

## Performing laparoscopic surgery – Perspectives of young Chinese hepatobiliary surgeons

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**Summary** Laparoscopic liver resection (LLR) has garnered attention as a new form of liver surgery. In China, many hepatobiliary surgeons are now encouraging the examination and assessment of LLC in order to improve its outcomes, and several young hepatobiliary surgeons recently shared their clinical experiences and the results of their research in presentations at the Akamon Forum as part of the 118th Annual Congress of the Japan Surgical Society, which was held April 5-7, 2018 in Tokyo, Japan. In China, LLR has gradually improved over the past 20 years, including both expanded indications and improved surgical approaches. However, China is a vast country, and the level of medical care varies nationwide. Medical facilities that can perform advanced laparoscopic techniques are currently limited to those in large cities. Moreover, additional clinical studies of the long-term oncological outcomes of LLR need to be performed in the future.

**Keywords:** Laparoscopic liver resection, laparoscopic anatomical liver resection, ICG fluorescence imaging

Since its introduction in the late 1980s, various forms of abdominal surgery have been performed laparoscopically. Laparoscopic liver resection (LLR) has garnered attention as a new form of liver surgery, and evidence of its effectiveness is being assembled and reliable guidelines are being drafted (1-3). Many hepatobiliary surgeons are now encouraging the examination and assessment of LLC in order to improve its outcomes (4-6). Recently, several young Chinese hepatobiliary surgeons shared their clinical experiences and the results of their research at the 118th Annual Congress of the Japan Surgical Society, which was held April 5-7, 2018 in Tokyo, Japan (7).

With the support of Professor Norihiro Kokudo, the Congress President of the 118th Annual Congress of Japan Surgical Society, a special session entitled the Akamon Forum was held on April 6. More than

twenty Chinese hepatobiliary surgeons from leading hepato-pancreato-biliary centers in China (including surgeons from Tsinghua Changgung Hospital, West China Hospital of Sichuan University, Hunan Provincial People's Hospital, The Third Affiliated Hospital of Sun Yat-sen University, Peking University Cancer Hospital, 302 Military Hospital of China, Sun Yat-sen Memorial Hospital of Sun Yat-sen University, Beijing Shijitan Hospital of Capital Medical University, and Zhejiang Provincial People's Hospital) attended this special forum to report the results of their research into liver tumors, cholangiocarcinoma, pancreatic neoplasms, pediatric liver transplantation, and portal hypertension.

Professor Kokudo delivered warm opening remarks. Since all of the young Chinese hepatobiliary surgeons attending the Akamon Forum had studied in Japan, Professor Kokudo welcomed them back to Tokyo to share their clinical experiences and the results of their research. Professor Kokudo stressed how the Forum would surely enhance communication between young surgeons from Japan and China. Professor Kiyoshi Hasegawa from the University of Tokyo and Professor Wei Tang from the National Center for Global Health

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and Medicine delivered closing remarks. The professors remarked on how the Forum represented an exceptional platform for academic exchanges and they encouraged the Forum to be held in the future.

In line with the theme of the 118th Annual Congress of the Japan Surgical Society – "Looking for New Findings in Surgery" – the topics of laparoscopic anatomical liver resection, ICG fluorescence imaging in LLR, and laparoscopic resection of hilar cholangiocarcinoma led to an interesting discussion among the audience at the Akamon Forum.

LLR was first reported in the early 1990s worldwide (8,9). The Eastern Hepatobiliary Surgery Hospital performed LLR for the first time in China in 1994 (10). After more than 20 years, LLR has gradually improved, and the total number of surgical cases has rapidly increased. Surgical indications have gradually expanded. Laparoscopic resection for recurrent liver cancer and laparoscopic hepatectomy for a living donor in living donor liver transplantation have also been reported by some facilities.

In addition to expanded indications, surgical approaches to LLR have gradually progressed from wedge resection and irregular resection to laparoscopic regular resection, hemi-hepatectomy, and anatomical segmentectomy. As laparoscopic techniques and equipment continue to improve, a variety of energy devices such as ultrasonic scalpels, argon bean coagulators, bipolar coagulators, and CUSA have become routine instruments. Several studies have reported on the safety and feasibility of LLR (11,12). According to published studies (11-14), LLR has several advantages: less blood loss, a lower rate of complications, a shorter duration of hospitalization, and a lower incidence of repeat liver resection and with no difference in oncological outcomes for liver malignancies compared to open liver resection. Some high-volume medical facilities in China have gradually begun to perform LLR more often, and the rate at which LLR is performed has even exceeded that of open liver resection. Moreover, some primary hospitals in China are performing LLR as well. However, more evidence needs to be compiled in the future.

In recent years, increased use of ultrasound in laparoscopic surgery has resulted in heightened clinical research into laparoscopic anatomical liver resection. Laparoscopic anatomical hepatectomy through exposing the hepatic veins and application of methylene blue dye injection in laparoscopic hepatectomy have been successfully performed. The recent use of ICG fluorescence imaging-guided hepatectomy in LLR has become a topic of considerable interest. A search of the literature revealed that several facilities in China have performed laparoscopic anatomical liver resection in more than 50 cases, respectively (15-17).

As patients worldwide increasingly opt for less invasive procedures, laparoscopic surgery will gain

even greater prominence. As the presentations at the Akamon Forum illustrate, young Chinese hepatobiliary surgeons are increasingly turning their attention to laparoscopic procedures. However, China is a vast country, and the level of medical care varies nationwide. Medical facilities that can perform advanced laparoscopic techniques are currently limited to those in large cities. Moreover, additional clinical studies of the long-term oncological outcomes of LLR need to be performed in the future.

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