



No-visible-scar cholecystectomy

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Abstract

Introduction: Single incision laparoscopic surgery (SILS) is a laparoscopic method providing a good cosmetic effect, but requiring the application of special ports and instruments enabling the surgeon to perform the procedure.

We report three-ports cholecystectomy through umbilical and suprapubic incisions performed with typical laparoscopic instruments which calls no-visible-scar cholecystectomy (NVSC).

Material and methods: Twenty patients with symptomatic cholelithiasis were qualified for NVSC. Typical CO₂ pneumoperitoneum was done after umbilical skin incision. Two ports of 5 mm were inserted in the maximum external edges of this incision. After cystic duct and cystic artery dissection the right one was exchanged for a port of 11 mm. The second incision for the 11-mm trocar for the laparoscope was done in the suprapubic median line within the hair area.

Results: Cholecystectomies were performed without any conversion to classical laparoscopic cholecystectomy (LCH) or open surgery. They were not technically identical due to the gradual improvement in the access and manipulation of instruments. The time of the intervention ranged from 2 hours during the introduction of the new method to 50 min for the last procedures. No postoperative complications were observed and all patients were discharged not later than after conventional LCH.

Conclusions: NVSC is a three-port laparoscopic intervention performed with typical laparoscopic instruments. It is more convenient for the surgeon than single incision LCH, because the placement of the optic in the suprapubic region gives more space for the instruments. It also provides a very good cosmetic effect of the intervention. The described procedure is easy to learn and in case of technical problems additional ports can be applied (as in typical LCH).

Key words: laparoscopic cholecystectomy, SILS, DILS

Introduction

One of the advantages of laparoscopic surgery is the much better cosmetic effect in comparison to open methods. So, further new modifications of typical laparoscopic techniques continue to be developed, including the concept of NOTES, to create no-visible-scar surgery.

Single incision laparoscopic surgery (SILS) cholecystectomy is an example, but it requires the application of three special small ports or special multi-chan-

nel and new bent instruments to facilitate the operation [1-6].

In this report we present three-port cholecystectomy through two incisions performed with trocars and instruments used in typical laparoscopic cholecystectomy (LCH). Two ports were introduced in the umbilicus and a third one (for the camera) through an additional suprapubic 1.5 cm incision. This modification of SILS gives the surgeon more space in the umbilical region and makes this intervention safer for the patient and more comfortable for the surgeon.

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Material and methods

Twenty patients (14 women, 6 men, aged 18-74 years) with symptomatic cholelithiasis were qualified for NVSC. Patients suspected of having common bile duct (CBD) stones were excluded.

All patients underwent general endotracheal anaesthesia typical for LCH. Patients were placed slightly on the left side (20°) in a 30° reverse Trendelenburg position. The surgeon stood between the patient's legs and the assistant at the left side of the patient.

Trocars typical for classical LCH were used: 5 mm (Covidien, Norwalk, USA) and 11 mm (non-disposable Olympus, Hamburg, Germany). After U-shape 3-cm long umbilical skin incision, 15-mmHg pneumoperitoneum was created with a Veress needle. The first 5-mm trocar was inserted inside the left edge of the umbilical incision. Through this trocar a 5-mm angled 30° telescope was placed. Under visual control, a second 11-mm trocar (Covidien, Norwalk, USA) for the camera was inserted slightly to the right of the suprapubic median line within the hair area. Then, the camera from the umbilicus was transferred to this trocar, and to improve the visibility it was changed for a 30° angled, 10-mm telescope. The third, 5-mm trocar (Covidien, Norwalk, USA) was introduced inside the right edge of the umbilical incision, as far as possible from the 5-mm, first inserted trocar.

Standard 5-mm Endo Clinch and dissector (Covidien, Norwalk, USA) were used. At first, straight needle suture 3-0 Monocryl (Ethicon, J&J) was inserted in the midline of the abdominal wall to hang up the round ligament of the liver. Then a second, similar suture was inserted from the anterior axillary line site, just below the right costal margin, and the fundus of the gallbladder was stitched, moved superolaterally and fixed to the abdominal wall just after being attached on the outside of the straight needle. A third suture was inserted in the same mode through the abdomen 5 cm below the second one and the neck of the gallbladder was punctured to help in opening of Calot's triangle. The Endo Clinch from the right trocar grasped the gallbladder to open Calot's triangle for dissection. After dissection of the cystic duct and artery the 5-mm trocar in the left umbilical port was changed for an 11-mm, metallic, non-disposable trocar. The mentioned structures were then clipped using a typical 10-mm clip applicator

and finally cut with laparoscopic shears. The gallbladder was dissected by monopolar electrocautery and the fixations were released. Haemostasis of the gallbladder site was done progressively by electrocautery. Rinsing and suction of the abdominal cavity was done if necessary. Next the camera was translocated to the 11-mm umbilical trocar and the gallbladder was removed using a typical crocodile grasper through the lower suprapubic trocar site. Through this orifice a 16 Fr catheter could be inserted and placed into the gallbladder site, if drainage was necessary. Pneumoperitoneum desufflation was followed by closure of the fascia in the umbilicus and in the suprapubic port site by 1-0 PDS (Ethicon, J&J). The skin was closed with nonabsorbable separated sutures in the umbilicus and purse-string sutures in the suprapubic incision.

Results

The 20 performed no-visible-scar cholecystectomies (NVSC) did not require conversion to classical LCH or open cholecystectomy in any case. They were not technically identical due to the gradual improvement in the access and manipulation of instruments. The time of the intervention ranged from 2 hours during the introduction of the new method to 50 min for the last procedures. There was no need to apply a drain in most cases (7/20).

No postoperative complications were observed and all patients were discharged on the second day after the intervention, like after conventional LCH. A follow-up examination was performed within one week after the intervention. The skin sutures were removed and replaced with strips. After one month of observation there were no visible scars on the abdomen. The patients' status was found to be similar as after conventional LCH. The pathologist reported chronic cholecystitis in 12 patients, cholecystitis with associated cholesterosis in 5, and exacerbation of the cholecystitis in 3 patients.

Conclusions

NVSC is a three-port laparoscopic operation performed with typical laparoscopic instruments. It is more convenient for the surgeon than SILS cholecystectomy, because the placement of the optic in the suprapubic region gives more space for the instruments. The transfer of the camera from the umbilical

port site to the suprapubic hairy area provides much more space for the instruments in this region than described by authors for all single access techniques [7-10]. The surgeon's work is easier, while exposure of Calot's triangle and gallbladder during NVSC is not as ideal as during classical LCH, but much better than in SILS patients. That is why additional fixation of the gallbladder fundus by straight needle suture was applied, which considerably ameliorated the exposure of Calot's triangle.

NVSC provides a very good cosmetic effect with no visible skin scars. The additional trocar placed in the lower suprapubic hairy area did not leave any significant trace on the skin. The cosmetic effect is more important for patients than the short stay in hospital and very quick return to normal activity and to the job. This has been raised recently in many publications and conferences [11].

The described procedure is easy to learn and in case of technical problems additional ports can be applied (as in typical LCH). The possibility of common application of bent laparoscopic instruments is essential to further development of this method. It will not only provide more operative space, but will also make Calot's triangle preparation safer in the sense of avoiding CBD damage.

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