RA SimAs = Regional Anaesthesia Simulator and Assistant

Training of Regional Anaesthesia Supported by Patient-Specific Virtual Physiological Human (VPH)-Based Models

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Background - Regional Anaesthesia

- Blocks the peripheral nerves through local injection of anaesthesia
- Lower costs for the hospital
- Lower impact and faster recovery for the patient
- Difficult technique to locate the nerve
- Requires advanced medical skills
- Is underused in medical routine

RA SimAs project: Increase the application, the effectiveness of regional anaesthesia by combining a simulator ultrasound-guided and electrical nerve-stimulated through an integration of image processing, physiological models and subject-specific data, and virtual reality

Methods

- Patient-specific anatomy: register of general mesh-based models with patient voxel-data recordings
- Used by simulator and assistant

Generic VPH Models

- Anatomium
- Zygote

Components

- Skin
- Bone
- Muscles
- Vessels (arteria, vein)
- Nerves

Simulator

To train physicians in performing regional anaesthesia

- Virtual reality environment
- Haptic feedback
- Ultrasound simulation
- Nerve stimulation simulation

Assistant

To help anaesthesiologists during the procedure

- 3D view of the patient
- Patient-specific model
- Augmented ultrasound
- Interpretation of structures
- Probe/needle tracking

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