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A retrospective multicenter study on evaluation of perioperative outcomes of single port robotic cholecystectomy comparing the Xi and SP version of da Vinci Robotic Surgical System

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Introduction : Single-incision-robotic cholecystectomy (SIRC) using the da Vinci Xi system (Xi) (Intuitive, Sunnyvale, CA, USA) is a safe and effective operation. Recently, the da Vinci SP system (SP) (Intuitive, Sunnyvale, CA, USA) which is a new platform specialized for single-port surgery has been released. The study aimed to compare perioperative outcomes of Xi and SP in regards to SIRC.

Methods : In this multicenter retrospective cohort study, patients who underwent SIRC with benign gallbladder disease between 2019 and 2020 were enrolled. In Seoul National University Hospital, Xi was used with 3 separate arms of instruments inserted through the single incision made in umbilical area. In Ewha Woman's University Seoul Hospital, SP was used with single multi-channel port through the umbilical incision. Patient's demographics, intraoperative factors, postoperative complications, and postoperative pain were investigated.

Results : 258 patients underwent SIRC with Xi, and 72 patients with SP. There were significant differences between Xi and SP groups in operation time at console (23.1 vs. 20.3 min, p=0.018), numbers of postoperative analgesic injection (4.0 vs. 3.2, p<0.001), NRS at day of operation (5.7 vs. 4.9, p<0.001), but no difference in total operation time (43.4 vs. 45.9, p=0.155) and postoperative complication (0.8% vs. 0.0%, p>0.999). SP group showed more estimated blood loss (14.3 vs. 19.2 mL, p=0.031).

Conclusions : Although operation time at console was shorter and pain was less in SP group statistically, clinical benefit appears to be minimal. Both Xi and SP can be a safe and feasible platform to perform SIRC, but further investigation is needed as prospective study.

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