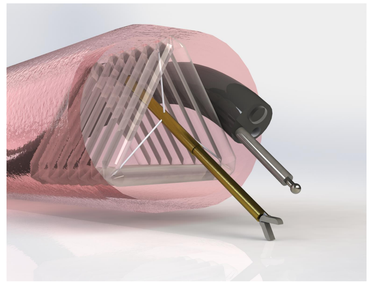
Lannsair
Soft robotics for endoluminal surgery



A novel over-the-scope soft robotic system for enhanced endoscopic interventions: ex-vivo trial of dynamic traction during endoscopic submucosal dissection

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A novel retraction device

Delivering an additional working channel, robotically guided and independent of the endoscope. Currently, our focus is to use the device to make Endoscopic Submucosal Dissection (ESD) faster, safer, and easier.

Pre-clinical trials

Provided an early preclinical evaluation of potential uses and best configurations of the soft robotic device during enhanced endoscopic interventions.

Integration into workflow

- The device is attached to the flexible endoscope
- It is inserted alongside the endoscope to the target location
- The device is deployed by inflating the structure, stabilising the surroundings
- Flexible endoscopic instruments inside the moving working channel can be manipulated with input device
- Upon completion of the procedure, the device is collapsed, removed, and disposed of.

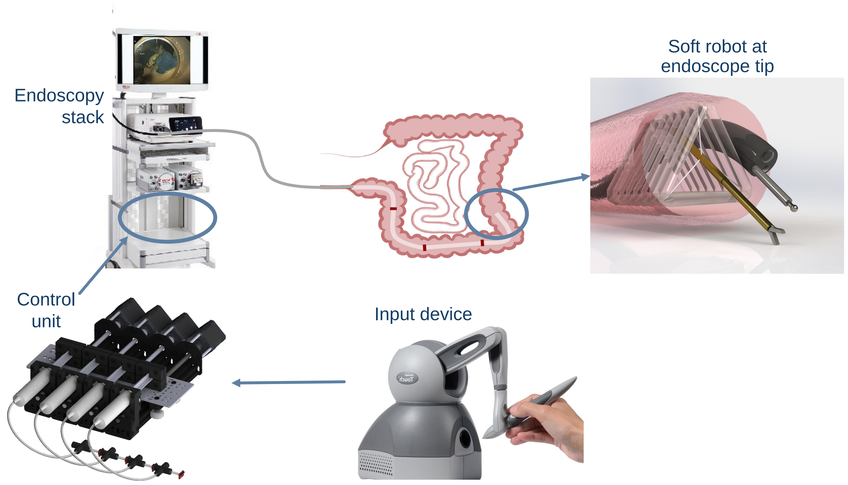


Figure 1: The system consists of a control unit, an input device, and the single-use soft robotic device

Dynamic traction of mucosa

- Mucosa manipulated to adaptively generate traction in any direction
- Two pseudotumours removed using ESD
- Successful insertion and deployment of device without impacting scope mobility
- Endoscope able to move independently around soft robotic structure

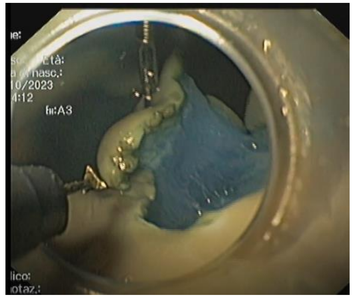


Figure 2: Endoscopic view. Dynamic traction achieved by the soft robotic device to expose the submucosal dissection plane

Further pre-clinical evaluation planned

- This low-cost, soft robotic device offers a potential paradigm shift in endoscopic surgery. Disposable, low-footprint robotic tools could make ESD more accessible.
- Design changes based on clinical feedback implemented ahead of in vivo porcine trials
- Studies to compare dissection speed using our device against manual ESD underway
- Further investigation into both safety and ease of use are planned.

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