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TECHNIQUE PRESENTATION

Single-incision Laparoscopic Cholecystectomy. How can We Reduce the Costs? Presentation of a Technique using Straight Non-articulating Instruments and One Conventional Trocar, without Commercially Available Single Port Devices

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ABSTRACT

Single-incision laparoscopic surgery (SILS) offers an approach to cholecystectomy without visible evidence that the cholecystectomy occurred.[9] Cosmesis is the only documented benefit of the single-incision laparoscopic cholecystectomy (SILC), while SILC remains equivalent to multi-incision laparoscopic cholecystectomy (MILC) in all other respects.[14]

We report our experience of performing SILC without any commercially available port devices allowing laparoscopic instrument placement. We use conventional, straight, non-articulating laparoscopic instruments with a roticulating function and only one conventional 10 mm trocar.

Single-incision laparoscopic cholecystectomy has a potential to maximize benefits of MILC.[12] Our procedure, without any port device, is a reliable, low-cost alternative to conventional SILC, offering the same level of patient safety and cosmesis.

Keywords: Cost-effectiveness, Single-incision laparoscopic cholecystectomy, Single-incision laparoscopic surgery.

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INTRODUCTION

Laparoscopic surgery allows the surgeon to perform abdominal surgery with minimal trauma. Single-incision laparoscopic surgery (SILS) requires only one incision in the umbilicus. Single-incision laparoscopic cholecystectomy (SILC) was described first in 1999.[1] Although it offers an approach to cholecystectomy without a visible scar, the systemic inflammatory response, postoperative pain and analgetic use are not reduced significantly.[4,7] The same blood loss, operating time, pain of both SILC and multi-incision laparoscopic cholecystectomy (MILC) procedures are reported.[2] Good cosmetic effect is the only documented benefit of the SILS, while SILS remains equivalent to MILC in all other respects.[12,14] The SILC procedure is safe and easy for experienced laparoscopic surgeon and has manageable learning curve.[11,12] Single-incision laparoscopic cholecystectomy compared to MILC is technically more challenging, but in contrast to MILC it gives access to each quadrant of the abdominal cavity with one umbilical approach.[10]

Higher costs must be considered in SILC cases. In our health system it was necessary to assess the economic feasibility of SILC.

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TECHNIQUE PRESENTATION

We report our experience of performing SILC without any commercially available port device allowing laparoscopic instrument placement. We use conventional, straight, non-articulating laparoscopic instruments with a roticulating function and only one conventional 10 mm trocar.

Single-incision laparoscopic cholecystectomy has been performed in patient with gallbladder stones with or without inflammation, under general anesthetic with endotracheal intubation. A single vertical intraumbilical incision through the center of umbilical stalk is performed, the umbilicus is pulled out. The pneumoperitoneum is induced using Veress needle access. The carbon dioxide pneumoperitoneum to 13 mm Hg is established. The 10 mm trocar is introduced at the congenital umbilical fascial defect to explore abdominal cavity with a 30°, 10 mm laparoscopic camera. The camera is removed then

and reintroduced without any additional trocar directly to the abdominal cavity above the trocar, following the small incision of the fascia. Subsequently the grasper is introduced with the same technique beneath the only one trocar (Fig. 1). We do not use additional transcutaneous sutures suspending the gallbladder. The dissector, hook cautery, scissors and clip applicator are introduced respectively through the only one trocar. The triangle of Calot is dissected, the cystic artery and cystic duct are separately identified, dissected, clipped and divided between clips. Then the normal retrograde cholecystectomy is performed. The gallbladder dissection from the liver bed and removing through the umbilical incision finishes the procedure.

All procedures were completed successfully using SILS technique. The mean operative time was 76 minutes (62–103). Conversion to MILC or open surgery was not required in any case. The mean postoperative stay was 1.9 days. Mortality was nil. All patients were satisfied with the cosmetic results (Fig. 2).

Fig. 1: Instrument placement. The 10 mm trocar in the middle. A 30° 10 mm laparoscopic camera above and the grasper beneath the trocar

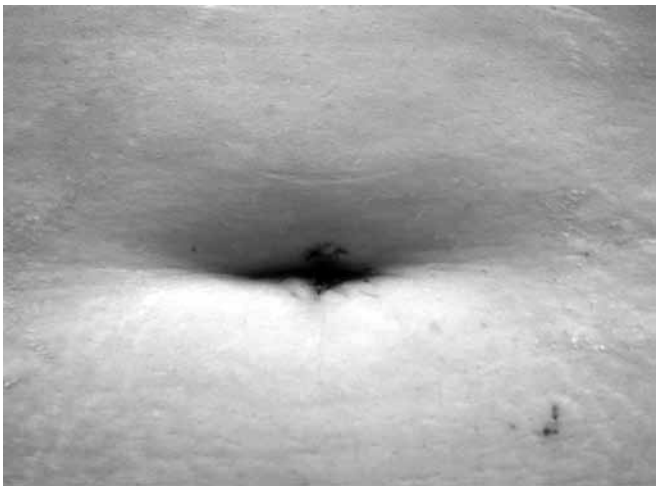

Fig. 2: No visible scar effect

DISCUSSION

Single-incision laparoscopic cholecystectomy is a relatively new, effective and safe procedure with a significant patient satisfaction.[13,14] Single-incision laparoscopic cholecystectomy compared to MILC has the same or longer operation time, equivalent morbidity and quality of life.[6-10,14] The cosmetic results[2,3,9,14] and global patient satisfaction[6] are rated excellent by the patients undergone SILC. Despite higher complication rate in initial cases has been reported in some papers,[5] SILC remain a safe, although technically more challenging alternative to traditional MILC.[10] Losing the advantage of instrument triangulation related to SILC procedure, causes the technical difficulties for the surgeon.[10] The use of port devices allowing laparoscopic instrument placement and curved, articulated or wristed instruments makes the SILS procedure less difficult. Improved cosmetic result is an advantage of SILC, with no data to prove the lower pain or shorter recovery time.[9]

Our procedure may represent an alternative to SILC. It requires conventional straight non-articulating laparoscopic instruments, which we use in MILC procedures. We need one forceps, one dissector, one scissors and clip applier. We use only one conventional 10 mm trocar. To reduce costs we gave up commercially available single port devices (Fig. 1).

Although the trocars with low-profile backends helps to prevent collisions during instrument movement,[9] we use standard trocars. Crucial to avoid trocar's backend collisions remains the coordination between the operator and the assistant manning the optics.

There were no postoperative complications. There were no need for conversion either to standard MILC or open cholecystectomy. The patients were pleased with the cosmetic results, with scar concealed in the umbilical depression (Fig. 2).

The patient safety remains the same with additional advantage of minimal costs. And the main goal of SILS, which is eliminating the visible scar from abdominal procedures, was achieved.

CONCLUSION

Single-incision laparoscopic cholecystectomy is feasible, efficient, effective, safe procedure associated with high cosmetic patient satisfaction, without visible evidence that the operation occurred and with excellent cosmesis.

Our procedure, without any commercially available port device allowing laparoscopic instrument placement, is a reliable, low-cost alternative to conventional SILC, offering the same level of patient safety and patient cosmesis.

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