

Robotic Surgery- Overview

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DISCLOSURES

Proctor- Intuitive

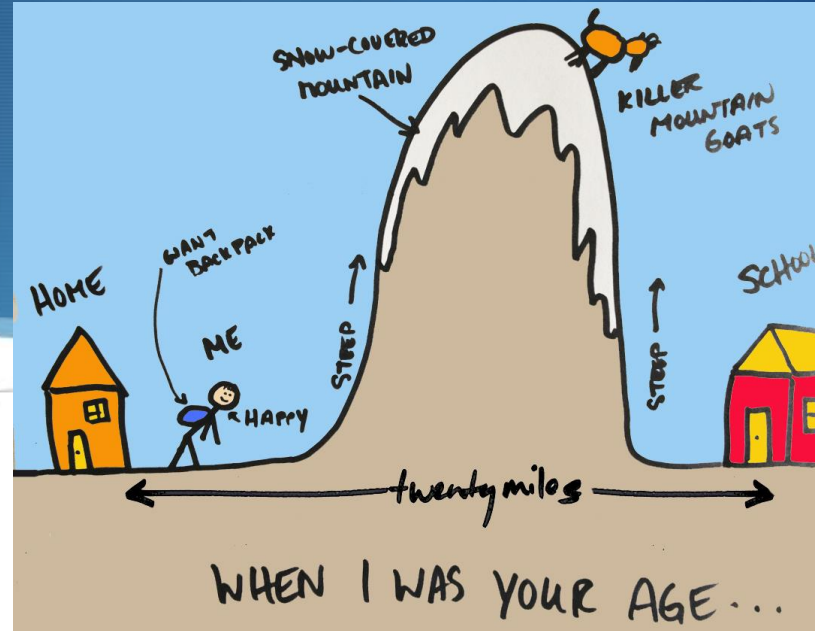
Consultant- Medtronic

Speaker- Conmed.

When I was a kid we didnt have toys. We walked 27 miles to school, barefoot, in the snow, uphill both ways. But we knew we had it good.



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Robotics

- ◆ Gimmick
- ◆ I am the best lap surgeon in the world
- ◆ How do I Know
- ◆ Just ask me and I will tell you.

Fog of Success

- ◆ Xerox
- ◆ Kodak
- ◆ Nokia
- ◆ Airbnb
- ◆ Some of them invented the future.

Success is Seductive

- ◆ Lures people into doing the same thing.
- ◆ Structurally organized to exploit the advantage
- ◆ New innovations require change in organizational structures.
- ◆ Few breakthrough innovations fit current structure.

Robotics in Bariatrics

- ◆ Surgeons are masochists.
- ◆ Benefit is for the Surgeon.
- ◆ Laparoscopy is an unnatural transitional platform.
- ◆ New generation of Surgeons.
- ◆ Democratization of the procedure.
- ◆ Safer for the patient

Cost

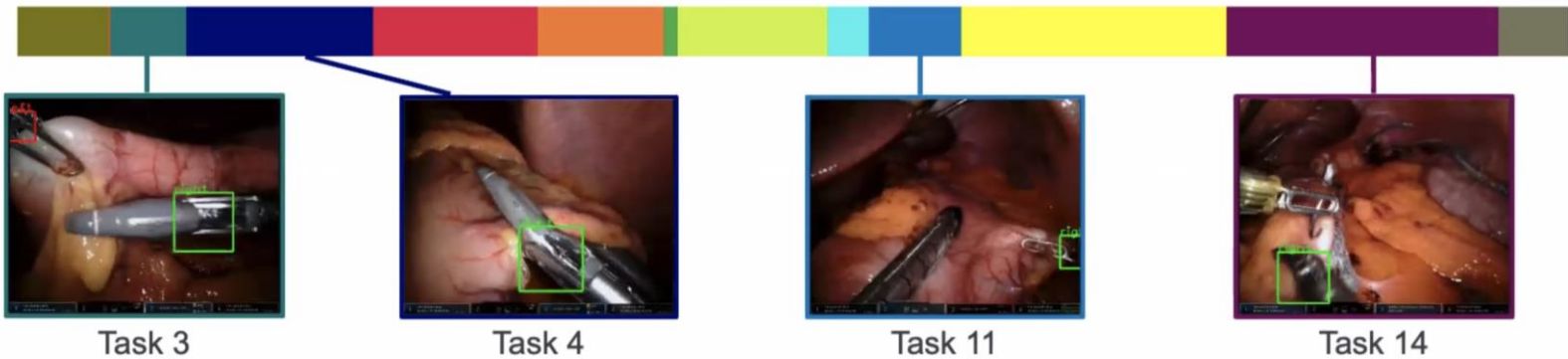
- ◆ Mental Gymnastics must stop.
- ◆ Upfront cost of Robotics is higher.
- ◆ Price is nuanced.
- ◆ Elimination of Surgical Assistant.
- ◆ Appropriate procedure being considered.
- ◆ Staging of procedures.
- ◆ Surgery available locally.

Training

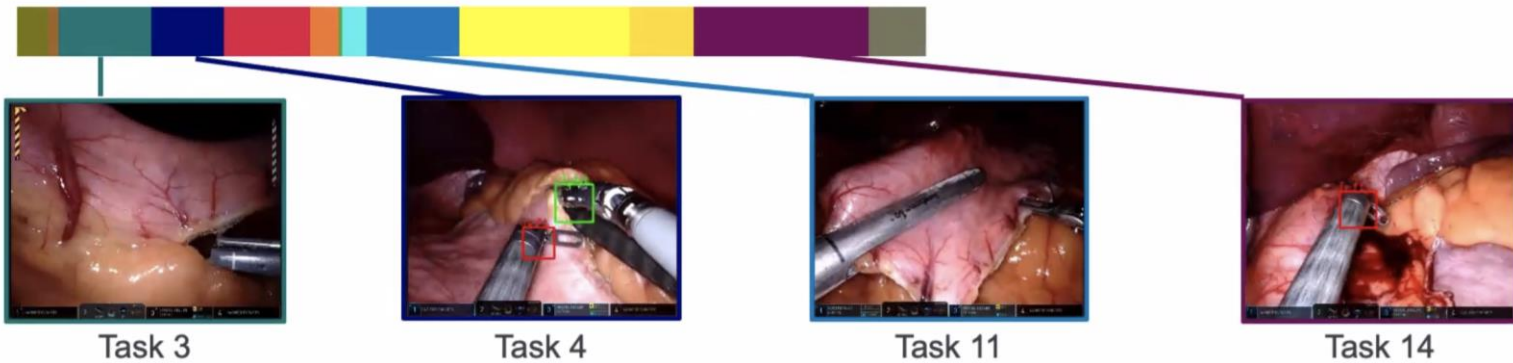
- ◆ Anesthesia
- ◆ OR nurses.
- ◆ Good Bedside assistance.
- ◆ Structured Robotic Surgery Residency Curriculum.
- ◆ Dedicated Team.

Machine Learning Task Recognition

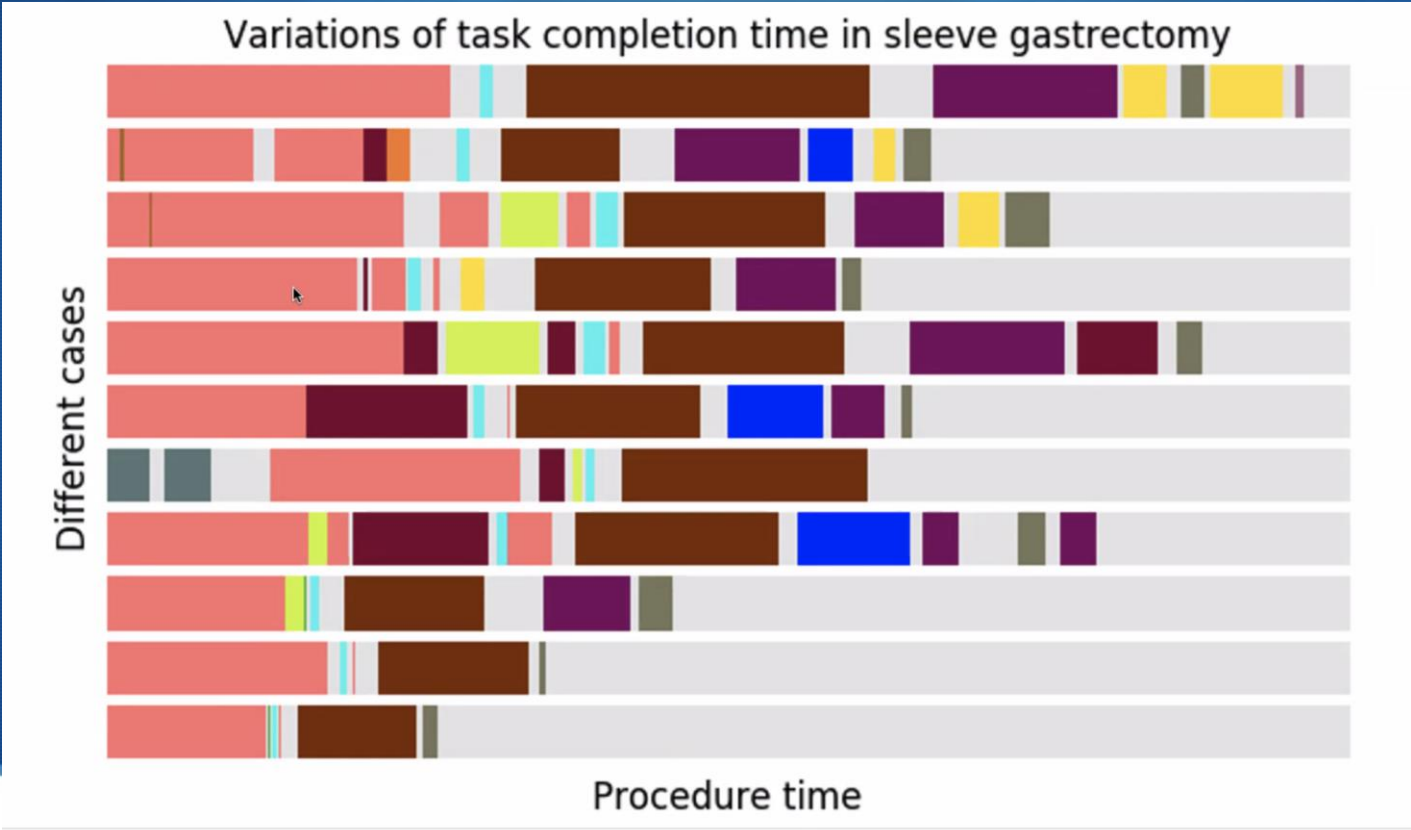
Inexperienced:



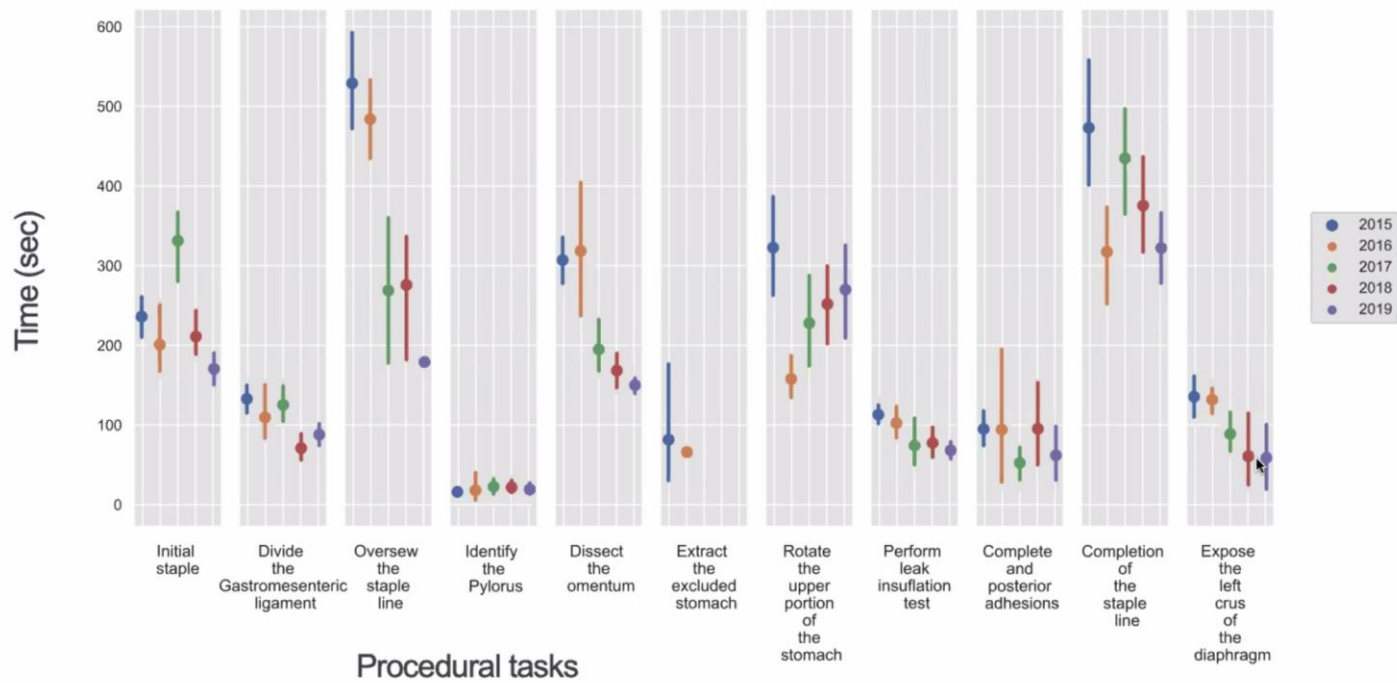
Experienced:



Algorithms to Identify Workflow Variability



Digitally Produced Task Based Insights



Robotic Sleeve Gastrectomy
Mark Tousignant, MD, FACS



Kinematics: Robotic Objective Performance Indicators

Completion time

Camera activation count

Camera control duration

Camera distance traveled

Instrument distances and trajectories

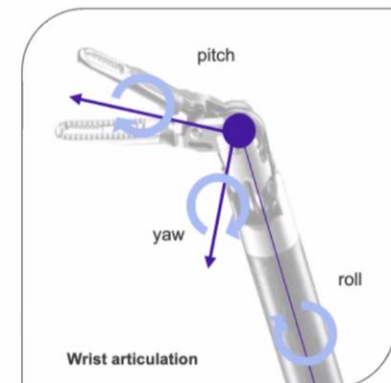
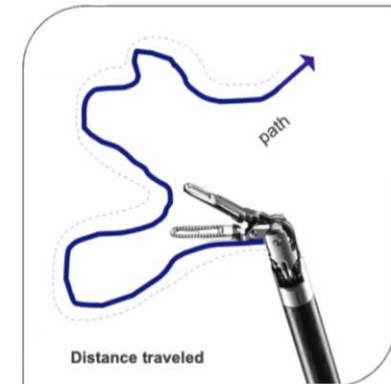
Movement speeds

Third arm swap count

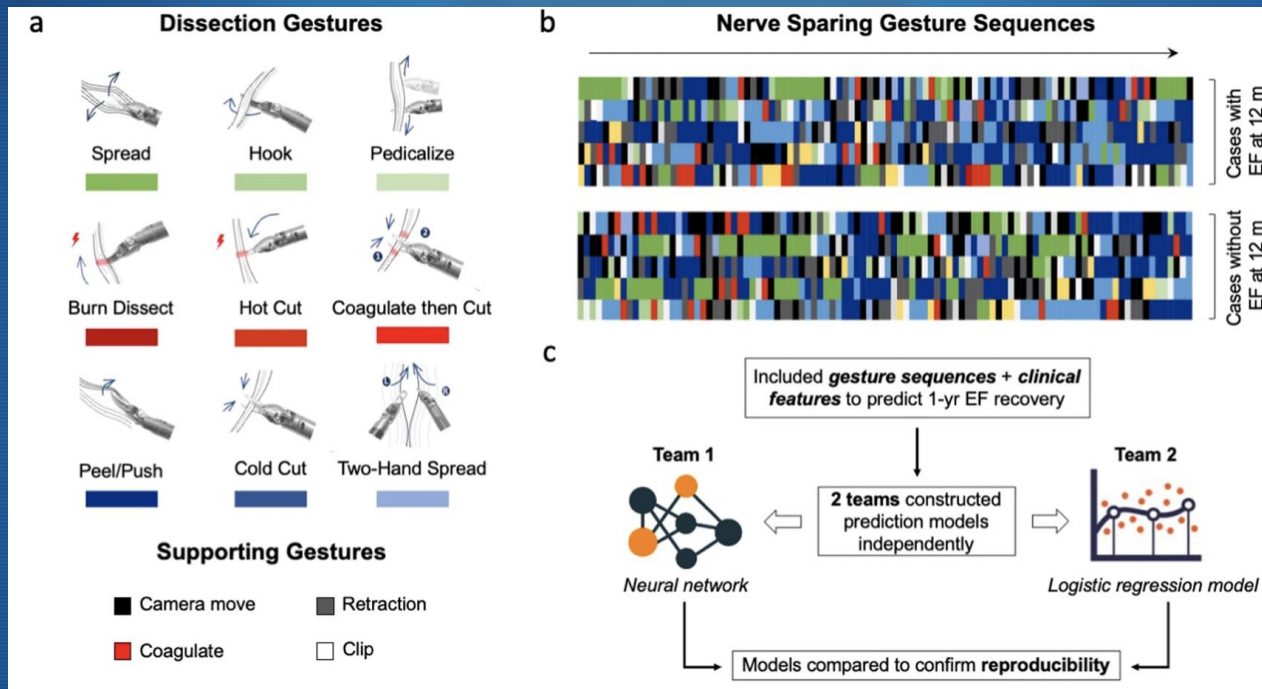
Ratio of dominant / non-dominant arm use

Wrist articulation

Instrument idle time



Kinematics: Robotic Gestures

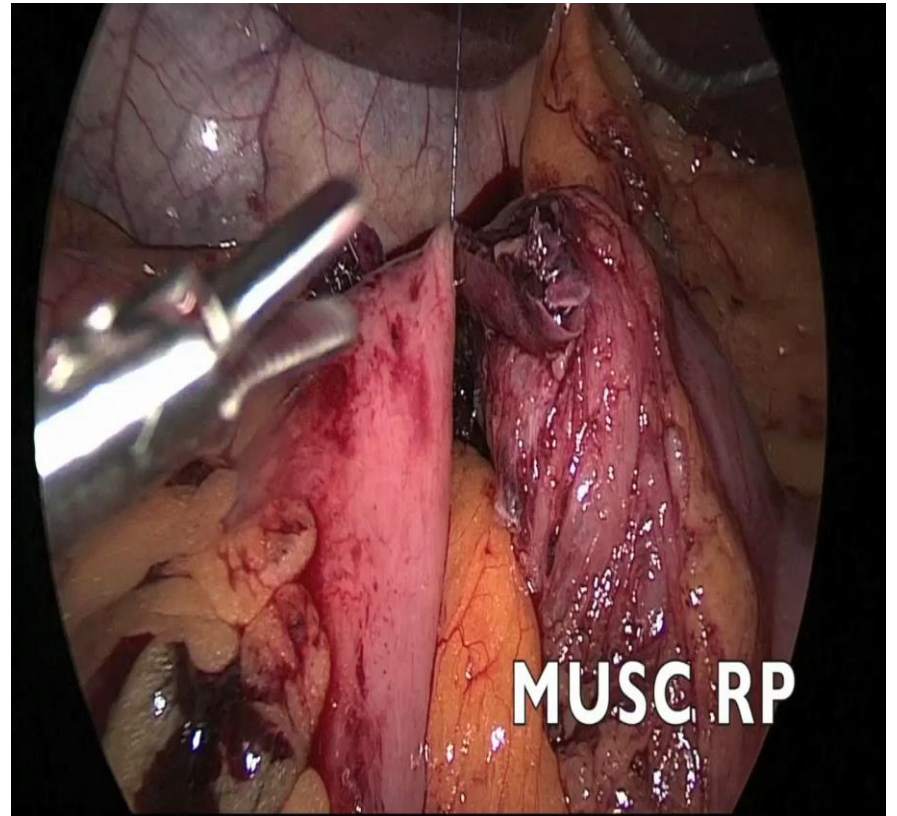
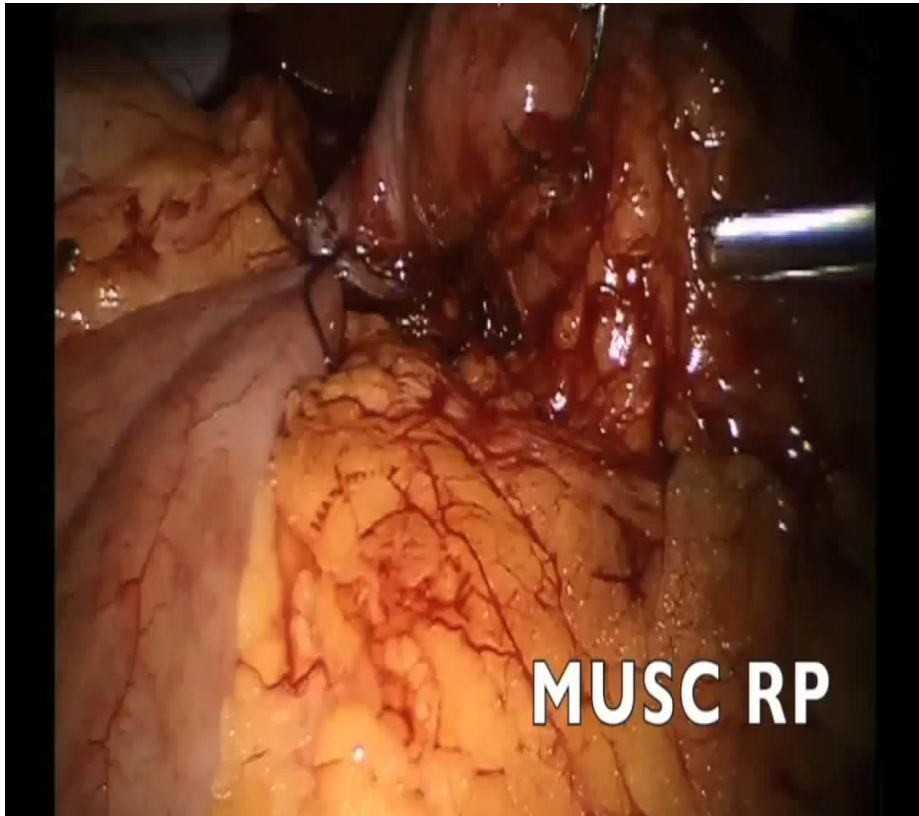


a Gesture classification, including 9 dissection gestures and 4 supporting gestures. **b** Color-coded nerve-sparing gesture sequences (showing only the first 100 gestures). Colors represented corresponding gestures in **a**. **c** One-year EF recovery prediction model construction process. Two teams independently constructed and tested their prediction models to confirm the reproducibility of results.





Duodenal Switch



Conclusions

- ◆ Robotic Bariatrics/ Computer assisted Surgery is here to stay.
- ◆ Robotic companies and surgeons using the robot need to stop being disingenuous.
- ◆ Do not claim what it is not.
- ◆ Accept it for what it is
- ◆ The future of this technology is exponentially getting better.

In many cases traditions last not because they are excellent, but because influential people are averse to change and because of the sheer burden of transition to a better state.

Cass Sunstein



Thank You
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