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Original Article

Removing gallbladder from intra abdominal area by a different technique

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Abstract

Aim: Laparoscopic cholecystectomy is a widely performed technique worldwide. The use of laparoscopic threaded holders for this is routine but takes a lot of time and may tear the gallbladder. There are no wide-mouthed and short endoscopic instruments that can be used for removing the gallbladder without perforation. We look at gallbladder removal methods that are quick and do not involve damage at the end of laparoscopic cholecystectomy.

Material and Methods: This prospective study was conducted on 30 laparoscopic cholecystectomy patients divided into two equal groups, one employing conventional laparoscopic cholecystectomy (CLC) and the other using a sponge holding forceps (SHF) (n=15, both groups) to demonstrate the effectiveness of our management. In the CLC group, the number of male patients was two (13.3 %) and female patients 13 (86.7%); in the SHF group, number of male patients was six (40%) and female patients nine (60%). When we compared the results statistically for bladder removal time, total operation time, gallbladder perforation, and wound infection, the p values were found to be 0.016, 0.182, 0.169, and 1, respectively.

Results: Thirty patients were analyzed. The SHF group showed significantly better results than the CLC group for gallbladder removal time and better although not significantly better results for perforation of bladder, while there was no difference between the groups for wound infection.

Conclusion: Removing the gallbladder with an SHF significantly shortens the duration of removal and also reduces perforations as compared to CLC.

Keywords: Laparoscopic Cholecystectomy; Forceps; Techniques.

INTRODUCTION

In the mid-1980s, with the emergence of minimally invasive surgical methods, laparoscopic cholecystectomy (LC) opened up a new era in abdominal surgery(1). Most gallstones are asymptomatic (2, 3), being incidentally detected on routine abdominal ultrasound (4). Approximately 90% of acute cholecystitis cases have gallstones associated with secondary bacterial infections and gallbladder inflammation (5–7); the remaining 10% of cases have what is termed acalculous cholecystitis. The “porcelain gallbladder" is an uncommon condition seen in 0.06–0.08% of patients (8).

Conventional Laparoscopic Cholecystectomy (CLC) requires four ports, but a “single port" method is often preferred (9). Using either method, it is necessary to remove the gallbladder from the abdomen. If laparoscopic threaded holders are routinely used to treat patients with porcelain gallbladders, or gangrenous or chronic cholecystitis, the holders may tear the gallbladder during removal from the abdomen. Then the

stones may spill into abdominal or subcutaneous regions, causing subsequent infections. In addition, it is very important to preserve the anatomical integrity of the gallbladder to facilitate informative pathological examination. In this article, we share a simple technical detail that facilitates gallbladder removal.

MATERIAL and METHODS

Routinely, three or four trocars are placed at initiation of CLC. After removing the gallbladder from its bed, many surgeons use the same instruments to remove the gallbladder from the abdomen. This requires considerable force because the surgical devices are long; it is difficult to vector the required force correctly. We sought to solve this problem. We wanted to develop a better, easier, and more rapid method.

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A sponge-holding forceps(SHF) is a lockable device that has a wide end-portion and is relatively shorter (24 cm) than other endosurgical tools, rendering the SHF easier to handle (Figure 1). Generally, the instruments used during laparoscopic abdominal surgery are rather long, being extensions of the arms of the surgeon as they reach into the patient. In addition, such instruments are narrow-mouthed because they must pass through the apertures of the trocars.

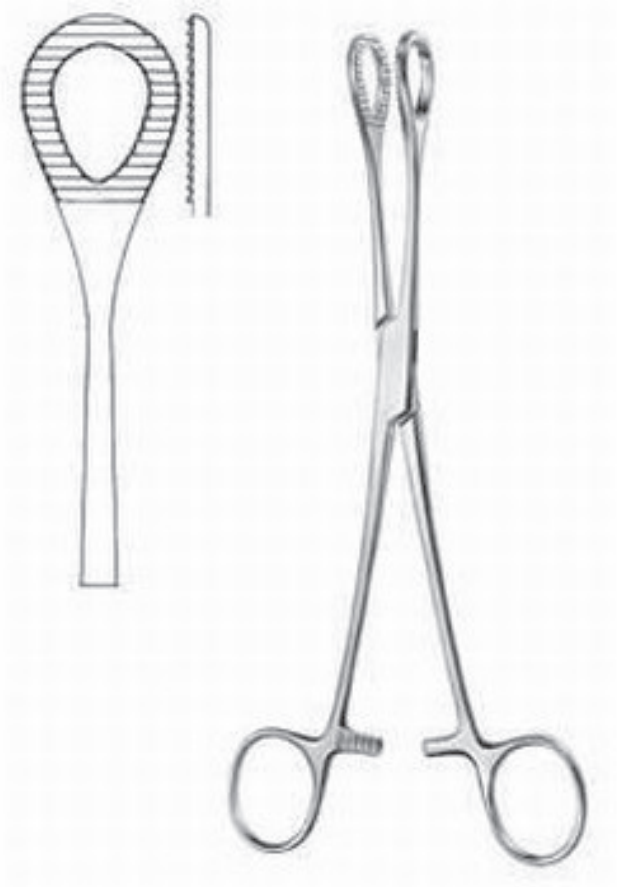

Figure 1. Schematic view of Sponge Holding Forceps

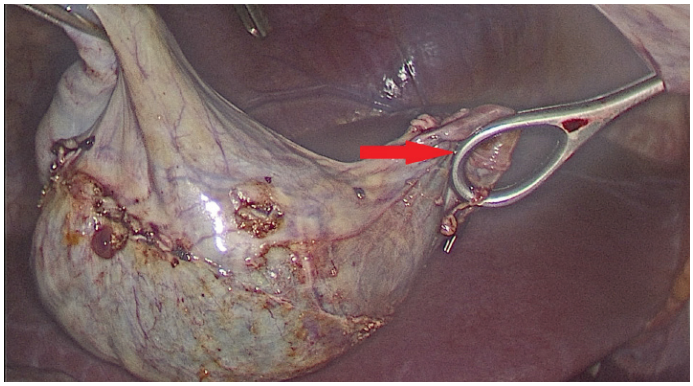

Figure 2. Arrow shows holding the galbledder with Sponge Holding Forceps

RESULTS

We performed a prospective study on 30 patients to explore the utility of this technique. They were selected in temporal order of presentation. Patients developed complications during surgery were excluded from the study.

In the first group of patients (CLC group), the gallbladder was separated from the liver bed during CLC and removed from the abdomen using a geared laparoscopic grasper. In the second group (SHF group), we removed the gallbladder after performing CLC. We used the substernal 10 mm trocar entry hole to remove the gallbladder from all patients. We recorded patient age and gender (Table 1), total CLC time, time required to remove the gallbladder, the instruments used for removal, whether or not the gallbladder was perforated during removal, and any postoperative infections (Table 2).

Table 1. Demographic data's of patients

Technique		CLC	SHF
n		15	15
Gender			
	M	2(13.3%)	6(40%)
	F	13(86.7%)	9(60%)
Age		47±16.85	50.73±14.65

n: Number of patients M: Male
CLC: Classic Laparoscopic Cholecystectomy F: Female
SHF: Sponge Holding Forceps

Table 2. Comparing CLC and SHF groups

Technique	CLC group	SHF group	P
Bladder Removal Time	7.33±2.16	5.06±2.65	0.016
Total Operation Time	69.33±16.99	61.33±14.93	0.182
Gallbledder Perforation	5(33.3%)	1(6,7%)	0.169
Infection	3(20%)	2(13,3%)	1.00

CLC: Classic Laparoscopic Cholecystectomy (p<0.05 is significant)
SHF: Sponge Holding Forceps

DISCUSSION

Laparoscopic surgery was first developed in the mid-1980s, rendering surgery faster, easier, and less invasive. The first laparoscopic cholecystectomy was performed in 1985 by Erich Muhe (10) and, in 1993, it was recognized by the National Institutes of Health as a viable treatment option for symptomatic gallstones (11). Natural orifice transluminal endoscopic surgery (NOTES) and single incision laparoscopic surgery were subsequently developed. Transoral cholecystectomy (a form of NOTES) was first performed in 2007 by Lee Swanstrom. Robotic surgery platforms were first developed in the late 1990s and have culminated in the "da Vinci System" (Intuitive Surgical, Sunnyvale, California) (12).

However, although the newer systems are certainly better than the old ones, the fact that the old systems are inexpensive encourage their continued use. Thus, four or three-port laparoscopic systems are still employed in many theaters worldwide. It is important to continue to explore how to perform CLC more effectively.

The literature identifies two principal complications of CLC: bile duct damage and abscess development caused by lost gallstones (13). If the gallbladder is perforated during removal using a conventional laparoscopic tool, stones may spill into the abdomen and must be retrieved. Abscesses form in about 0.3% of patients (14); experience indicates that the abscesses often develop in the abdominal wall, subhepatic space, or retroperitoneal region under the subhepatic space (15).

At the end of an operation, if the gallbladder is to be removed using laparoscopic graspers, it is possible for the grip on the gallbladder to fail if the force applied by the surgeon is not appropriately vectored. Sometimes, the gallbladder has to be repeatedly captured. In addition, the gallbladder may become perforated at the trocar site, as considerable force must be applied to ensure removal. Then inflammation of the skin and subcutaneous tissue may develop, followed by wound infection. Endobag is available, but it will create an extra cost to the operation.

CLC is still performed; the technique is inexpensive. New methods for treatment of gallbladder disease are under constant development. In CLC, removal of the gallbladder using an SHF significantly shortens the operative duration and accordingly reduces the incidence of perforations.

CONCLUSION

The use of an SHF significantly decreased the time required to remove the gallbladder. No significant differences in total operative time or the frequency of postoperative infections were evident between the two techniques. However, the extent of bladder perforation did differ significantly. While a grasper is used to remove the gallbladder, this may cause gallbladder perforation and spillage of gallstones into the abdomen, increasing the likelihood of additional problems. Thus, it is better to use an SHF than a laparoscopic grasper to remove the gallbladder from the body.

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