LaparoS™ - Innovation in Laparoscopy Training and Education

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VIRTAMED

Objective

LaparoS™ is a **novel mixed reality simulator** designed to address unmet needs in laparoscopic skills training. It has been designed for residency training in General Surgery and Gynecology, with the advanced technology holding the potential to incorporate specific medical devices and new procedures, including for robotic surgery.

Highly motivating and efficient training cases include condensed sequences of key surgical skills, encouraging the trainee to **repeat training until proficiency benchmarks are reached**.

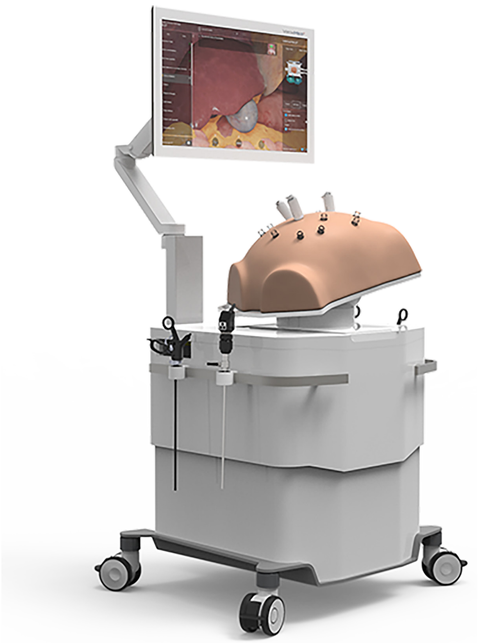
Device Description and Methods

Based on decades of experience and validation studies in the laparoscopy simulation field, VirtaMed combined the best of box model training with the benefits of high fidelity simulation. As the only mixed reality simulator with an anatomical patient model, it allows residents to **practice patient positioning, trocar placement and true team training**.

The patented haptic feedback approach combines several **haptic technologies for accurate tissue feedback**. Instruments can collide, vibrotactile effects simulate when clips are being closed or cuts performed on tissue, and active trocars provide a response for tissue stiffness and deformation based on simulated physical organ properties.

The abdominal rubber model was specifically designed with patient positioning and trocar placement in mind. The **patient can be tilted in any position** from Trendelenburg or Reverse-Trendelenburg to flat Lithotomy position and shift the position of organs accordingly. The trainee can select from 17 of the most common trocar positions in General Surgery and Gynecology.

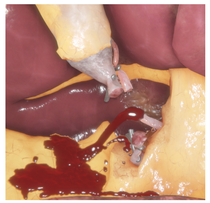
All movements and interactions are recorded with sub-millimeter accuracy, enabling **objective feedback reports** and providing data for machine learning analysis of surgical performance via VirtaMed's cloud network.

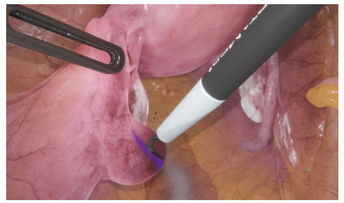


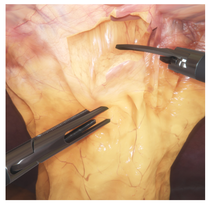
Preliminary Results

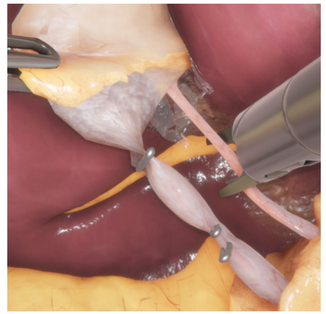
VirtaMed partnered with the Association of French Surgery (AFC) in 2020 to provide laparoscopic training across French University Hospitals. The Davos GI Course also selected VirtaMed as the unique simulation training provider in 2020.

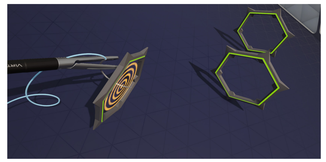
To date, **over 500 residents at 50 hospitals** have undertaken training with the LaparoS™. A systematic study of these residents reported that **100% found simulation training to be worthwhile**, with 80% requesting mandatory simulation training of at least one hour per week.









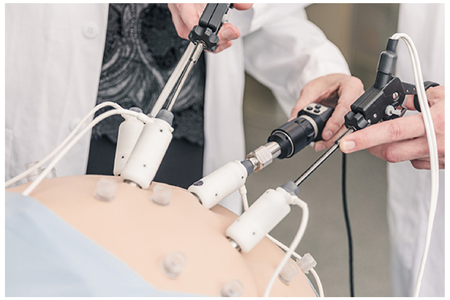


Conclusions

The main goals for the following years will be to expand the training offering to include skills and key steps of more advanced procedures in General Surgery and Gynecology to cover the **full bandwidth of residency training milestones and enable objective data-driven assessment**.

In collaboration with medical societies and subject matter experts we want to grow our training courses, foster curriculum integration and strengthen our feedback metrics and we hope with this to see a broad adoption of our solution in the surgical community on an international level.

Next steps will be to broaden our offering into simulation training for surgical robotics and exploring augmented reality, online training and machine learning options to be the partner of choice when it comes to highly innovative surgical training.



Learn more about innovative laparoscopic training:
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