

# Surgical Treatment of Acute Cholecystitis in Patients over 80 Years: 10-Year Experience

Kadir Yildirim<sup>\*</sup>, Ilhan Karabicak, Mahmut Fikret Gursel, Zafer Malazgirt

Department of General Surgery, Medical Park Hospital, Samsun, Turkey

## Email address:

kdryldrm@windowslive.com (K. Yildirim), ikarabicak@yahoo.com (I. Karabicak), mfikretgursel@hotmail.com (M. F. Gursel),

zafermalazgirt@gmail.com (Z. Malazgirt)

<sup>\*</sup>Corresponding author

## To cite this article:

Kadir Yildirim, Ilhan Karabicak, Mahmut Fikret Gursel, Zafer Malazgirt. Surgical Treatment of Acute Cholecystitis in Patients over 80 Years: 10-Year Experience. *Journal of Surgery*. Vol. 10, No. 1, 2022, pp. 40-43. doi: 10.11648/j.js.20221001.18

**Received:** January 23, 2022; **Accepted:** February 13, 2022; **Published:** February 25, 2022

---

**Abstract:** The prevalence of gallstones ranges from 20% to 30% in patients  $\geq 60$  years of age whereas it is higher in individuals  $\geq 90$  years of age. Elderly patients with gallstones tend to develop more complications such as gallbladder hydrops, empyema or perforation. Although perioperative morbidity and mortality is slightly high in elderly patients with acute cholecystitis, cholecystectomy is successfully performed for acute cholecystitis with regard to improvement in patients care. In this study, we aimed to evaluate the results of patients over 80 years of age who had cholecystectomy. The data of the 196 patients over 80 years of age who underwent cholecystectomy for acute cholecystitis between Jan 2011 and August 2020 were retrospectively reviewed. The age of the patients in this study ranged from 80 to 97 years. The number of female patients was 111 and male patients was 85. 109 patients underwent laparoscopic cholecystectomy and 77 patients underwent open cholecystectomy. 10 patients converted from laparoscopic to open surgery. One patient who underwent open cholecystectomy died. We observed more wound infection in open cholecystectomy group. Laparoscopic cholecystectomy patients were discharged earlier. Age is not a contraindication for cholecystectomy in patients with acute cholecystitis. Cholecystectomy is a safe procedure in elderly patients with accepted morbidity.

**Keywords:** Acute Cholecystitis, Elderly, Laparoscopic Cholecystectomy

---

## 1. Introduction

The prevalence of gallstones ranges from 20% to 30% in patients  $\geq 60$  years of age whereas it increases to 80% in individuals  $\geq 90$  years of age [1, 2]. Elderly patients with gallstones tend to develop acute or chronic recurrent cholecystitis attacks, gallbladder hydrops, empyema or perforation [3, 4]. Acute cholecystitis (AC) has significantly high mortality rate in elderly patients [5].

AC is generally accepted as a surgical indication. Perioperative morbidity and mortality is slightly high in elderly patients with AC. Thus, more elderly patients go under surgery even with many comorbid factors [6-10].

In our department, we prefer to perform either laparoscopic or open cholecystectomy (OC) to elderly patients with AC. The aim of this study is to evaluate the clinical results of cholecystectomy in patients older than 80

years of age who underwent surgery for AC.

## 2. Methods

The patients who were diagnosed with AC in the general surgery clinic of Samsun VM Medicalpark Hospital between January 2011 and August 2020 were scanned with OC and laparoscopic cholecystectomy (LC) codes in the database. The files between these dates were examined retrospectively after the approval of the local ethics committee (Istinye University, Protocol No. 21-102) was obtained.

The AC diagnosis and recommended treatment options were confirmed from the physical examination notes in the hospital's database systems.

Patients with incomplete examination notes in the database, those whose AC diagnosis was not confirmed, those who had previously undergone choledochal surgery and those who underwent choledochal procedure during surgery

were considered to be out of criteria.

Patients over 80 years of age who were diagnosed with AC as a result of their history and physical examination were included as a criterion for inclusion in the study. AC diagnosis was confirmed by blood tests and abdominal ultrasonography report. Patients were diagnosed with AC according to the Tokyo Guidelines and three of these criteria were included as signs of local inflammation, including Murphy's symptom or right upper quadrant pain, signs of systemic inflammation, including fever (body temperature 38.3), high C-reactive protein (3 mg/dL) and/or high white blood cell (WBC) count (higher than upper limit of normal), and characteristic imaging findings of AC, gallbladder wall thickening greater than 3mm, gallbladder enlargement (8 cm on the long axis or 4 cm on the short axis), pericholecystic fluid accumulation.

Data collected from medical records included age, gender, body mass index (BMI), American Society of Anesthesiologists (ASA) score, heart disease, chronic obstructive pulmonary disease (COPD), diabetes mellitus (types I and II) and chronic renal failure. Length of hospital stay, open or laparoscopic surgery, conversion from laparoscopic to open rate, morbidity (postoperative bleeding, biliary leakage, subhepatic abscess, wound infection) and mortality rates were examined apart from those mentioned earlier.

Primary surgeon decided whether to start directly laparoscopic or open and decision to convert from laparoscopic to open surgery. Inability to clearly determine the gallbladder anatomy, bleeding and intense inflammation

were the reasons to convert from laparoscopic to open surgery.

#### Statistical Analysis

The analysis of the data was made on the personal computer using the Statistical Package for Social Sciences (SPSS 22.0) software. Descriptive statistics were used in the study. The mean and standard deviation were calculated for quantitative variables (Age, BMI, and length of hospital stay). Frequencies and corresponding percentages are given for qualitative variables. Fisher's exact test was used in group comparisons and Mann-Whitney U test was used for comparing hospital stay. Values below 0.05 were considered statistically significant.

### 3. Results

A total of 2219 patients underwent cholecystectomy during these time period. 196 patients over 80 years of age who were diagnosed with AC met the inclusion criteria. The patients age ranged from 80 to 97 years. The mean age was  $85 \pm 6.68$  years. The number of female patients was 111 (56.6%) and male patients was 85 (43.3%). Of the patients included in the study 12 (6.1%) had diabetes mellitus, 10 (5.1%) had COPD-Asthma, 15 (7.7%) had congestive heart failure and 4 (2%) had chronic renal failure.

The type of the surgery and postoperative complication data such as postoperative biliary leakage, bleeding, subhepatic abscess and wound infection are shown in Table 1 and the length of hospital stay is shown in Table 2.

Table 1. Type of surgery and complications are shown.

COMPLICATIONS		TYPE OF SURGERY		P value
		Laparoscopic Cholecystectomy	Open Cholecystectomy	
Postoperative biliary leakage	No	103	81	0.769
	Yes	6	6	
Postoperative bleeding	No	108	82	0.09
	Yes	1	5	
Postoperative subhepatic abscess	No	104	84	0.491
	Yes	5	3	
Postoperative wound infection	No	106	69	0.000*
	Yes	3	18	
Total	No	94	63	0.019*
	Yes	15	24	

\*Fisher's exact test.

Table 2. Length of hospital stay.

Variable	Laparoscopic Cholecystectomy		Open Cholecystectomy		P value
	Mean	S. D.	Mean	S. D.	
Length of hospital stay	1.69	0.662	2.15	0.91	0.000

\* Mann-Whitney U test.

### 4. Discussion

We encounter more frequent gallstones-related symptoms in the elderly population. The complications of gallstones is more severe and has high mortality rate in this age group [11]. Postoperative mortality precludes surgeons to perform

surgery in elderly patients. Since patient care after any kind of surgery has improved, more elderly patients underwent surgery.

Since patients have less pain after the surgery due to minimal invasiveness, laparoscopy has the advantages of shorter length of hospital stay and earlier return to normal social activity rate [12, 13]. LC is the gold standard treatment

approach for gallstones [14]. Experience with the safe performance of LC has been reported in the elderly populations [5, 7, 8, 15-17].

Severely ill elderly patients with comorbid factors can always not tolerate laparoscopy. LC has more complication rate such as biliary tract injury and bleeding when there is severe inflammation [18]. Even though, we preferred more LC for our patients, OC rate is relatively high, respectively 55.6% and 44.4%. We were more conservative in the early days of the study and some patients had to undergo surgery under spinal anesthesia which explains the high OC rate. Fukami Y et al [18] reported similar LC rate in elderly patients.

We converted LC to OC in ten patients due to the inability to reveal the biliary anatomy secondary to intense inflammation and some patients could not tolerate pneumoperitoneum. Our conversion rate (8.4%) is similar of the previous studies [2]. Since these patients have many comorbid factors and high ASA score, insisting for laparoscopic surgery can increase perioperative morbidity and mortality.

Mortality after cholecystectomy even in elderly patients is rare. Most of them are secondary to non-surgical reasons [6]. We observed one mortality (0.5%), a patient who had heart attack after OC and was known to have congestive heart failure.

Elderly patients are more prone to have complications after cholecystectomy, especially after OC [6, 18, 19]. 39 patients (19.8%) had complication related to surgery in this study. The complication rate was significantly low after LC similar to Serban D et al [14] study. When complications were evaluated in details, we realized that OC group had significantly high wound infection. This finding may explain why overall complication is low after LC. There were no difference between the groups in terms of biliary leakage, postoperative bleeding and intraabdominal abscess.

In general, laparoscopic surgery has advantages such as shorter length of hospital stay, less pain and shorter return to normal social activity rate [12]. Postoperative hospital stay was  $1.6 \pm 0.66$  days in LC group and  $2.15 \pm 0.91$  days in OC group. OC was associated with a significant increase in the length of hospital stay. Since OC group had more wound infection, these patients stayed more after the surgery.

## 5. Conclusion

Almost 9% of patients underwent cholecystectomy is over 80 years old. We encounter and operate more elderly patients with AC. Even though comorbidities are frequently observed in elderly patients, cholecystectomy can be performed safely in patients with acute cholecystitis. Age is not a contraindication especially for laparoscopic surgery. LC is a safe method with low morbidity and mortality rate. Elderly patients with severe comorbidity and those who will not tolerate pneumoperitoneum, OC can be the first surgical choice.

## References

- [1] Lirussi, F., Nassuato, G., Passera, D., Toso, S., Zalunardo, B., Monica, F. et al. (1999). Gallstone disease in an elderly population: the Silea study. *Eur J Gastroenterol Hepatol*, 11 (5): 485-491.
- [2] Festi, D., Dormi, A., Capodicasa, S., Staniscia, T., Attili, AF., Loria, P. et al. (2008). Incidence of gallstone disease in Italy: results from a multicenter, population-based Italian study (the MICOL project). *World J Gastroenterol*, 14 (34): 5282-5289.
- [3] Miura, F., Takada, T., Strasberg, SM., Solomkin, JS., Pitt, HA., Gouma, DJ. et al. (2013). TG13 flowchart for the management of acute cholangitis and cholecystitis. *J Hepatobiliary Pancreat Sci*, 20 (1): 47-54.
- [4] Overby, DW., Apeltgren, KN., Richardson, W., Fanelli, R. (2010). SAGES guidelines for the clinical application of laparoscopic biliary tract surgery. *Surg Endosc*, 24 (10): 2368-2386.
- [5] Wiggins, T., Markar, SR., Mackenzie, H., Jamel, S., Askari, A., Faiz, O. et al. (2018). Evolution in the management of acute cholecystitis in the elderly: population-based cohort study. *Surg Endosc*, 32 (10): 4078-4086.
- [6] Ambe, PC., Weber, SA., Christ, H., Wassenberg, D. (2015). Primary cholecystectomy is feasible in elderly patients with acute cholecystitis. *Aging Clin Exp Res*, 27 (6): 921-926.
- [7] Kim, HO., Yun, JW., Shin, JH., Hwang, SI., Cho, YK., Son, BH. et al. (2009). Outcome of laparoscopic cholecystectomy is not influenced by chronological age in the elderly. *World J Gastroenterol*, 15 (6): 722-726.
- [8] Nielsen, LB., Harboe, KM., Bardram, L. (2014). Cholecystectomy for the elderly. No hesitation for otherwise healthy patients. *Surg Endosc*, 28 (1): 171-177.
- [9] Bueno, LJ., Vaqué, UJ., Herrero, BC., Castillo, GE., Carbonell, TF., Baquero, VR. et al. (2007). [Acute cholecystitis and laparoscopic cholecystectomy in the elderly]. *Cir Esp*, 81 (4): 213-217.
- [10] Laycock, WS., Siewers, AE., Birkmeyer, CM., Wennberg, DE., Birkmeyer, JD. (2000). Variation in the use of laparoscopic cholecystectomy for elderly patients with acute cholecystitis. *Arch Surg*, 135 (4): 457-462.
- [11] Rosa, F., Covino, M., Cozza, V., Fransvea, P., Quero, G., Fiorillo, C. et al. (2021). Management of acute cholecystitis in elderly patients: A propensity score-matched analysis of surgical vs. medical treatment. *Dig Liver Dis*, 53 (12): 1620-1626.
- [12] Agrusa, A., Romano, G., Frazzetta, G., Chianetta, D., Sorce, V., Di Buono, G. et al. (2014). Role and outcomes of laparoscopic cholecystectomy in the elderly. *Int J Surg*, 12 Suppl 2: S37-s39.
- [13] Serban, D., Socea, B., Balasescu, SA., Badiu, CD., Tudor, C., Dascalu, AM. et al. (2021). Safety of Laparoscopic Cholecystectomy for Acute Cholecystitis in the Elderly: A Multivariate Analysis of Risk Factors for Intra and Postoperative Complications. *Medicina (Kaunas)*, 57 (3).

- [14] Pisano, M., Allievi, N., Gurusamy, K., Borzellino, G., Cimbanassi, S., Boerna, D. et al. (2020). World Society of Emergency Surgery updated guidelines for the diagnosis and treatment of acute calculus cholecystitis. *World J Emerg Surg*, 15 (1): 61.
- [15] Loozen, CS., Van Ramshorst, B., Van Santvoort, HC., Boerma, D. (2017). Early Cholecystectomy for Acute Cholecystitis in the Elderly Population: A Systematic Review and Meta-Analysis. *Dig Surg*, 34 (5): 371-379.
- [16] Yokota, Y., Tomimaru, Y., Noguchi, K., Noda, T., Hatano, H., Nagase, H. et al. (2019). Surgical outcomes of laparoscopic cholecystectomy for acute cholecystitis in elderly patients. *Asian J Endosc Surg*, 12 (2): 157-161.
- [17] Jensen, KK., Roth, NO., Krarup, PM., Bardram, L. (2019). Surgical management of acute cholecystitis in a nationwide Danish cohort. *Langenbecks Arch Surg*, 404 (5): 589-597.
- [18] Fukami, Y., Kurumiya, Y., Mizuno, K., Sekoguchi, E., Kobayashi, S. (2014). Cholecystectomy in octogenarians: be careful. *Updates Surg*, 66 (4): 265-268.
- [19] Bhandari, TR., Shahi, S., Bhandari, R., Poudel, R. (2017). Laparoscopic Cholecystectomy in the Elderly: An Experience at a Tertiary Care Hospital in Western Nepal. *Surg Res Pract*, 2017: 8204578.