REAL-TIME ASSESSMENT OF INTESTINAL PERFUSION AND LYMPHATIC FLOW BY INDOCYANINE GREEN FLUORESCENCE IMAGE–GUIDED LAPAROSCOPIC SURGERY FOR COLO-RECTAL CANCERS

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[Introduction]

The aim of this study is to present our experience with laparoscopic procedures for colo-rectal cancer using ICG fluorescence imaging (LAP ICG-FI).

[Patients and Methods]

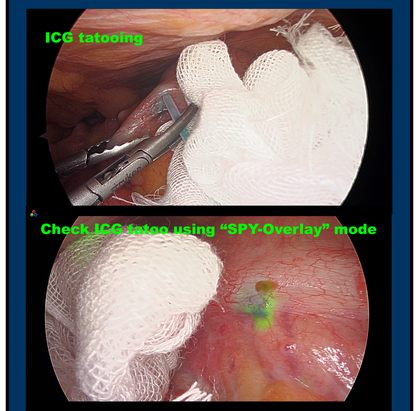
We experienced 119 LAP ICG-FI cases with colo-rectal cancer patients using near- infrared (NIR) laparoscopy.

[Indocyanine green fluorescence imaging]

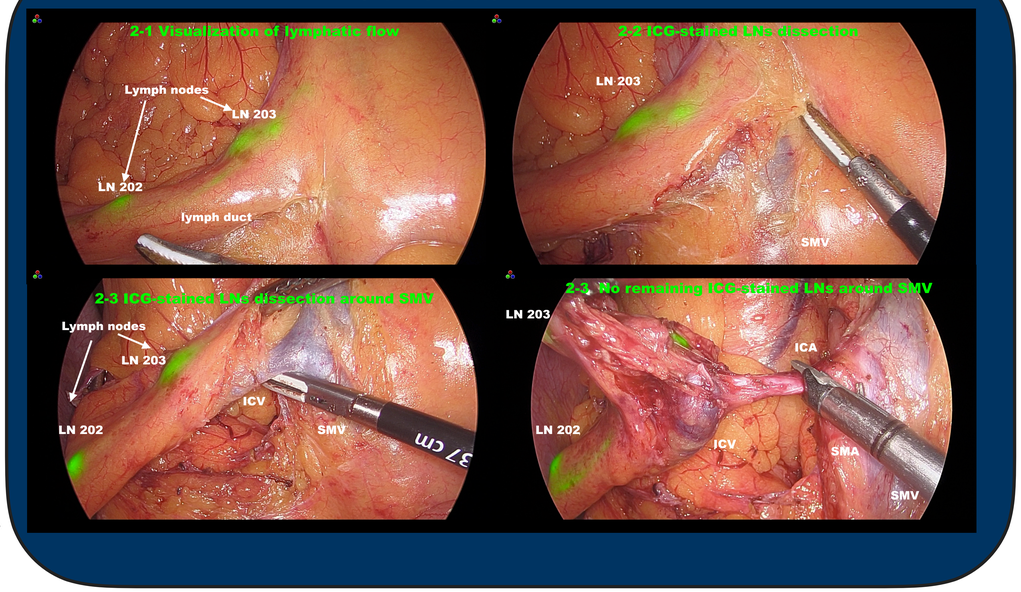
Visualization of lymph flow

ICG (2.5 mg/1.0 mL) was injected into the submucosal layer around the tumor at 1~2 points before the lymph node dissection . Lymphatic flow could be visualized in 30 minutes.

1. Inject indocyanine green (ICG) around the tumor



2. LNs dissection with real-time lymphangiography

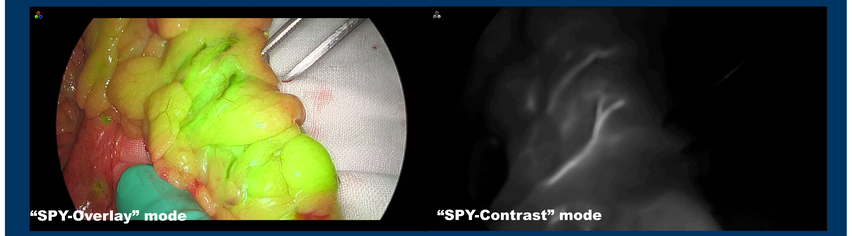


* Tumor was located at Cecum in the presented case

Visualization of blood flow

ICG (2.5 mg/1.0 mL) was injected intravenously just before anastomosis.

Checking blood flowing using real-time angiography



[Results]

1. Patients' background

Male/Female	66/53
Age	68(38-91)
BMI	24.8(20-36.4)
Tumor location	
Cecum	11
Ascending colon	9
Transverse colon	8
Descending colon	14
Sigmoid colon	29
Rectum	48
TNM classification (I / II / III)	34/31/37/17

2. Outcomes

*Lymphangiography (LG)	119/119
High Quality LG (HQLG)	98/119 (83%)
Metastatic LNs / ICG+LNs	10%
Metastatic principal LNs / HQLG	0/119 (0%)
Metastatic LNs / ICG-LNs >5cm from tumor	0/119 (0%)
Tumor-free resection margin (cm)	12.7±5.8
Harvested lymph nodes	25±2
*Angiography(AG)	119/119
High Quality AG (HQAG)	119/119 (100%)
Staining time	26(15-90 sec)
Revision of the transection point	4/119(3.3%) Rectum: 3, Transverse colon: 1
Anastomotic leakage	1/119(0.84%) Rectum: 1
Anastomotic leakage in the revision case	0/4(0%)

[Conclusion]

1. LAP ICG-FI is a simple, safe and useful tool to help us complete LAP CME or TME and check real-time anastomotic tissue perfusion.
2. High quality lymphangiograms allow us to perform precise and adequate lymphadenectomy.

Our findings indicate that the extent of intestinal resection and LNs dissection can be reduced.