Olympus Corporation is pleased to announce the launch of a surgical endoscopy system incorporating 4K technology, commencing in Japan and Europe*1 in early October 2015. The technology was developed by Sony Olympus Medical Solutions Inc., the medical business joint venture between Olympus and Sony Corporation.

It has become common practice to use endoscopic surgery for the excision of tumors and other lesions. This involves inserting a surgical endoscope, together with other special-purpose devices like energy devices or hand instruments, via incisions. By eliminating the need for open surgery, this technique offers less post-operative pain and faster recuperation, making it popular as a minimally invasive surgical practice that reduces the burden on patients.

To further improve the accuracy and safety of endoscopic surgery, Olympus is launching a surgical endoscopy system incorporating 4K technology (3840×2160 pixels or more), offering resolution approximately four times better than the previous full HD model*2. It also features excellent color reproduction to facilitate the identification of blood vessels and other fine tissue.

Development of the technology for the new endoscopy system, which combines the medical device know-how of Olympus with Sony’s digital imaging and other technologies, was handled by Sony Olympus Medical Solutions, which was established April 16, 2013. The subsequent product design was then carried out by Olympus Medical Systems Corporation*3. Olympus intends to continue its technical collaboration with Sony to help develop medical equipment that minimizes the impact on patients’ bodies.

*1: In other countries except Japan and Europe, this system will be available upon declaration of conformity, product registration, or market clearance in each country’s jurisdiction.
*2: Full high-definition VISERA ELITE (launched October 2011) images have approximately 2,070,000 pixels, compared with 8,290,000 for 4K.
*3: With the exception of the monitor, telescope and recorder, this system is manufactured by Olympus Medical Systems Corporation (2951 Ishikawa-cho, Hachioji-shi, Tokyo, Japan 192-8507). Most functions of Olympus Medical Systems Corporation were taken over by Olympus Corporation as of April 1, 2015, as part of a group reorganization aimed at facilitating strategic business expansion.

Launch Overview

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*4: The first in the world to support 4K video format (as of September 16, 2015)

Main Features

1. Ultra-high-definition 4K images help improve visibility during surgery
2. Excellent color reproduction facilitates the identification of fine tissue
3. Large monitor and magnified visualization facilitate delicate surgical procedures
Development Background
Since it is minimally invasive and enables rapid recuperation, use of endoscopic surgery has grown rapidly in Japan since the 1990s. It is now used in a wide variety of clinical applications, including not only gastrointestinal surgery but also thoracic surgery, urology and gynecology.

As a supplier of a complete range of endoscopes, Olympus has long been engaged in the development, manufacture and sales of endoscopy products for surgical use. This led to the 2013 formation of Sony Olympus Medical Solutions as a medical business joint venture with Sony. The aim of Sony Olympus Medical Solutions is to contribute to advances in the medical field by developing improved endoscope systems that draw on Sony's state-of-the-art digital imaging technologies and know-how, especially for 4K imaging, as well as Olympus's lenses and other optical technologies and its experience in medical equipment manufacture and development.

In the development process, Sony Olympus Medical Solutions developed the basic technologies for this new endoscope system, while Olympus Medical Systems was in charge of commercialization.

From the light source and endoscope to the monitor, this surgical endoscopy system is the most innovative ever produced, incorporating the latest 4K technologies and know-how from both partners. As a mark of this collaboration, the products will carry the "Innovation by Sony & Olympus" logo.

Details of Main Features
1. Ultra-high-definition 4K images help improve visibility during surgery
The new surgical endoscopy system incorporates 4K technology to provide resolution approximately four times better than the previous full HD model. The resulting clear and ultra-high-definition display helps improve visibility during surgery.

Comparison of full HD and 4K images
The 4K camera head uses the Sony Exmor R™ CMOS image sensor to create high-sensitivity, low-noise images. To help shorten surgery times, it also features a one-touch auto-focus function that instantly focuses the image at the press of a button.

The Ultra Telescope uses an extra-low dispersion (ED) lens to minimize chromatic aberrations caused by light dispersion that result in different colors having different focal planes. This technology helps to ensure that the image remains sharp right to the edge of the viewing field and improves the visibility of fine tissue features such as blood vessels or nerves.
2. Excellent color reproduction facilitates the identification of fine tissue

4K images provide a broader range of color reproduction than the full HD used in previous models, and the extensive range of hues enables more detailed color calibration. This will help surgeons to distinguish the edges and details of fine tissue features such as blood vessels, nerves, lymphatic vessels and adipose tissue. In particular, the enhanced reproduction of red, a crucial color for surgery, will support increased accuracy.

3. Large monitor and magnified visualization facilitates delicate surgical procedures

The larger display on the 55-inch monitor is helpful for delicate procedures, as it makes the ultra-high-definition images easier to see. It also uses Sony’s proprietary OptiContrast™ Panel to provide high contrast with minimal glare. Whereas conventional LCD panels have a layer of air between the liquid crystal screen and protective panel, the OptiContrast Panel fills this gap with resin, preventing glare that would otherwise degrade the image contrast and preventing condensation within the panel.

Furthermore, the magnified visualization function on camera head helps surgeons use the telescope from some distance, minimizing interference with hand instruments inserted via different incisions.

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