

Technical Report: A Modification in Laparoscopic Cholecystectomy Technique for Left-handed Surgeons

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ABSTRACT

Introduction: Studies show very few articles addressed left-handed surgeons and their problems. Difficulties occur in using the tools and methods that have been invented by right-handed surgeons. Some previous studies have shown that surgical left-handed residents have much less skilled hands. This study aims to describe some changes that were made that led to 40 safe and comfortable cholecystectomy procedures.

Materials and surgical technique: The most important changes compared to the standard method are about trocar placing to improve alignment for a left-handed surgeon.

Result: Forty surgeries using the modified methods were done and in comparison to the standard method were much smoother, faster, and with fewer side effects.

Discussion: By our modification left-handed surgeons can improve their safety and their comfort during operations and expand their skills in this regard.

Keywords: Laparoscopic cholecystectomy, Left-handed surgeon, Technical modification.

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INTRODUCTION

Studies show very few articles addressed left-handed surgeons and their problems so far.¹ Difficulties occur in using the tools and methods that have been invented by right-handed surgeons. While 8% of the human population is left-handed, in this case very limited information is available.² Previous studies have shown that many surgical left-handed residents have much less skilled hands to the extent that they quit this field.³

This study aims to describe and show some changes were made by a left-handed surgeon that has led to safe and comfortable cholecystectomy in comparison with the standard 4-port method at Ghaem Educational and Treatment hospital in Mashhad.

MATERIALS AND SURGICAL TECHNIQUE

In the standard method, the patient is placed supine on the operating table with the surgeon standing at the patient's left side. A 10-mm trocar is inserted through the supraumbilical incision. The laparoscope with the attached video camera is passed through the umbilical port and the abdomen inspected. Three additional ports are placed under direct vision. A 10-mm port is placed in the epigastrium, a 5-mm port in the middle of the clavicular line, and a 5-mm port in the right flank, in line with the gallbladder fundus.⁴

The most important changes compared to the standard method are about trocar placing. Like the standard method, the left-handed surgeon stands on the left side of the patient and the first aid stand beside him and the monitor to be placed on the right side in front of the surgeon. Initially, a 10-mm trocar is placed in the umbilicus to enter the camera. The next is a 5-mm trocar placed in the epigastrium and subxiphoid. The most important change is done in the third step where a 10-mm trocar is placed in the left paramedian between the umbilicus and sub costal border on the midclavicular line. The biggest change has been created in its

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place so that the new trocar location can improve alignment with the left hand of the surgeon and through which the surgeon will be able to guide the dissector tool easily and without interference with the cameraman. And with his right hand from subxiphoid can provide adequate exposure. The next trocar is optional. According to the anatomy of the gallbladder, its presence and absence is determined. As the standard method, it is a 5-mm trocar placed on the midaxillary line about the umbilicus (Fig. 1).

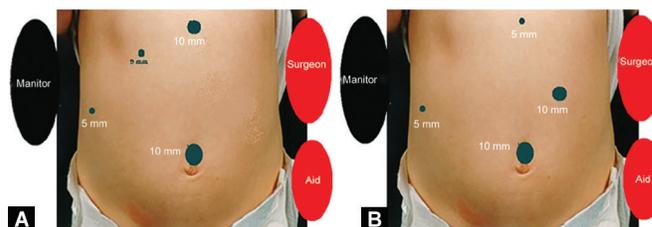


Fig. 1: (A) Standard trocar replacement by a right-handed surgeon in American style. (B) Our modified trocar replacement for a left-handed surgeon in American style

Table 1: The results of this comparison are summarized in detail at the table below.

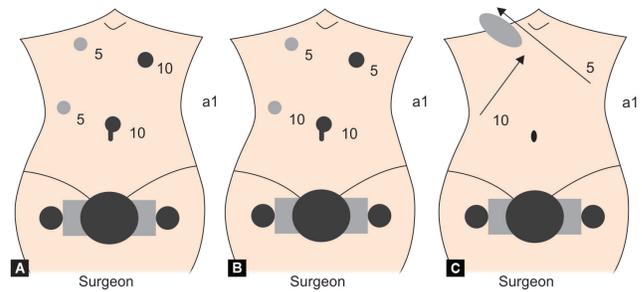
	<i>Modified method</i>	<i>Conventional method</i>
Age	19–49 Y (mean 45.2 Y)	18–55 Y (mean 45.7 Y)
Sex (M/F)	17/23	12/28
Body mass index	18–30 (mean 26.9)	18–30 (mean 27.3)
Mean operative time (min)	29.2	58.7
Requirement of transfusions	No	No
Intraoperative complications	No	2 cases
Conversion to open	No	1 case
Port site infection	No	No
Hospital stay	1–2 days	1–2 days
Follow-up	6 months	6 months

After obtaining informed consent, forty surgeries using the modified method are done by the author who himself is a left-handed general surgeon with experience of more than 200 laparoscopic cholecystectomies, and forty surgeries are done using the standard American method by the same surgeon from August 2017 to August 2018. The patients with documented acute cholecystitis, and choledocholithiasis, and biliary pancreatitis were excluded. Overweight patients (body mass index > 30) were also excluded from the study. None of our patients had any history of previous abdominal surgical intervention. Preoperative checkups, such as CBC (complete blood count), kidney function tests, liver function tests, ECG (electrocardiogram), chest radiograph, and ultrasonography (confirmed the presence of gallbladder stones) was done. Preoperative prophylactic antibiotics were also given in all patients. So this modified technique in comparison to the standard method (American) that is taught to general surgery residents was much smoother, faster, and with fewer side effects in the hands of a left-handed surgeon (Table 1).

There were two complications (5%) totally and only in the conventional method. Both were minor. One of them was diffuse hemorrhagic ooze from the liver bed and the other was bilious ooze from the gallbladder bed. The complications were managed intraoperatively by supplying the proper hemostasis and prolonged drainage (10 days). There was not any major bile duct injury in this study. There was one (2.5%) case with conversion to open surgery in the conventional method because of the vague anatomy of the biliary tree and bilious oozing from the gallbladder bed. This study aimed to introduce a modified approach for left-handed surgeons and comparing this approach with standard practice in future studies will be presented.

DISCUSSION

Considering that minimally invasive surgical techniques, such as laparoscopy have a profound impact on the treatment of gallbladder diseases, despite the many problems using standard methods, left-handed surgeons are forced to use laparoscopy in gallbladder diseases. So the standard methods should be modified to achieve



Figs. 2A to C: Trocar placement (a1 is assistant): (A) standard trocar placement by a right-handed surgeon in the French technique; (B) Modification for trocar placement by the left-handed surgeon in the French technique; and (C) the figure shows how the surgeon uses an atraumatic grasper in his right non-dominant hand to retract gallbladder fundus while his dominant hand is used to dissect the hilum. It is hoped that the changes introduced to ease the burden on left-handed residents in residency training programs⁵

more comfort, security, and reduce the error rate for left-handed surgeons. The only study in this regard is published by Mr. Herrero and colleagues in the journal of Laparoendoscopic and Advanced Surgical Techniques. They suggest reforming the location of ports to reduce the problems of left-handed surgeons.⁵ These reforms were done on the French model, while our study is a modification for the American standard method (Fig. 2). Left-handed surgeons must learn to work in an environment suitable for right-hands and with the right-handed made tools and using methods described by the right-hands to have a safe and comfortable operation. It is not possible except through reforms, no matter how small the modification procedure is so that they can grow their safety and their comfort during operations and expand their skills in this regard. The study will help achieve these goals.

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