Retrieval of gallbladder through epigastric port as compared to umbilical port after laparoscopic cholecystectomy

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Abstract: This comparative prospective study was conducted at the Ghulam Muhammad Mahar Medical College Hospital and Red Crescent General Hospital, Sukkur, Pakistan, for a period of two years from July 2012 to June 2014. The study included 1800 patients who underwent laparoscopic cholecystectomy for symptomatic cholethiasis. These patients were divided in to two groups. Group I included 900 patients, who underwent conventional laparoscopic cholecystectomy with the four port technique. In these patients, the gall-bladder was retrieved through umbilical port by a sterile surgical hand glove (size 6½ or 7 inches) endobag. The fascial defect of 10 mm umbilical port was closed by vicryl "0" with J-shaped needle, while three 5 mm ports closed by applying steri strips. Group-II also included 900 patients. In these patients laparoscopic cholecystectomy was done by using three ports, 10 mm epigastric working port, 5 mm umbilical port for 5 mm telescope and lateral 5 mm port for assistant. The gall-bladder was retrieved through epigastric port without endobag. The results of both these techniques were collected and analyzed on SPSS version 14. The mean age of patients was 45 years. The male to female ratio was 1:3. In group-I, after laparoscopic cholecystectomy, gall-bladder was retrieved safely through 10 mm umbilical port in surgical glove endobag. In acutely inflamed cases, the gall-bladder was opened at the umbilical port site inside the endobag and decompressed before retrieval. In this group, wound infection of umbilical port occurred in 5.11% patients, port-site hernia in 3.66%, port-site bleeding in 1.33% while difficulty in retrieval of gall-bladder in acutely inflamed cases in 1.88% patients. In group-II, wound infection in epigastric port was found in 1.55% patients, port-site hernia in 0.11%, port-site bleeding in 4%, difficulty in retrieval of gall-bladder in 5.33% while leakage /perforation of gall-bladder in 4.11% patients. The serious complications like wound infection and port-site hernia are more frequently found in group-I patients as compared to group-II.

Keywords: Laparoscopic cholecystectomy, port-site hernia, retrieval of gall-bladder.

INTRODUCTION

Laparoscopic cholecystectomy is the gold standard treatment for symptomatic cholelithiasis since last 15-20 years (Zehetner *et al*. 2007). It may be performed by single, two, three or four ports (3, 5 and 10mm size) technique depending on the surgeon's choice, his expertise and experience. At the end of the procedure, proper positioning of instruments (rail-roading) and orientation is required for retrieval of gall-bladder specimen (Kang & Lim 2003; Leggett *et al*. 2000). Laparoscopic cholecystectomy is associated with greater chances of intra-abdominal stone spillage and implantation as well as port-site contamination during retrieval of gall-bladder specimen (Ali & Siddiqui 2013). In order to prevent above complications, gall-bladder specimen is retrieved in an endobag. Acutely inflamed or distended gall-bladder packed with stones always creates a problem during its retrieval. Gall-bladder removal in these cases requires a needle decompression, stone fragmentation and stone removal from the gall-bladder near the port site or extension of one of the fascial incision to fascilitate gall-bladder retrieval, which causes more post-operative port site pain (Zehetner 2007).

In this study, we evaluate the safety and cost-effectiveness of technique of using sterile surgical glove endobag to retrieve gall-bladder through umbilical port in group-I patients, while retrieval of gall-bladder through epigastric port without endobag in group-II patients. The merits and demerits as well as complications of both the techniques were compared and analyzed.

Methodology

This comparative prospective study was conducted in the Ghulam Muhammad Mahar Medical College Hospital and Red Crescent General Hospital, Sukkur, Pakistan, for a period of two years from July 2012 to June 2014.

This study included 1800 patients who underwent laparoscopic cholecystectomy for symptomatic cholelithiasis. These patients were divided in two groups. Group I included 900 patients, who underwent conventional laparoscopic cholecystectomy with four port technique. In these patients, the gall-bladder was retrieved through umbilical port by a sterile surgical hand glove (size 6 ½ or 7 inches) endobag. The 10mm umbilical port (fascial defect) was closed by vicryl "O" with J-shaped needle, while three 5mm ports closed by applying steristrips.

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Group-II also included 900 patients. In these patients laparoscopic cholecystectomy was done by using three ports; 10mm epigastric working port, 5mm umbilical port for 5mm telescope and lateral 5mm port for the surgeon's assistant. The gall-bladder was retrieved through epigastric port without endobag.

In children, the patients with obstructive jaundice and carcinoma gall-bladder were excluded from the study. Informed written consent was taken from all patients. The demographic data, clinical examination, routine laboratory investigations and fitness for general an aesthesia were recorded. The results of both these techniques were collected and analyzed on SPSS version 14.

RESULTS

The mean age of patients was 45years. The male to female ratio was 1:3

In group-I patients, after laparoscopic cholecystectomy gall-bladder was retrieved through 10mm umbilical port in surgical glove endobag. In acutely inflamed cases the gall-bladder was opened at the umbilical port site inside the endobag and decompressed before retrieval. In this group, out of 900 patients wound infection occurred in umbilical port in 46 (5.11%) patients, port-site hernia in 33 (3.66%), port-site bleeding in 12 (1.33%), leakage /perforation of gall-bladder in 14 (1.55%), port-site contamination in 08 (0.88%), spillage of stones/port impaction 04 (0.44%) and difficulty in retrieval of acutely inflamed gall-bladder in 17 (1.88%) patients (Table-I).

In group-II patients, wound infection occurred in epigastric port in 14 (1.55%) patients, port-site hernia in 01(0.11%), port-site bleeding in 36 (4%), leakage/perforation of gall-bladder in 37 (4.11%), port-site contamination in 30 (3.33%), spillage of stones/port impaction in 13 (1.44%), and difficulty in retrieval of acutely inflamed or distended gall-bladder in 48 (5.33%) patients. (Table-II).

The serious complications like wound infection and port-site hernia are more frequently found in group-I patients as compared to group-II patients.

DISCUSSION

After laparoscopic cholecystectomy, extraction of the gall-bladder is a time consuming and difficult job. Although several techniques and methods are suggested to facilitate the retrieval of gall-bladder safely, problems occurring during retraction have not been completely remedied and generally widening of the port site is required. This increases the risk of bleeding, haematoma and infection as well as leaving a risky area for incisional hernia Sanz-Lopez *et al*. (1999). There is a lot of controversy regarding the retrieval of gall-bladder through umbilical or epigastric port and in an endobag or without endobag. In laparoscopic cholecystectomy, the ratio of gall-bladder perforation and gallstone spillage reaches up to 36% (Mohiuddin 2006). In some of these cases, ruptures occur during the traction of the gall-bladder and as a result bile and gall-stones are spilled into the abdomen. In addition, when the port site is contaminated with bile or when gall-stones are left, infection develops. Gall-bladder perforation (10-40%) and stone spillage (6-30%) are the two most common complications encountered during dissection (75%) and removal (25%) of gall-bladder in laparoscopic cholecystectomy (Brockmann 2002; Wood field 2004; Sathesh-Kumar 2004). Infected bile and gall-stone implantation in the subcutaneous tissues of the abdominal wall causing discharging sinus or abscess at the port site of retrieval is a rare entity (Hand 2006; Shahzad 2007; Kumar 2004). In our study, we retrieved gall-bladder specimen safely through 10mm umbilical port using surgical glove endobag in group-I patients, while in group-II through 10mm epigastric port without endobag. The gall-bladder perforation was found in 1.55% in group I and 4.11% in group-II while spillage of stones/ port impaction in 0.44% in group-I and 1.44% in group-II patients. However, a reported incidence of gall-bladder spillage varies from 6% to 30% (Kang 2003; Kumar 2004). Ali & Siddiqui (2013) and Helme *et al*. (2009) stated that best way to avoid complication of spilled gall-stones and port site contamination is to use endobag. Golash in his series of 772 patients of Laparoscopic cholecystectomies retrieved the gall-bladder specimen through the umbilical port without using endobag, hence reported a high incidence of port site contamination and gall-stone spillage (Golash & Rahman, 2006). In the present study, 5.11% of our patients of group-I developed umbilical port infection despite of using endobag, possibly due to contamination of the outer surface of endobag; while epigastic port-site infection is only 1.55% in group-II patients. Memon *et al*. (2013) also reported 5% umbilical port sepsis in patients with acutely inflamed gall-bladder specimen despite of using endobag for its retrieval. Another study reported port site wound infection 1.02% and port site hernia 0.47% (Sharma *et al*. 2013). In our study, port site hernia occurred through umbilical port in 3.66% in group-I patients and in 0.11% in epigastric port in group-II patients. Memon *et al*. (2011) reported 2.14% umbilical port site hernia despite using endobag for gall-bladder retrieval. Ali & Siddiqui 2013 reported a rare complication of port-site infection due to implanted stones resulting in discharging sinus following laparoscopic cholecystectomy. All reasonable efforts should be made to remove spilled gall-stones; nevertheless conversion to open surgery is not mandatory as the reported complication rate of lost stones is less than 1% (Brockmann 2002, Sathesh-Kumar 2004, Lrkorucu 2008).

Table 1: Group-I (Umbilical Port Retrieval)

Variables	Numbers (n=900)	Percentage
Port-site bleeding	12	1.33%
Wound infection	46	5.11%
Port-site hernia	33	3.66%
Difficulty in retrieval	17	1.88%
Leakage/perforation of GB	14	1.55%
Port-site contamination	08	0.88%
Spillage of stones/port impaction	04	0.44%

Table 2: Group-II (Epigastric Port Retrieval)

Variables	Numbers (n=900)	Percent age
Port-site bleeding	36	4%
Wound infection	14	1.55%
Port-site hernia	01	0.11%
Difficulty in retrieval	48	5.33%
Leakage/perforation of GB	37	4.11%
Port-site contamination	30	3.33%
Spillage of stones/port impaction	13	1.44%

CONCLUSION

Both the techniques of retrieval of gall-bladder through umbilical port with endobag and through epigastric port without endobag, have their own merits and demerits. In this study it is observed that umbilical port retrieval resulted in more port site wound infection and port site hernia as compared to epigastric port retrieval. Port site hernia is a serious complication leading to further surgery. The epigastric port retrieval of gall-bladder resulted in more port site bleeding, perforation of gall-bladder and port site contamination which are manageable and less in severity.

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