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Single-site multiport combined splenectomy and cholecystectomy with conventional laparoscopic instruments: Case series and review of literature

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ABSTRACT

INTRODUCTION: Conventional laparoscopic procedures have been used for splenic diseases and concomitant gallbladder stones, frequently in patients with hereditary spherocytosis since 1990's. The aim of this study is to evaluate the feasibility of single-site surgery with conventional instruments in combined procedures.

PRESENTATION OF CASE SERIES: Six consecutive patients who scheduled for combined cholecystectomy and splenectomy because of hereditary spherocytosis or autoimmune hemolytic anemia were included this study. Both procedures were performed via trans-umbilical single-site multiport approach using conventional instruments. All procedures completed successfully without conversion to open surgery or conventional laparoscopic surgery. An additional trocar was required for only one patient. The mean operation time was 190 min (150–275 min). The mean blood loss was 185 ml (70–300 ml). Median post-operative hospital stay was two days. No perioperative mortality or major complications occurred in our series. Recurrent anemia, hernia formation or wound infection was not observed during the follow-up period.

DISCUSSION: Nowadays, publications are arising about laparoscopic or single site surgery for combined diseases. Surgery for combined diseases has some difficulties owing to the placement of organs and position of the patient during laparoscopic surgery. Single site laparoscopic surgery has been proposed to have better cosmetic outcome, less postoperative pain, greater patient satisfaction and faster recovery compared to standard laparoscopy.

CONCLUSION: We consider that single-site multiport laparoscopic approach for combined splenectomy and cholecystectomy is a safe and feasible technique, after gaining enough experience on single site surgery.

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1. Introduction

Since 1990s, conventional laparoscopic procedures have been used for splenic diseases and concomitant gallbladder stones, frequently in patients with hereditary spherocytosis. After the evolution of single-incision laparoscopic surgery (SILS), cholecystectomy became one of the most commonly described SILS procedures [1,2]. More recently, successful splenectomies by SILS

technique have also been reported in both adult and pediatric patients [3,4].

Single site laparoscopic surgery promises to be a thriving alternative to conventional laparoscopy by providing better cosmetic outcome, less postoperative pain, patient satisfaction and faster recovery [4]. SILS has more benefits especially in combined procedures, which may increase the additional trocar requirement and extension of the incision. Combine diseases have some difficulties regarding to intra-abdominal placements of organs and position of the patient during laparoscopic surgery. Popularity of SILS has led to develop novel instruments to facilitate single-site procedures, which may offer advantages, but are not absolutely necessary due to the higher costs [5–8].

Abbreviation: SILS, single-incision laparoscopic surgery.

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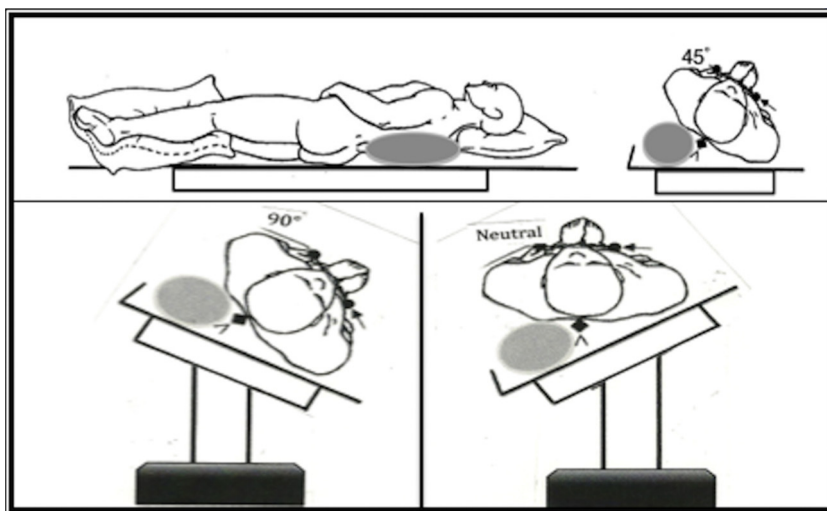


Fig. 1. (a) Initial position of the patient (left side of the patient elevated on a gel cushion about 45°). (b) Position for splenectomy ensured by turning the table to the right side. (c) Position for cholecystectomy ensured by turning the table to the left side.

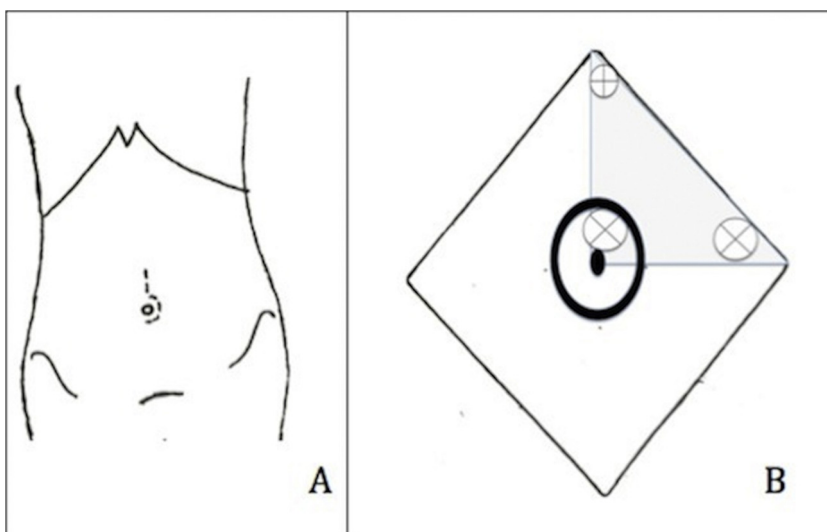


Fig. 2. (a) Shape of the incision. (b) Skin flap and detached fat tissue area (colored gray) and trocar placements (⊗: 10 mm trocar, ⊕: 5 mm trocar).

We aimed to evaluate the feasibility of single-site surgery with conventional instruments at patients who were scheduled for combined splenectomy and cholecystectomy.

2. Materials and methods

2.1. Patient selection

Single-site laparoscopic combined splenectomy and cholecystectomy with conventional instruments were performed on 6 patients between September 2012 and December 2013. All patients were preoperatively assessed by abdominal ultrasonography, spleen scintigraphy and computerized tomography for accessory spleens. The diagnosis was hereditary spherocytosis in five patients and autoimmune hemolytic anemia in one. All patients were combined with cholelithiasis. The mean age was 44 years (range, 28–65 years), and the mean body mass index was 29 (range, 24–37). There were one male and five females. Pneumococcus (Pneumovax 23, Merck & Co., Inc., Whitehouse Station, NJ, USA) and Haemophilus influenza type B (Hiberix, GlaxoSmithKline) vaccines were administered two weeks before the operations.

2.2. Operative technique

All procedures were performed by two attending surgeons. For the operation, patients were placed on right decubitus position with the left flank elevated 45° on a gel cushion (Fig. 1a). Operation table was tilted to the right site completely to obtain 80–90° right lateral decubitus position (Fig. 1b).

A left periumbilical semilunar skin incision was performed on the left side of the umbilicus (Fig. 2a). Then a skin flap about 4 × 2 cm in diameter was created under the upper and left side of the umbilicus by detaching subcutaneous fat tissue (Fig. 3a). Pneumoperitoneum was established to 12 mmHg via Veress needle. Subsequently, 10 mm trocar was introduced at the superior border of the umbilicus. One more 10 mm trocar was introduced at 2 cm lateral to the former. Finally, a 5 mm trocar was inserted 3 cm superior to the umbilicus on the midline (Figs. 2 b and 3 a,b). Through this trocar placement, instruments are redirected to the relevant organ from created working triangle, unlike using classic SILS port. Also it reduces the possibility of clashing between the hands and instruments of surgeon and assistant. The splenocolic ligament was dissected to liberate the lower pole of spleen.

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