Endoscopic Customizable Anastomosis

After the resection of pathological bowel sections, for example to treat a colon carcinoma, there are various ways to reconnect the lumen margins, all of which still show significant risks of complication and require highly invasive surgery. Guidelines for an ideal anastomosis are already well-known, however the respective technology is still missing.

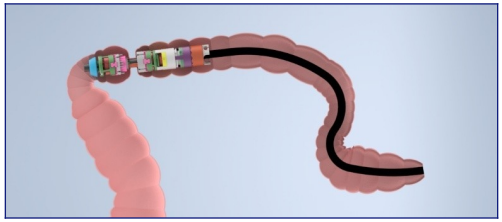


Implant and Applicator Kit

IP RIGHTS
Both applications filed in EP
2021

The invention provides an endoscopic approach to create inverting end-to-end anastomosis, using a two component applicator and a degradable implant to reduce the risk of scarring and stenosis. The system can be adapted to the anatomical conditions of the patient, facilitating a customized surgical anastomosis.

01 System for endoluminal anastomosis
02 Adjustable to the lumen size of the patient's intestine
03 Force application mechanism at flexible endoscope tip for arbitrary shapes
04 Possible transfer to other minimally invasive technologies (e.g vascular or GI)



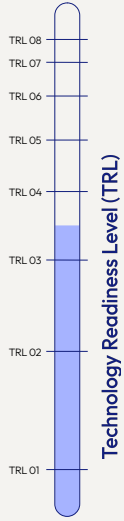
The implant applicator has been transluminally inserted via the aboral lumen.

CHALLENGE

Current anastomosis techniques are dominated by sutures and staplers that demand high surgical skill, often require laparotomy and can leave foreign bodies permanently in the bowel wall. These approaches are associated with leakage, strictures and scarring and offer limited options to match the anastomosis diameter to individual anatomy. There is a need for a transluminal solution that combines precise, adjustable anastomosis with minimal residual foreign material and reduced trauma.

INNOVATION

The invention introduces a convertible implant and applicator kit for fully endoluminal, inverting end-to-end anastomosis. The system uses two expandable implant components which are interconnected by joining sections. The two components are inserted endoluminally via a respective two-component applicator system, in-situ scaled to the colon diameter of the patient and then connected in order to restore patency. A degradable implant leaves the anastomosis site foreign body-free after healing to reduce the risk of scarring and stenosis.



01 Basic principles observed · **02** Technology concept formulated · **03** Experimental proof of concept · **04** Technology validated in lab · **05** Technology validated in relevant environment · **06** Technology demonstrated in relevant environment · **07** System prototype demonstrated in operational environment · **08** System complete and qualified

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