

## **Outline of the Entire Study Let`s Revisit Lap-C. If not now, Then When?**

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Laparoscopic cholecystectomy (Lap-C) has been established as the preferred treatment for symptomatic cholelithiasis performed by general surgeons worldwide and is positioned as the basic procedure for all laparoscopic surgeries. Recently, Lap-C has become widely adopted as a standard treatment for patients with acute cholecystitis (AC), especially as a result of improvements in surgical techniques and instrumentation. The complication rate of Lap-C has now reached an acceptably low level in association with technological advancements and increases in expertise; however, even now, certain cases involving remarkable inflammatory changes, such as fibrotic and/or scarring, develop a severe condition after Lap-C and suffer from long-term complications.

International clinical practice guidelines for acute cholangitis and cholecystitis were first published in 2007 and the subsequent revision, TG13: Updated Tokyo Guidelines for the Management of Acute Cholangitis and Acute Cholecystitis, was published in 2013. In them, significant efforts have been made to provide treatment guidelines based on the degree of severity in patients with AC. Surgery for AC has improved according to the diagnosis and severity determined using the TG13; however, several problems, including the optimal timing for Lap-C and appropriateness of drainage, such as PTGBD and PTGBA, remain as to finding the best management of AC, and clinical evidence has not been established.

Several studies have reported the findings of preoperative evaluations as objective indices to predict technical difficulties of Lap-C based on the findings of severe inflammation in local regions. And, several studies have discussed technical difficulties of Lap-C with respect to the operative time and rate of complications associated with intraoperative findings based on subjective indices evaluated by the surgeon. However, surgeons often encounter various difficulty, which has not predicted preoperatively, during Lap-C, while the operative time and rate of complications depend on surgeon`s skill. Nevertheless, there is currently no concrete method to evaluate the intraoperative findings of technical difficulties of Lap-C based on objective indices. Therefore, we believed that defining the technical difficulties of Lap-C based solely on intraoperative findings is required, and we drafted a novel measurement system for it. International approval of validity of this measurement system encourages establishment of various clinical evidences for the best practices for the treatment of AC, for example, determining the optimal timing for Lap-C and appropriateness of drainage such as PTGBD and PTGBA. Furthermore, this measurement system will help to avoid complications, such as vascular or biliary injury, during Lap-C, thus contributing to educational programs for beginners in the Lap-C procedure; as well as the evidence-based outcomes obtained in this study are expected to be beneficial for patients with AC.

The current international study conducted by a working group in Japan, Korea and Taiwan since 2013 seeks to determine the best practice for the treatment of AC. As an initial step, an international study to prove validity of this novel measurement system was planned. We will inform this novel measurement system and an outline of the entire study.

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