Study the Link between Laparoscopic Cholecystectomy and Abdominal Wall Paraumbilical Hernia

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Abstract

A laparoscopic cholecystectomy is a surgery which includes the removal of gallbladder. It is a minimally invasive cholecystectomy wherein inside of the abdomen is visualize with the help of camera introduced through 4 small incisions to remove the gallbladder by using long tools. The aim of the present study is to evaluate the correlation between abdominal wall hernia (paraumbilical hernia) and laparoscopic cholecystectomy in the Iraqi patients (n=100). The age of the patients was 25 to 36 years. Before surgery, the red blood cells, white blood cells and serum urea were found to be 105.67±3.00; 13731±1940.4 and 33.48±0.47, respectively. After surgery, the red blood cells, white blood cells and serum urea were found to be 117.95±4.21; 10307.9±1057.7 and 35.25±0.46, respectively. The laparoscopic cholecystectomy with previous abdominal wall hernia is the easiest operative procedure. However, it required good experience and careful dissection.

Keywords: Abdominal wall paraumbilical hernia, Surgery, Laparoscopic cholecystectomy.

Introduction

Various factors such as alterations in medications, hormones, diet, or rapid weight gain or loss results in changes in concentration of bile; which helps in the digestion into the small intestine and produced by the liver. Formation of gallstones occurs if the bile composition and concentration is changed. If this formed gallstones migrate out of the gallbladder then it blocks bile normal flow and develops infection and inflammation. This is known as cholecystitis and its symptoms are constant abdominal pain, vomiting, fever and nausea1. The incidence rate of gallstones is 10-15%. Out of these, about 35% of patients display lifetime recurrence rate of symptoms or complications. Gallstones are three times more common in women than men2.

To prevent associated inflammation complications, administer conservative therapy is used which is a first line of acute cholecystitis treatment. If patients do not respond to medication after 6 to 8 weeks of treatment, laparoscopic cholecystectomy is performed. About 70% of such patients respond to medical therapy within the first 24 to 48 hours; still laparoscopic cholecystectomy is the preferred treatment for symptomatic gallstone disease1.

In rare cases, complications after laparoscopic cholecystectomy are observed and could become serious if structures near the gallbladder are damaged. Common bile duct is one of situated near gallbladder; which pores bile from the gallbladder and liver into small intestine. Biliary ducts damage or leakage leads to the barrier of bile flow and develops symptoms of fever, abdominal pain, and yellowing of the skin. This is known as jaundice. Gallstone disease also showed similar symptoms along with the bleeding from a blood vessel. Generally, bleeding stops after some time. However, if it’s persistent for a long time, then intervention is needed. Post cholecystectomy surgery, fever, nausea, worsening pain, chills, vomiting, or jaundice also reported by some authors1.
Another complication of laparoscopic cholecystectomy is the occurrence of port site hernia. The incidence rate of it deceits between 0.38% to 5.4% with an overall frequency of 1.7%. The incidence rate is increasing with size of the trocar. The incision enlargement, connective tissue disorders, diabetes mellitus, wound infection, type of trocar used, obesity, and defective closure of the fascial defect. These are the major risk factors involved in the development of port site hernia. Sometimes, peritoneal defects below the repaired fascial layer could lead to herniation. Therefore, it is important to safely repair the port sites; fascial as well as the peritoneal. With this background, we aim to evaluate the correlation between abdominal wall hernia (paraumbilical hernia) and laparoscopic cholecystectomy.

**Material and Method**

**Patient Enrollment:** In the present study, the patients (n=100) visited to the Baqubah teaching hospital during July 2018 to July 2019 were enrolled. The age of the patients was 25 to 36 years.

**Inclusion Criteria:**
1. All cases with symptomatic gall stone disease
2. Acute cholecystitis after conservative treatment
3. Diabetics patient with gall stone
4. A calculus cholecystitis

**Operative procedure:** All operations are done under general anesthesia, in supine position and insufflation with CO₂ by using Veres needles or Hason method in patient with complicated previous abdominal surgery. Dissecting the calot triangle and identification and clipplings of both cystic artery and duct.

**Blood Collection:** The blood was collected for the various biochemical assays such as hematogram analysis and serum urea by commercially available kits.

**Statistical Analysis:** Results were presented as mean ± standard error (SE). Dunnett multiple comparison test and one way analysis of variance (ANOVA) was done to estimate the statistical significance.

**Results**

In the present study, we examined the hundred patients visited to the Baqubah teaching hospital during July 2018 to July 2019 period. The age group of the patients was 25 to 36 years.

Before surgery, the red blood cells, white blood cells and serum urea were found to be 105.67±3.00; 13731±1940.4 and 33.48±0.47, respectively. After surgery, the red blood cells, white blood cells and serum urea were found to be 117.95±4.21; 10307.9±1057.7 and 35.25±0.46, respectively (Table 1).

**Table 1: Blood parameters before and after surgery**

<table>
<thead>
<tr>
<th>Blood Parameter</th>
<th>Before</th>
<th>After</th>
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<tbody>
<tr>
<td>Red Blood Cells</td>
<td>105.67±3.00</td>
<td>117.95±4.21*</td>
</tr>
<tr>
<td>White Blood Cells</td>
<td>13731±1940.4</td>
<td>10307.9±1057.7</td>
</tr>
<tr>
<td>Serum Urea</td>
<td>33.48±0.47</td>
<td>35.25±0.46</td>
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**Discussion**

Various studies have investigated laparoscopic cholecystectomy and associated complications such as incisional hernia from umbilical port. In the present study, we have evaluated the hematological parameters and serum urea before and after hernia surgery. In a case study of 55 year old female reported by Sharma et al., an anterior abdominal wall hernia was diagnosed after two days of laparoscopic cholecystectomy through the umbilical port. Authors have reported hernia reduction, fascial anatomical repair and peritoneal defect over the midline laparotomy incision.

Umbilical hernia is another type of hernia constituting 6% of all abdominal hernias in adults. Treatment options for umbilical hernias includes several surgical method. During laparoscopic cholecystectomy; the simultaneous occurrence of umbilical hernia and cholelithiasis may cause technical problems in CO₂ insufflations and trocar insertion. Kamer et al. has explored ideal repair method among primary repair, mayo repair and flat mesh hernioplasty for incidentally encountered umbilical hernias after laparoscopic cholecystectomy. The study reported improved outcomes of the umbilical defect repair with mesh after laparoscopic surgeries and a better technique for either obese or non-obese patients than primary suture techniques in terms of recurrence rates.

In a case control study by Uslu et al., female gender, older age, higher BMI along with increased surgery duration was found to be associated with increased probability of a trocar site hernia formation. Thus, authors conclude that closure of trocar sites in obese patients above 60 years, and a longer operation duration could result in prevention of port site hernia following laparoscopic cholecystectomy.
Thus, during the follow up of patients who underwent laparoscopic cholecystectomy; after this surgery, the probability of development of port site hernia can occur. These considerations of hernia could help in providing early intervention to reduce sepsis and strangulation. In addition, repair of both peritoneal and fascial layers at the port site should also be considered to avoid such unfavorable condition at a future date.

**Conclusion**

The laparoscopic cholecystectomy with previous abdominal wall hernia is the easiest operative procedure. However, it required good experience and careful dissection. The red blood count gets increased after surgery along with serum urea.

**Ethical Clearance:** Ethical clearance taken from Diyala University, Diyala, Iraq.

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**Conflict of Interest:** Nil

**References**