A MINIATURE ROBOTIC DEVICE APPLICABLE TO A FLEXIBLE ENDOSCOPE FOR THE SURGICAL DISSECTION OF GASTRO-INTESTINAL TRACT SURFACE NEOPLASMS

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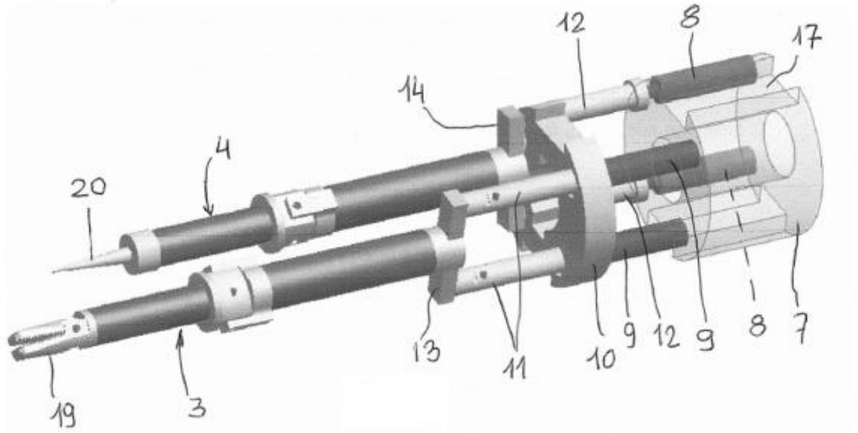
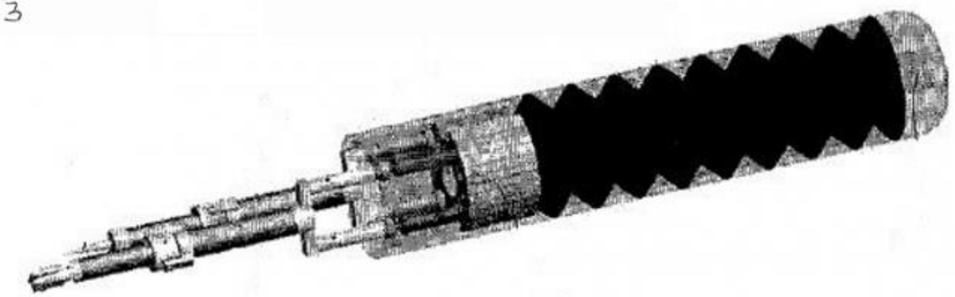
Invention

The research efforts was focused on the development of a Robot for Endoscopic Dissection (RED). It is a tool installed as cap to the tip of an endoscope, a device that is present in all hospitals. The cap contains a teleoperation robot (master-slave robot) with 2 arms (one with a clamp and the other with a dissector) which the surgeon/endoscopist can control with an ergonomic console, which is similar to the console commonlly used in robotic surgery.
In 80% of cases of non-metastatic colorectal cancer, the primary treatment is surgical resection by local excision. This excision is done very well in the rectum with the use of TEM (Transal Endoscopic Microsurgery) because this instrument has a diameter of 4 cm, in the rest of the colon it is necessary to perform local excision with ESD (Endoscopic Submucosal Dissection). However, this technique does not have the same good oncological radicality results as TEM and has more complications. This is due to the fact that ESD does not allow tissue manipulation as it is not possible to triangulate the instruments on the lesion. In the context of research, the focus was the development of a device which can be used for excisions all along the colon that is able to copies the movements performed during TEM, with good triangulation of the instruments on the target lesion and good tissue manipulation but using a much smaller device (about 1 cm in diameter) than TEM itself. This invention provides numerous advantages including: The precision of the intervention, the extension to the whole colon, a shorter time in hospital and a reduction in costs for caregivers.

Drawing & pictures





Industrial applications

- Colorectal cancer resection;
- Minimally invasive surgery;
- Endoscopic transluminal natural orifice surgery;
- Robotic surgery / endoscopy;

Possible developments

The research group is interested in industrial partners interested in licensing the technology covered by this patent.

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