

# 11th WCES

**Special Session1: Eyes for Future**  
**September 3 (Wed) Room 1 (Main Hall)**

**8:30 – 9:10**

---

**WSP1-1 SPECIAL LECTURE:**  
**HISTORY OF DIGESTIVE ENDOSCOPY**

President, Japan Gastroenterological Endoscopy Society / St. Marianna University School of Medicine,  
Japan

**Hirohumi Niwa**

**Chairperson: Keizo Sugimachi** (Kyushu Central Hospital of the Mutual Aid Association of Public School  
Teachers, Japan)

**September 3 (Wed) Room 1 (Main Hall)**

**9:10 – 11:30**

---

**Can you believe your eyes?—3D or High Quality Visual Effect—**

Chairpersons: Masaki Kitajima (International University of Health and Welfare, Japan)  
Michel Gagner (Mount Sinai Medical Center, USA)

**WSP1-2 AN INNOVATIVE 3-DIMENSIONAL LAPAROSCOPE BASED ON SINGLE OPTICAL  
CHANNEL AND CAMERA**

1Department of Biomedical Engineering, Yonsei University, Korea, 2Wasol Co., LTD, Korea  
Hyung-Ro Yoon<sup>1</sup>, Young-Ha Lee<sup>2</sup>, Byungio Jung<sup>1</sup>

**WSP1-3 3D EXPERIENCES IN GASTRECTOMY: DRY LAB, ANIMAL, AND HUMAN PATIENT.  
FEEL IT BY YOURSELF!**

Department of Surgery, Seoul National University College of Medicine, Korea  
Han-Kwang Yang

**WSP1-4 INTRAOPERATIVE THREE-DIMENSIONAL VISUALIZATION IN LAPAROSCOPIC  
GASTRECTOMY FOR GASTRIC CANCER: AN EARLY EXPERIENCE**

Department of Surgery I, Oita University Faculty of Medicine, Japan  
Seigo Kitano, Tsuyoshi Etoh, Norio Shiraishi

**WSP1-6 LAPAROSCOPIC SURGERY UNDER 3-D VISION—COLECTOMY AND  
RECTALRESECTION**

Department of Surgery, Keio University, Japan  
Hirotooshi Hasegawa, Yoshiyuki Ishii, Takashi Endo, Koji Okabayashi, Yuko Kitagawa

## WSP1-2

### AN INNOVATIVE 3-DIMENSIONAL LAPAROSCOPE BASED ON SINGLE OPTICAL CHANNEL AND CAMERA

<sup>1</sup>*Department of Biomedical Engineering, Yonsei University, Korea,*

<sup>2</sup>*Wasol Co., LTD, Korea*

Hyung-ro Yoon<sup>1</sup>, Young-ha Lee<sup>2</sup>, Byungjo Jung<sup>1</sup>

2-D endoscope has been widely used for minimally invasive surgical procedure in medicine. Recently, 3-D endoscopes have been developed in order to significantly improve surgical visualization by simulating human eye. However, current 3-D endoscopes based on a stereoscopic system have a major limitation of the lack of depth and distance perception which impairs delicate dissection or suturing during endoscopic surgery. In order to address the limitations, we developed an innovative novel 3-D endoscope based on a single optical channel and camera. The 3-D endoscope obtains left and right images at different view point by fast moving the optical axis of a transparent refractive plate in front of a CCD. We describe in detail about the principle of optical setup.

## WSP1-3

### 3D EXPERIENCES IN GASTRECTOMY; DRY LAB, ANIMAL, AND HUMAN PATIENT. FEEL IT BY YOURSELF!

*Department of Surgery, Seoul National University College of Medicine, Korea*

Han-Kwang Yang

Laparoscopy system has many advantages, but lacks depth perception deriving from binocular vision. Recently developed 3D image systems are supposed to provide good spatial perception in laparoscopic surgery. We experienced two 3D systems currently available in different levels of operation.

1) In the dry-lab, we conducted a study comparing 2D(Storz HD system) and 3D(Wasol prototype)systems. In this pilot study, 3D environment showed tendencies of quicker operation time and lower rate of errors and less "poor relaxation" of hand muscles on EMG, with only mild dizziness.

2) The laparoscopy-assisted distal gastrectomy using 3D wasol system was performed on a 40kg pig. Watching the special 3D monitor with polarized glasses on, operation was safely completed without any distinct discomfort.

3) We performed one distal gastrectomy for a 53 year-old female early gastric cancer patient using daVinci robot system. The "endowrist" as well as the 3D system was useful for stereoscopic procedures of gastrectomy.

Based on these experiences, we expect newly developing 3D systems could provide practically useful spatial perception with minimal discomforts in laparoscopic surgery.

## WSP1-4

### INTRAOPERATIVE THREE-DIMENSIONAL VISUALIZATION IN LAPAROSCOPIC GASTRECTOMY FOR GASTRIC CANCER: AN EARLY EXPERIENCE

*Department of Surgery I, Oita University Faculty of Medicine, Japan*

Seigo Kitano, Tsuyoshi Etoh, Norio Shiraishi

**Backgrounds:** Although one of the advantages of laparoscopic surgery is wide visualization, the recognition of vessels, tumor and organs during the surgery is limited because of ordinal two-dimensional view.

**Aim:** We present an early experience of use of a three-dimensional (3D) visualization system in laparoscopic gastrectomy with lymph node dissection.

**Materials and Methods:** The usage of 3D visualization system (WASOL Co., Korea) was approved by the ethics committee of our university and patient provided written informed consent. A patient with early gastric cancer underwent laparoscopy assisted distal gastrectomy under this system.

**Results:** Vascular and organ anatomies were well visualized, and were easily grasped under 3D visualization. Lymph node dissection around rt.epigastroploic artery and lt. gastric artery was safely performed. The system was stable during all procedures, and there were no operative or technical complications.

**Conclusion:** The 3D system was feasible in our case of laparoscopic gastrectomy for cancer and may be helpful visualization that can prevent surgical complication in laparoscopic surgery.

## WSP1-6

### LAPAROSCOPIC SURGERY UNDER 3-D VISION-COLECTOMY AND RECTAL RESECTION

*Department of Surgery, Keio University, Japan*

Hirotoishi Hasegawa, Yoshiyuki Ishii, Takashi Endo, Koji Okabayashi, Yuko Kitagawa

Laparoscopic surgery has now gained its acceptance in the field of colorectal benign diseases and malignancies, with improvements and innovations of new technologies and instrumentations. Of which, an endoscope as well as Harmonic scalpel would be considered as one of the most important and state-of-the-art instruments and technologies, since the endoscope is 'eyes of endoscopic surgeons'. An endoscope with high resolution images/visions or a 5-mm flexible endoscope has been introduced, which has had an impact on endoscopic surgery. However, the 2-dimensional vision is still one of the limitations in laparoscopic surgery.

To overcome this problem, a number of endoscopes with 3-dimensional images have been innovated, but very few have had an impact. In this session, the authors will present laparoscopic colorectal surgery using a prototype of newly innovated endoscope with a 3-dimensional image converting system. [Institutional Review Board approval is due to be obtained for this purpose only] What will the impact of this new system be like?