

# Department of surgical technology

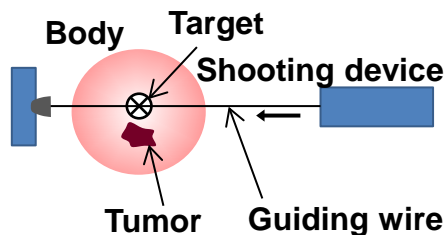
## Research and Development on Medical Devices in/around Laparoscopic Surgery

We make research and development on medical devices in/around laparoscopic surgery based on clinical needs in academic-industrial/medical-engineering collaboration.

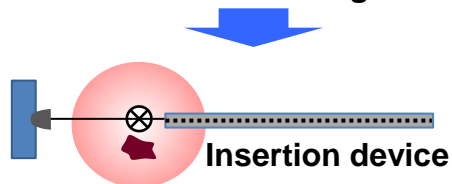
### Research and Development

#### A novel device for ablation treatment

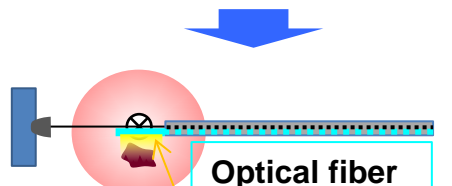
Aiming to enhance accuracy and safety in local ablation treatments, we conduct research and development on a novel device which can perform ablation of tumors by laser irradiation. The laser irradiation is performed through optical fibers which inserted into the vicinity of tumors. (PCT/JP2016/059483)



First, guiding wire is shot to a target in the vicinity of tumors by a shooting device, and passes through the body.



Next, an insertion device is inserted along the guiding wire and placed in the vicinity of tumors.



Next, an optical fiber is placed through the insertion device in the vicinity of tumors.

**LASER irradiation**

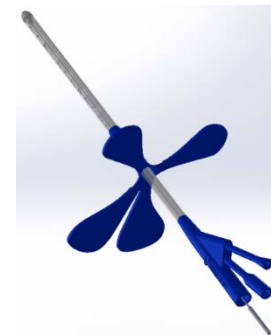
Finally, by laser irradiation through the optical fiber, ablation of tumors is performed.

The system allows us the ablation of tumors with high accuracy without the ablation of normal tissues because the laser irradiation can be performed from the immediate vicinity of tumors.

### Developed PRODUCTS

#### A novel transanal tube (TAT), "WING DRAIN",

A novel transanal tube (TAT), "WING DRAIN", was developed into a product in collaboration with Muranaka Medical Instruments Co., Ltd. TAT can separate gas and watery stool in the intestinal tract and smoothly pass them out of the body. Therefore, it can prevent anastomotic leakage after rectal cancer surgery and decrease patients' charges.



#### "Foot-Site Monitor" in endoscopic surgery

A novel device "Foot-Site Monitor" (FSM), which allows simple use of multiple foot pedals in endoscopic surgery, was developed into a product in collaboration with HAYASHI-REPIC Co., Ltd. Using FSM, the multiple foot pedals are illuminated, and the images of them are displayed on a monitor attached to endoscopic monitor. Therefore, the surgeons can smoothly perform endoscopic surgery without looking for the correct foot pedal under the bed.

