

## Live Surgery and Teleconferencing at the 19th World Congress of the International Association of Surgeons, Gastroenterologists and Oncologists (IASGO) in Beijing

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**Live surgery and teleconferencing at the 19th World Congress of the International Association of Surgeons, Gastroenterologists, and Oncologists (IASGO) in Beijing**

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Abbreviations:

IASGO: International Association of Surgeons, Gastroenterologists, and Oncologists

DVTS: Digital video transport system

REN: Research and education network

ISDN: Integrated Services Digital Network

CERNET: China Education and Research Network

**Short summary**

Advanced technologies were introduced for the first time at the 19th World Congress of the International Association of Surgeons, Gastroenterologists, and Oncologists (IASGO) in Beijing, China. Live surgery and multi-station teleconferencing were performed using the super high-speed Internet to transmit and preserve the high quality lifelike images of surgical operations. This is the first time in the history of IASGO that use has been made of this worldwide academic network and user friendly digital video transport system, which have many advantages over traditional telemedicine systems. Here we briefly report these epoch-making sessions and their future expectations.

### **Attractive scientific programs**

The successful 19th World Congress of the International Association of Surgeons, Gastroenterologists, and Oncologists (IASGO) took place in Beijing, China, from September 23rd to 26th, 2009, under the presidency of Professor Yupei Zhao of the Peking Union Medical College. The participants of 1500 domestic and 1000 international healthcare providers from over 90 countries enjoyed the 384 scientific presentations in 37 sessions. The scientific programs highlighted the importance of globalization of medical knowledge and expertise by bringing together colleagues from all over the world and offering them the necessary information on the most current developments and evolution in our disciplines.

Among them, the International Surgical Olympics Video Festival was a unique program, commemorating the Beijing Olympic Games in 2008, whose stadium was located next to the Congress venue. In this Beijing meeting where East met West, 147 video sessions were presented in various surgical and oncological fields.

### **Liver surgery demonstrations and teleconferences**

One exciting and very new type of event in this particular meeting was the introduction of innovative technologies for broadcasting live demonstrations and teleconferences of the most advanced laparoscopic, robotic and oncological procedures, in four consecutive sessions over two whole days. As many as ten renowned medical centers were directly connected to the congress venue, adding further significant value to the scientific standards of this meeting.

In the morning session on September 25th, a live surgery video of laparoscopic sigmoidectomy was transmitted from the Kyoto University Hospital, Kyoto, Japan (Operator: Dr Sakai Y), and in the afternoon, a laparoscopic lateral hepatectomy was demonstrated from the Asan Medical Center, Seoul, Korea (Operator: Dr Kim KH). On the morning of 26th, the live surgery of two laparoscopic distal gastrectomies were transmitted in parallel, one from the Seoul National University Bundang Hospital, Korea (Operator: Dr Kim HH), and the other from the Kyushu University Hospital, Fukuoka, Japan (Operator: Nagai E), with another connection to Sydney to invite a remote discussant from Australia (Figure 1). In the afternoon, four state-of-the-art lectures on laparoscopic and robotic surgeries were presented, with connections to another six centers, including the National University of Singapore Hospital (Singapore), University of Philippines Manila (Manila, Philippines), Mahidol University Siriraj Hospital (Bangkok, Thailand), Cho Ray Hospital (Ho Chi Minh, Vietnam), Fujita Health University (Nagoya, Japan), and Kyushu University Hospital (Fukuoka, Japan)

(Figure 2).

### **Technology and advantages**

The audience should have been impressed with the clear and smooth moving images in real time and the discussion between participants at the Beijing main venue as well as at remote stations. The cutting-edge technologies applied for the first time in the history of IASGO Congress to make video conferencing possible were both the digital video transport system (DVTS) and the research and education network (REN). DVTS transformed digital video signals directly into Internet Protocol without any analog conversion, which, as a result, perfectly preserved the quality of video images during transmission. In addition, one of the big advantages of this system is that any costly special teleconferencing equipment is not necessary. The installation of free DVTS software to commonly used personal computers is all that is required (1,2). An essential requirement, however, is to secure large enough Internet bandwidth, as much as 30Mbps per channel, which is over 200 times that of conventional systems such as the Integrated Services Digital Network (ISDN, 0.124Mbps/line).

In contrast to the commercially available Internet, the REN network can provide this very large Internet bandwidth in a stable manner. It is government funded and many universities and research centers have already been connected to it although it is not yet widely known in the medical community. Accepting the fact that the contents of this network are restricted to research and education purposes and are not allowed to be used for commercial or regular office use, it is ideally suited for broadband-based DVTS transmission and no additional charges are required if a hospital or educational institution is a REN member (3).

ISDN or conventional teleconference systems which are often used in telemedicine may be useful for static pictures such as radiology or pathology, but transmission of video images has been inevitably degraded due to too much image compression and is often sluggish due to the limited bandwidth. Satellite transmission could send similar image quality to that achieved by the combination of DVTS and REN, but the huge associated cost is its biggest problem in addition to tight scheduling requirements.

### **Next conference and CME project**

The potential use of these technologies is enormous, thanks to the high-resolution image quality with minimal cost, and the system simplicity (4, 5). It is planned to use this new system for Continuous Medical Education Projects of IASGO that will be established in over 35 countries, as well as to similar programs in various other

countries and regions. This is not only innovative and pioneering, but more than that, it fulfills our expectations for spreading current medical knowledge and expertise beyond frontiers and boundaries both domestically and internationally.

We would sincerely like to welcome you to the next World Congress in Cairo, Egypt, from 20 to 23 October 2010, where even more exciting events are being organized.

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References:

1. Shimizu S, Nakashima N, Okamura K, Hahm JS, Kim YW, Moon BI, Han HS, Tanaka M: International transmission of uncompressed endoscopic surgery images via super-fast broadband internet connections. *Surg Endosc* 2006; 20:167-170.
2. Shimizu S, Han HS, Okamura K, Nakashima N, Kitamura Y, Tanaka M: Technological Developments in Telemedicine: State-of-the-Art Academic Interactions. *Surgery*, in press.
3. Shimizu S, Okamura K, Nakashima N, Kitamura Y, Torata N, Tanaka M: Telemedicine with digital video transport system over a worldwide academic network. In: Martinez L, Gomez C, eds. *Telemedicine in the 21st Century*. New York: Nova Science Publishers; 2008: pp143-164.
4. Shimizu S, Nakashima N, Okamura K, Han HS, Tanaka M: Telesurgery system with original-quality moving images over high-speed internet: expansion within the Asia-Pacific region. *J Laparoendosc Adv Surg Tech A* 2007; 17:673-678.
5. Shimizu S, Nakashima N, Okamura K, Tanaka M: One hundred case studies of Asia-Pacific telemedicine using digital video transport system over research and education network. *Telemedicine J E Health* 2009; 15:112-117.



**Figure legend:**

Figure 1. Beijing venue during the live demonstration of laparoscopic gastrectomy. On the left screen, the four connected stations of China, Japan, Korea and Australia are shown with two surgeries and a remote discussant.

Figure 2. Multi-station teleconference. Lectures were shared with six remote sites with real time multi-directional discussion. A large audience can join the session, saving travel time and costs.

Figure 1



Figure2

