Bratisl Lek Listy 2008; 109 (7)
313 – 316

CASE REPORT

Laparoscopic cholecystectomy in elderly patients

Yildirim Osman, Menekse Ebru, Turan Umit, Oter Volkan, Karabeyoglu Melih, Kocer Belma, Bozkurt Betul, Cengiz Omer, Soran Atilla*

Ankara Numune Training and Research Hospital, Ankara, Turkey. **oyildirim99@yahoo.com**

Abstract: *Aim:* In this study, we hypothesize that LC is a safe procedure in a non-laparoscopic specialized general surgery unit in a teaching hospital.
Patients and methods: We evaluated retrospectively the data of 286 patients that had symptomatic cholelithiasis and were operated on with LC.
Results and conclusion: Fifty-four (18.9 %) male and 232 (81.1 %) female patients underwent LC. Morbidity in patients over 75 years was higher than in patients under 75 years. Mean hospitalization time was 1.5 days. LC is as safe in young patients as in patients at age ranging from 65 to 75 at a general surgery setting at a teaching facility. Although postoperative morbidity risk is higher in patients over the age of 75 years and diagnosed with symptomatic cholelithiasis, the main reason for increased morbidity is having an ASA score greater or equal to 3, and it is independent from age. In conclusion, LC can be performed in patients older than 75 years of age after giving them proper treatment for comorbidities *(Tab. 1, Ref. 12)*. Full Text (Free, PDF) *www.bmj.sk.*
Key words: laparoscopic cholecystectomy, elderly patients.

There is an inverse relationship between age and the incidence of cholelithiasis and its complications (1). Although advanced age is not a contraindication, it is well-known that surgery in elderly patients involves increased risk (2). Laparoscopic cholecystectomy (LC) is the gold standard in the treatment of cholelithiasis with the advantages of shorter hospital stays, minimizing the postoperative pain and speeding up the return to social life, and LC is increasingly preferred in elderly patients as well (3–6). Elderly patients have a decreased physiologic capacity, which causes complications with increasing metabolic and mechanic affects of laparoscopy (6). In this study, we hypothesize that LC is a safe procedure in a non-laparoscopic specialized general surgery unit in a teaching hospital. In order to test this hypothesis we aimed to compare the results of LC in both elderly and young populations operated on at our clinic.

Patients and methods

We evaluated retrospectively the data of 286 patients that had symptomatic cholelithiasis and were operated on with laparoscopic cholecystectomy between January 2006 and September 2007 at Ankara Numune Teaching and Research Hospital's 2nd General Surgery Clinic. We stratified patients into three groups according to their ages. These three groups were; younger than 65 years old (Group I), >65 (Group II) and <75 years (Group III), 75 years or older (Group III). Group III is a subgroup of Group II, hence the Group II also includes the patients of Group III). The patients who had a history of biliary colic, and were diagnosed with cholelithiasis by US were included. The patients with acute cholecystitis, acute pancreatitis, diffuse peritonitis, septic shock, biliary malignancy, portal hypertension and patients who have contraindications for general anesthesia were excluded from the study. All patients underwent elective surgery. In order to achieve optimal stable physical condition, patients with comorbidities were evaluated and treated preoperatively. LC was performed under general anesthesia with a standard 4-port technique. Compression socks and low molecular weight heparin were used as tromboembolism prophylaxis for patients in Group II and Group III, as well as for the ones at high risk (obesity, valvular heart disease) in Group I. Endoscopic Retrograde Cholangiopancreatography (ERCP) was performed under the conditions such as choledocholithiasis or dilatation of bile duct were seen on US and for patients with high serum bilirubin levels; preoperative sphincterotomy and stone extraction were performed in such cases. Intraoperative cholangiography was not used in any of patients. LC was converted to open cholecystectomy (OC) in patients when adhesions due to inflammation, complicated anatomy, hemorrhage or cholecystoduodenal fistula were detected during the operation. The following variables were studied: age, sex, comorbidity (hypertension, diabetes mellitus, cardiopulmonary disease), ASA score, conversion to open surgery, peroperative and postoperative complications, hospitalization day, and mortality.

Ankara Numune Training and Research Hospital, Ankara, Turkey,
*Department of Surgery, Magee-Womens Hospital of UPMC, Ankara

Address for correspondence: Osman Yildirim, Fatih Cad. Fatih Sitesi 174/34 Kecioren-Ankara, Turkey. Phone: +90.312.3821161

Statistics

SPSS 10.0 (CA, USA) program was used in statistical evaluation. A chi-square test was used in evaluating factors effecting preoperative and postoperative complications as univariant analysis. Factors effecting postoperative complications were evaluated by univariant and multivariant analysis. A logistical regression test (Backward conditional) was used. p value ≤0.05 values were significant.

Results (Tab. 1)

Fifty-four (18.9 %) male and 232 (81.1 %) female patients underwent LC. There were 208 (72.7 %) patients in Group I, 78 (27.3 %) patients in Group II and 23 (8 %) patients in Group III. There was no difference among groups for gender. ASA score was greater or equal to 3 in 81 (28.3) patients. The higher ASA scores did not indicate a difference among the groups. Hypertension, diabetes mellitus (DM), and cardiopulmonary diseases were detected in 110 patients alone or combined. Comorbidity rates were significantly higher in Group I (20.7 %) in Group II (64.1 %, p=0.0001) and in Group III (73.9 %, p=0.0001). Only in 18 (6.3 %) patients, the procedure was converted to open cholecystectomy. Conversion to open cholecystectomy was higher in Group II and III but no significant difference was found among three groups (Group I: n=10, 4.8 %, Group II: n=8, 10.3 %, Group III: n=3, 13 %). Peroperative complication rate was 12 (4.1 %); peroperative hemorrhage in 6 (2.09 %) patients, small intestine laceration in 3 (1.04 %) and bile duct injury in 3 (1.04 %) patients. The overall postoperative morbidity was observed in 34 (11.9 %) patients. Morbidity rate was 10.1 % in Group I, 16.7 % in Group II and 26.1 % in Group III. There was no statistical difference between the groups according to the preoperative and postoperative morbidity. However, morbidity in patients over 75 was higher than in patients under 75 years of age. Subhepatic collection was seen in 15 patients (5.2 %) and none of the cases required drainage (Group I n=10; Group II n=5, Group III n=2), wound infection in 8 (2.8 %) patients (Group I n=4; Group II n=4; Group III n=2), cardiopulmonary complications in 6 (2.1 %) patients (Group I n=4, Group II n=2, Group III n=1) and other complications such as incisional hernia, thromboembolism, postoperative fever lasting more than 48 hours and hemorrhage were detected in 5 (1.7 %) patients. The distribution of these morbidities were homogenous among groups (p>0.05).

Tab. 1. Results of laparoscopic cholecystectomy. Group III is a subgroup of Group II so Group II also contains the results of Group III.

	Group I (<65) n(%)	Group II (>65) n(%)	Group III (>75) n(%)	Total n(%)
Number	208 (72.7)	78(27.3)	23(8)	286(100)
Sex M/F	35/173	19/59	3/20	54/232
Comorbidity	43(20.7)	50(64.1)	17(73.9)	93(32.5)
ASA I	20(9.6)	7(9)	4(17.4)	27(9.4)
ASA II	132(63.5)	46(59)	11(47.8)	178(62.2)
ASA III	56(26.9)	25(32.1)	8(34.8)	81(28.3)
Conversion	10(4.8)	8(10.3)	3(13)	18(6.3)
Perop. Comp.	7(3.4)	5(6.4)	1(4.3)	12(4.2)
Postop. Comp.	21(10.1)	13(16.7)	6(26.1)	34(11.9)
Hospital stay day	1.4	1.6	1.9	1.48

Mean hospitalization time was 1.5 days and there was no significant difference among groups. Mortality occurred in none of the groups.

Having an age over 75 years old (p=0.028), having an ASA score of 3 and over (p=0.028), presence of comorbidities (p=0.020), peroperative bile duct injury (p=0.013) and conversion to open surgery (p=0.004) are associated with an increase in postoperative morbidity.

Discussion

LC has been practiced for symptomatic cholelithiasis cases in our clinic since 1994. LC has been more often used in elderly patients and the results proved that it is as safe as in young patients (5). In elderly patients who have undergone surgical operation, the duration of hospitalisation, postoperative complications and mortality rates increase independently from other factors (6). Pulmonary reserve capacity decreases physiologically, depending on the age, not necessarily on comorbidity. This reduces the stress tolerance in elderly patients (6). The rate of accompanying diseases in elderly patients is much greater than in younger patients. Today, ASA (American Society of Anesthesiology) score greater or equal to 3 is defined as a prognostic factor triggering the complications and death in elderly patients (1, 6). Incidence of cholelithiasis and its complications have proven to be increasing with age (7). In elderly patients with gall bladder disease, postponing the surgical intervention until the complications show up causes an increase in perioperative morbidity and an extension in the duration of hospitalisation (1). Therefore, in elderly patients, biliary surgery is more often preferred (7). Today, LC is preferred in elderly patients rather than OC not only because of its known advantages, but also because of the lower rate of postoperative morbidity (6–9).

LC causes hypercapnia and acidemia depending on the transition of carbon dioxide from the peritoneal membrane following transperitoneal insufflation, and it can inhibit cardiac performance by effecting the preload, afterload and myocardial contractility with its mechanical and metabolic effects. Although laparoscopy is believed to cause problems in patients with limited pulmonary and cardiac reserves, successful laparoscopic operations performed during the past decade have reduced the concerns related to complications resulting from pneumoperitoneum (6). Despite the advantages of LC, the question as to whether it increases the risk of postoperative morbidity and mortality in elderly patients with limited physiological cardiopulmonary reserves due to its existing mechanical and metabolic effects, remains still unanswered. In their study, Perez et al evaluated the results of LC patients over 70 years of age and found the rate of postoperative morbidity of 16.98 %, rate of mortality of 0.57 %, rate of conversion to open surgery of 11.3 %, and average duration of hospitalization of 1.27 days. The morbidity rates

of this group of patients were similar to those in other studies performed in elderly patients (17.71 %), however, when they were compared to the results of all LC age groups, the results were found to be worse (3.34 %). However, when they were compared to the results gathered in studies performed in elderly OC patients (25.72 %), they were found to be better. Perez's results of conversion to open surgery and duration of hospitalisation were similar to previous studies in elderly patients. Duration of postoperative hospitalization was shorter compared to the elderly patients in the OC group. Morbidity and mortality rates as well as the recovery period were better in LC patients than in elderly patients treated with open surgery (2). In the study made by Mayol et al, on LC patients, postoperative morbidity rate was 11 % in the group aged between 60–69, 20 % in the group of patients older than 70 years, and 14.5 % in the general group of patients older than 60 years. Rate of conversion to OC was 10 % in the group over 60 years, and 16 % in the group over 70 years. Postoperative complications and conversion to open surgery rates were higher in the group of patients older than 70 years compared to the patient in over 60-year-old age group. However, this fact does not bear any statistical significance. In this study, hospitalization in the group older than 70 (4 days) was significantly higher than the group of patients older than 60 (3 days), and the results of both groups were better than those achieved in the OC patients (8). In our study, no significant distinction was detected in terms of rate of conversion to open surgery, peroperative complications, hospitalization and mortality in patients older or younger than 65.

In previous studies, rate of morbidity in elderly LC patients ranges between 8 % and 20 % (2). Common reasons for morbidity were biliary leakage, hemorrhage, infection, cardiopulmonary complications and subhepatic fluid collection (2, 8, 9). In our study, the overall postoperative morbidity was observed in 34 patients (11.9 %). The most frequent causes for morbidity were subhepatic collection, wound infection, cardiopulmonary complications, incisional hernia, thromboembolism, postoperative fever lasting longer than 48 hours and hemorrhage respectively. Morbidity rates were 10.1 % in Group I; 16.7 % in Group II; 26.1 % in Group III, and it was significantly higher in Group III. The most common cause of morbidity was subhepatic collection, which was generally detected with US at the early postoperative stages, did not show any infection, did not require any drainage, and healed spontaneously in one week. In our study, the rate of wound infection was insignificantly higher, and this complication mainly occurred in patients with DM. When we compared patients younger or older than 65, we found that although being older than 65 years has a higher rate of comorbidity, postoperative morbidity did not increase ($p>0.05$). In literature, the rate of morbidity found in the LC group (16.7 %) was better than the morbidity rate of the elderly OC patients (25.72 %) (2).

We analyzed the patients older than 75 separately in order to find out whether there would be a change in the results of the patients above 65 as age increases. A significant increase in postoperative morbidity was detected in the patients older than 75 years (26.1 %, $p=0.028$). However, these were minor complications, which did not have any impact on hospitalization or mortality increase. In this group, no significant distinction was observed in conversion to open surgery, preoperative complications, hospitalization and mortality. Although being over 75 years of age seems to increase the rate of morbitidy, the multivariant analyses showed that having an ASA score of over 3 increased postoperative morbidity in patients above 75 independently from the age factor ($p<0.05$). Smith and Max stated that morbidity-mortality rate following OC was 25 % in the group of 60–69 and around 50 % in the group of above 70 (2, 8). Although the studies made on LC patients above 75 are limited, in some series, the rates of postoperative morbidity were revealed as 22–56 % (10). Still, the rate of morbidity in our Group III was better than that of the OC group.

The length of hospitalization was found not to be related to age. When searching through previous studies the average length of hospitalization in patients over 65 years of age is approximately 2–3 days (2, 10). In our study, the average stay was 1.5 days. This parameter was found to be 1.9 days for patients over 75 years of age. For patients under 65 years the mean stay at the hospital was 1.4 and it is parallel to previous studies (1.2 days). The hospitalization period of OC patients in all age groups was approximately 6.13 days (2). In our study, the hospitalization period of LC patients in all age groups was shorter than that of OC patients.

Conclusion

LC alone was found not to be related to increased postoperative morbidities in the elderly. On the other hand, the presence of comorbities in patients over the age of 75 years and having an ASA score greater or equal to 3 are significant risk factors for postoperative morbity in the elderly as compared with younger patients. Even under this condition one may conclude that LC has a lesser postoperative morbidity rate than OC. In conclusion, LC is as safe in young patients as in patients older than 65 and 75. Although postoperative morbidity risk is higher in patients over 75 and diagnosed with symptomatic cholelithiasis, the main reason for increased morbidity is having an ASA score greater or equal to 3, independent from age. Our study results support the null hypothesis that LC is a safe procedure at a non-laparoscopic specialized general surgery unit at a teaching hospital.

References

1. Cheng SP et al. Factors associated with prolonged stay after laparoscopic cholecystectomy in elderly patients. Surg Endosc 2007; 30.

2. Pérez Lara FJ et al. Laparoscopic cholecystectomy in patients over 70 years of age: review of 176 cases. Rev Esp Enferm Dig; 98: 42—48.

3. Gigot J et al. The dramatic reality of biliary tract injury during laparoscopic cholecystectomy. An anonymous multicenter Belgian survey of 65 patients. Surg Endoscop 1997; 11: 1171—1178.

4. McSherry CK. Cholecystectomy: the gold standard. Amer J Surg 1989; 158 (3): 174—178.

5. Weber DM. Laparoscopic surgery an excellent approach in elderly patients. Arch Surg 2003; 138: 1083—1088.

6. Chau CH et al. Laparoscopic cholecystectomy versus open cholecystectomy in elderly patients with acute cholecystitis: retrospective study. Hong Kong Med J 2002; 8: 394—399.

7. Mayol J et al. Complications of laparoscopic cholecystectomy in the ageing patient. Age Ageing 1997; 26: 77—81.

8. Bingener J et al. Laparoscopic cholecystectomy for elderly patients: gold standard for golden years? Arch Surg 2003; 138: 531—535.

9. Tambyraja AL, Kumar S, Nixon SJ. Outcome of laparoscopic cholecystectomy in patients 80 years and older. World J Surg 2004; 28: 745—748.

10. Coenye KE, Jourdain S, Mendes da Costa P. Laparoscopic cholecystectomy for acute cholecystitis in the elderly: a retrospective study. Hepatogastroenterology 2005; 52 (61): 17—21.

11. Amaral PC et al. Laparoscopic cholecystectomy for acute cholecystitis in elderly patients. JSLS 2006; 10: 479—483.

12. Annamaneni RK, Moraitis D, Caytem CG. Laparoscopic cholecystectomy in the elderly. JSLS 2005; 9: 408—410.

Received February 2, 2008.
Accepted May 15, 2008.