning

CTA, MRA

Design

D2P

Planning

VR

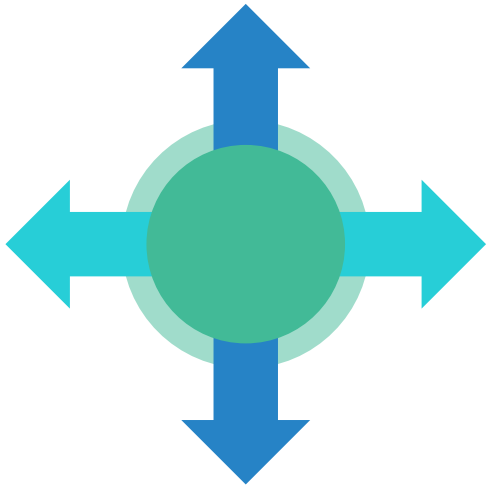
Operation

DIEP Flap

Additional options for VR technology use:

Devices compatibility checks

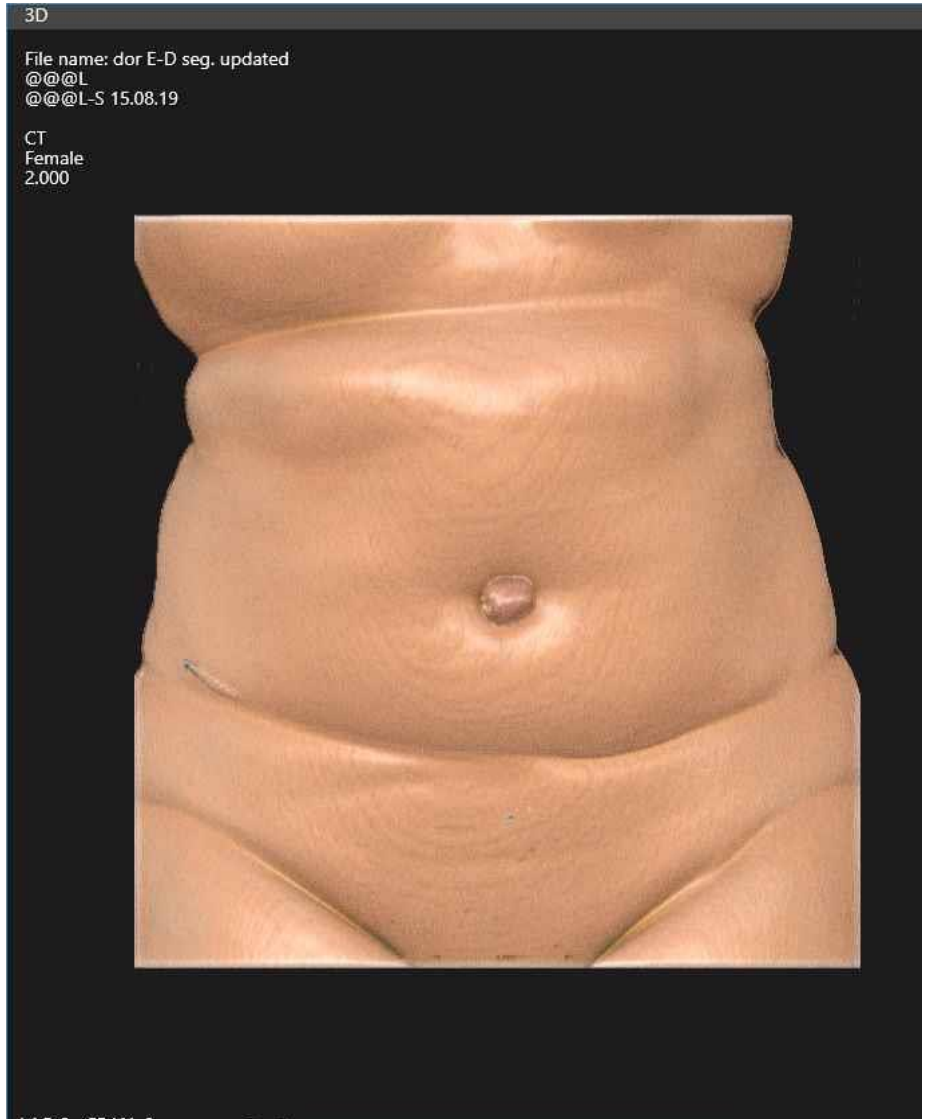
Pre-surgery planning



Practicing & Learning

Robotic DIEP Flap Harvest

VR modeling


3D
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CT
Female
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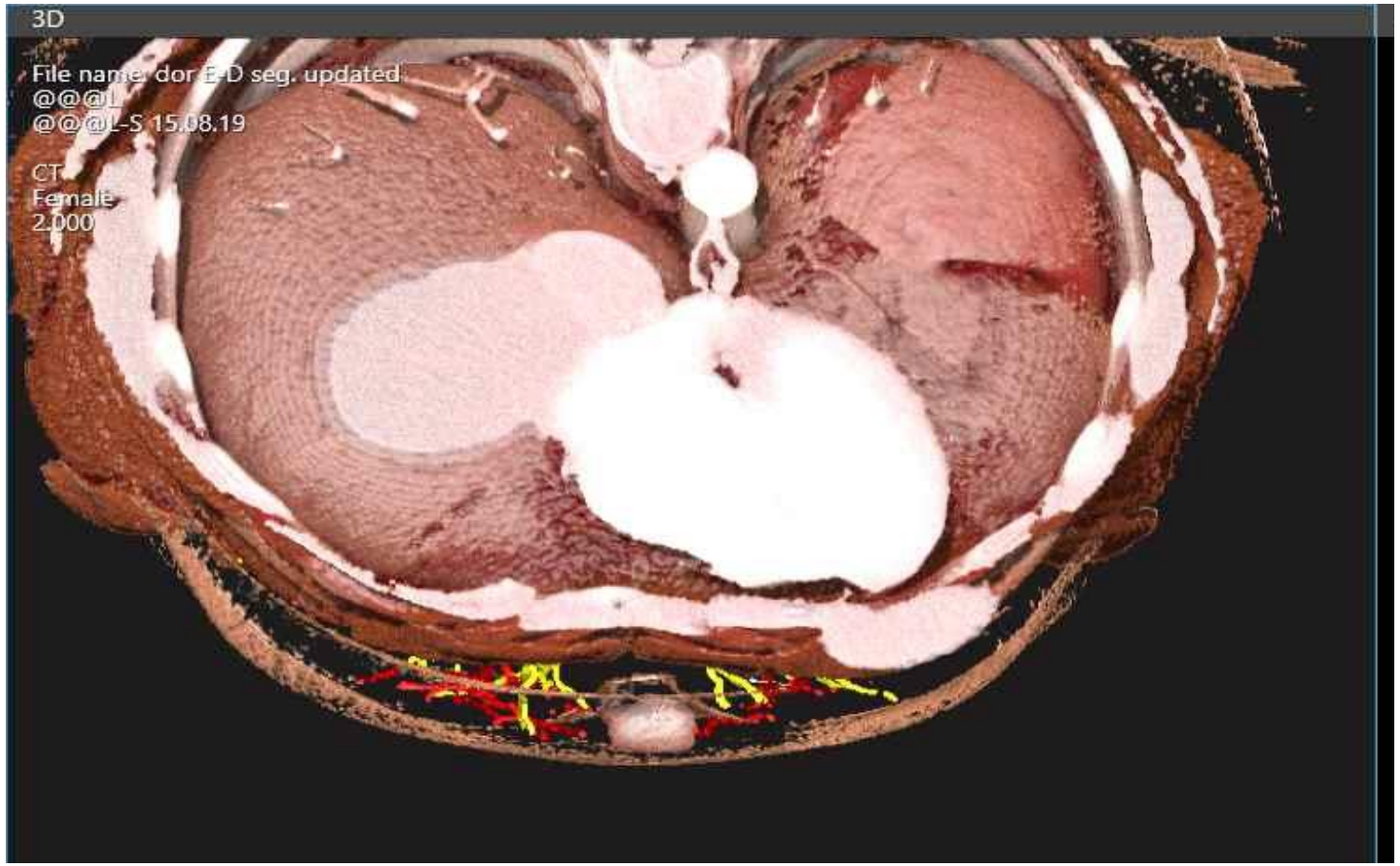
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CT
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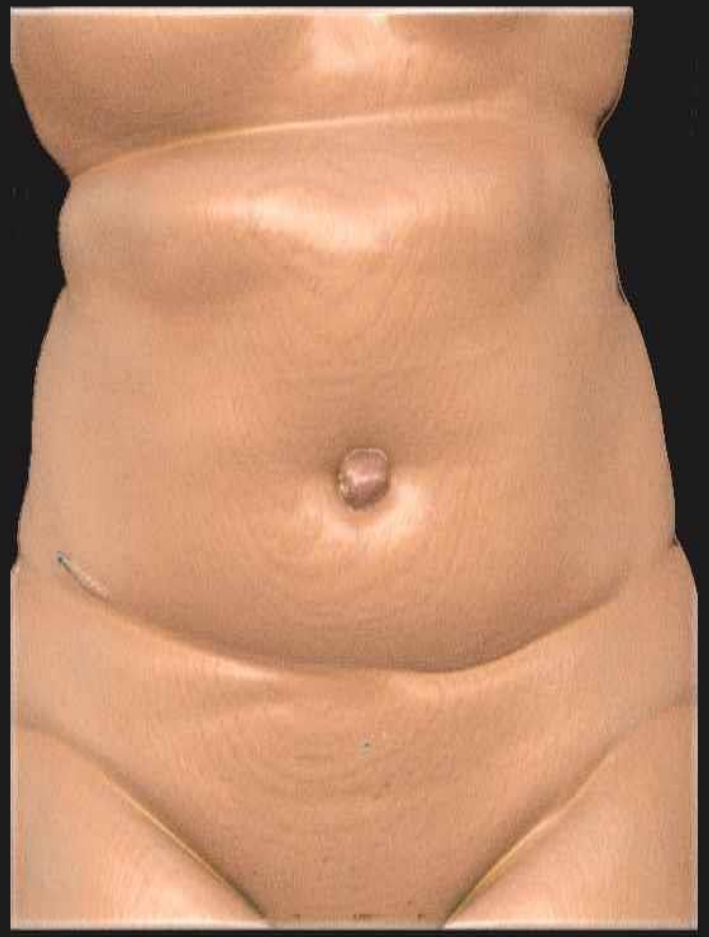

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3D

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CT
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3D

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CT
Female
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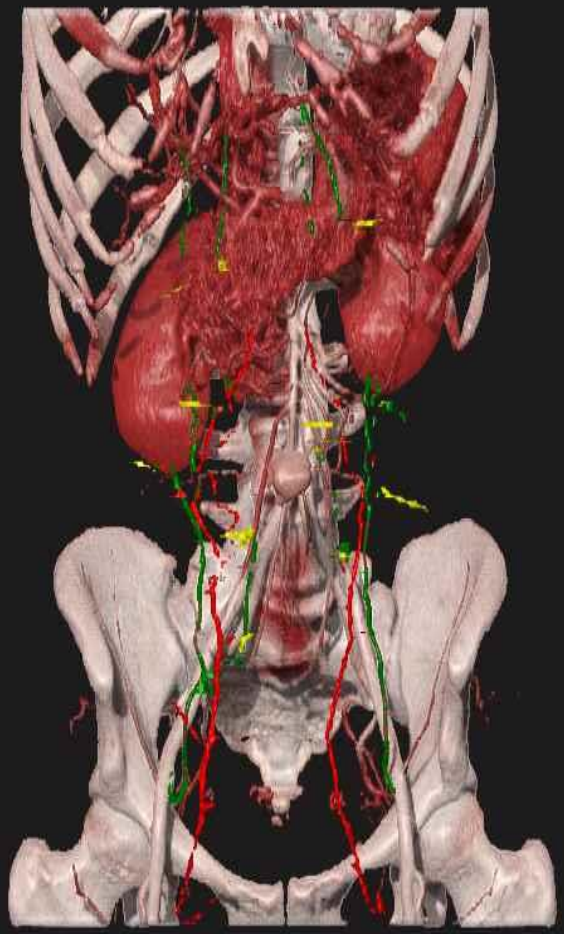

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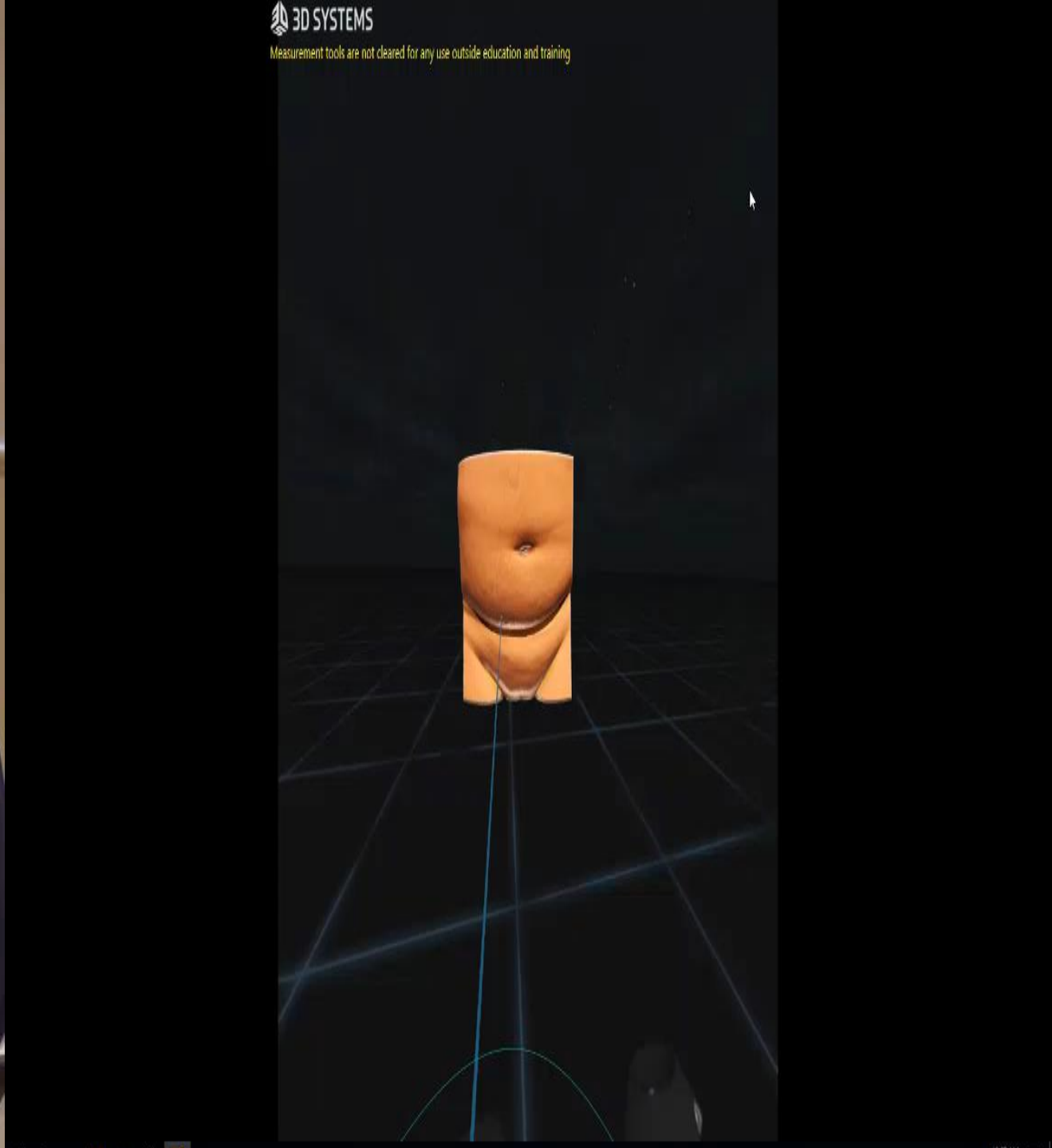
Video


3D SYSTEMS
Measurement tools are not cleared for any use outside education and training

Conclusion

- **VR allows us to see the perforants in 3D configuration**
- **Just a “warm up”**
- **Next step : Developing AR model**

Thank you