LAPAROSCOPIC CHOLECYSTECTOMY, SINGLE-SITE ROBOTIC CHOLECYSTECTOMY AND SINGLE-INCISION LAPAROSCOPIC CHOLECYSTECTOMY: A PROSPECTIVE NON-RANDOMIZED CONTROLLED STUDY

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Introduction

Single-incision laparoscopic surgery (SILS), although technically challenging, has been proposed to provide better cosmesis and less pain. Robotic single-site surgery platform restored the lost triangulation, enhanced surgeon's control and provides better ergonomics. Single-site Robotic Cholecystectomy (SSRC) offered many questions remain unanswered.

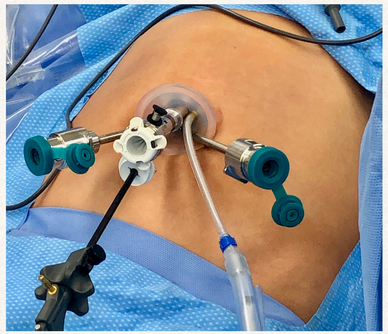
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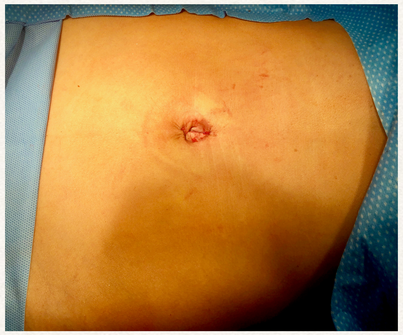
The primary end point of this comparative study was to assess the feasibility and safety of SSRC compared to SILC and multi-incision laparoscopic cholecystectomy (MILC), as indicated by the rate of occurrence of intraoperative and postoperative adverse events and the operative time. The secondary end points evaluated were pain, aesthetic results, hospital stay and cost.

Patients and Methods

100 consecutive patients with gallbladder disease were included. 35 patients were subjected to SSRC, 35 patients to SILC and 30 control patients to conventional laparoscopic cholecystectomy. The SSRC cases were performed in the United States of America while the rest were performed at Cairo University, Egypt.

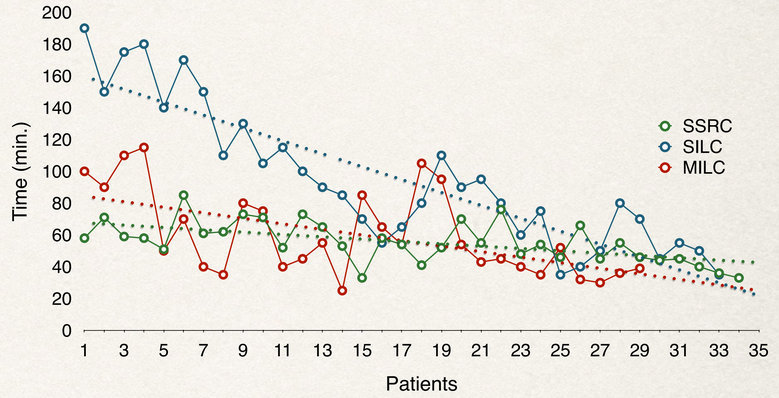
We compared those techniques for feasibility, safety, operative time, technical difficulties, complications, conversion rates, postoperative pain, duration of hospital stay and finally, the aesthetic satisfaction. Pain was assessed by a numerical rating scale with a 10-points score.





Results

No mortality was reported. Operative time of SILC was considerably longer (94.85 ± 44.4min) compared to SSRC (55.56 ± 12.7min) and MILC (63.45 ± 30.2min) and it inflicted a physical and mental toll on the operating surgeon. Concerning technical difficulties; Gas leak was a problem with SILC occurring in 25.7% of our cases. Arm-collision was a problem with SSRC occurring in 11.4% of our cases. Docking the robot time averaged (4.65 ± 1.4min). CBD injury occurred in one case with SILC and right hepatic artery injury in another case. The conversion rate with SILC was 5.8% while with SSRC, it was 2.9%. Pain, in both SSRC and SILC was significantly lower than in MILC. The hospital stay in both SSRC and SILC was shorter than in MILC. Port-site hernia was reported in one case (2.9%) in the SILC group. Wound infection occurred in one case in the SSRC group. Patient satisfaction was highest in the SSRC and SILC groups.



Operative Time and progression of the Learning Curve

Conclusion

SSRC proved to be superior to SILC offering less complications. The platform is stable and secure, and it provides better ergonomics for the operating surgeon. This translates into improving both surgical performance and work satisfaction, which eventually has beneficial impacts on the patient's well-being and outcome.

Unfortunately, for the time being, apart from the limited availability of the system, there are many financial challenges that limits the widespread adoption of robotics within general surgery in Egypt.