Single Incision Laparoscopic Cholecystectomy without the use of inverse triangulation (556 cases)

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Background:
Single-incision laparoscopic cholecystectomy (SILC) is generally performed with the use of inverse triangulation. In this study, we performed 3-channel or 4-channel SILC without the use of inverse triangulation. We evaluated the adequacy and feasibility of SILC using our surgical method.

Methods:
We retrospectively reviewed our series of 556 SILCs performed between March 2014 and August 2016 in hallym Sacred Heart Hospital in Anyang, Korea. In our series, we performed SILC using one long articulated grasper (Roticulator, Covidien) by surgeon’s left hand, rigid 10-mm 30° telescope by assistant, and conventional laparoscopic dissector or Hem-O-Lok clip applier by surgeon’s right hand. The assistant controlled the 10-mm 30° rigid telescope and another long articulated grasper, which was located below the rigid telescope (Fig. 1). In case of 4-channel SILC, we used one long articulated grasper by surgeon’s left hand and conventional laparoscopic dissector or Hem-O-Lok clip applier by surgeon’s right hand. The assistant controlled the 10-mm 30° rigid telescope and another long articulated grasper, which was located below the rigid telescope (Fig. 2). Of importance, conventional laparoscopic dissector, scissors, and Hem-O-Lok clip applier were inserted through channel C by the right side of the rigid telescope.

Results:
Among 556 SILCs, male were 262 and female were 294 patients, mean age was 47.8 ± 15.1 years old and mean body mass index was 24.8 ± 3.8 kg/m²SIXY seven patients had previously undergone abdominal surgery including 9 cases of upper abdominal surgery. SILC after percutaneous transhepatic gallbladder (GB) drainage was completed in 8.1% of cases. There were 10 cases of emergency SILC. SILC was performed for noncomplicated GB including symptomatic GB stone and polyp in 66.7% of cases, acute cholecystitis in 33.3%. Overall, 96.6% of procedures were successfully completed without an additional port. The reason for the addition of an extra port or open conversion included technical difficulties due to severe adhesion and bleeding. The mean operating time was 60.7 ± 22.3 minutes. The overall complication rate was 2.7%: 15 patients of wound seroma, 1 case of bile leakage from GB bed, 6 cases of intra-abdominal abscess or fluid collection, and 2 case of an incisional hernia were developed. There was no case of common bile duct injury.

Discussion:
The effort toward reducing the number of ports needed for CLS has led to the development of SLS [9,10]. One current goal of SILC is to perform laparoscopic procedures successfully and safely. Our study did not aim to prove that SILC is better than CLC, but we aimed to show that it is feasible and safe and thus may be used as an alternative technique. A universal goal of any new technique should be its reproducibility by other surgeons. This will enhance its applicability by large numbers of surgeons and to large numbers of patients requiring cholecystectomy. In this study, we performed 3- or 4-channel SILC using Gloveport 431 that has several advantages without the use of inverse triangulation: traction of GB by surgeon’s left hand and main procedure including dissection of Calot’s triangle by right hand. Gloveport 431 is a flexible SLS system, easy to use and can be simply accommodated to the abdominal wall. Because it allows combined motions in linear, radial, and translational planes, the instruments can be used apart, relatively easily crossed or rotated as required in any situation. Also, Gloveport 431 has a pouch, which is a built-in wound protecting specimen retrieval system... The apparent benefits of transumbilical SILC are cosmesis and patient satisfaction [16,23]. In the current era where a high premium is placed on cosmetics, patient request for improved cosmesis will impel surgeons toward the application of SILC. So, it is likely that SILC will see an increased demand. However, alone, the cosmetic advantage does not justify the performance of SILC on a routine basis. We think that patient safety should be emphasized. To further investigate these benefits, randomized trials are needed to assess patient outcomes.

Conclusions:
we provide an alternative access system using Gloveport 431 to allow for SILC. According to our experiences, SILC using Gloveport 431 without the use of inverse triangulation has been demonstrated to be feasible, effective, and safe for the patient. We believe that this Gloveport 431 system is one way to lessen the technical difficulties of performing SILC and therefore broaden its applicability to other procedures.

References: