

## THE RESULTS OF LAPAROSCOPIC AND OPEN CHOLECYSTECTOMY IN GERIATRIC PATIENTS

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- ✓ Between Oct. 1992 - Jul. 1994, 948 cholecystectomies were performed in our clinic. Of 948 cases, 190 (20.5%) cases were in the geriatric age group (>65 years old). Open cholecystectomy (OC) was performed on 136 patients and laparoscopic cholecystectomy (LC) on 54 patients. Results in each group were compared with each other with respect to operating time, hospitalization time, morbidity and mortality. Operating time was  $48.7 \pm 3.0$  minutes for the laparoscopic group compared with  $55.2 \pm 2.4$  minutes for the open cholecystectomy group and the difference was not significant statistically ( $p > 0.05$ ). Hospitalization in the LC group ( $1.4 \pm 0.8$  days) was significantly shorter than that of the open cholecystectomy group ( $5.2 \pm 0.3$  days) ( $p < 0.05$ ). Complications were encountered in 18 (13.2%) cases in the OC group, compared with only 3 (5.5%) cases in the LC group and this difference was also significant statistically ( $p < 0.05$ ). There was no mortality in either group.

Because of low complication rates and short hospitalization time and since there was not significant difference in operation time between the two methods, we consider that laparoscopic cholecystectomy can also be performed on the geriatric age group with confidence.

**Key words:** Geriatric patients, laparoscopic cholecystectomy

- ✓ **Geriatric Hastalarda Açık ve Laparoskopik Kolesistektomi Sonuçları**  
Ekim 1992 - Temmuz 1994 arasındaki dönemde kliniğimizde 948 kolesistektomi yapıldı. 948 olgu içerisinde 190 (%20.5) olgu geriatric yaş (65 yaşın üzerinde) grubundaydı. Bu grupta 136 olguya açık kolesistektomi, 54 olguya laparoskopik kolesistektomi yapıldı. Her gruptaki sonuçlar operasyon süresi, hospitalizasyon süresi, morbidite ve mortalite yönünden karşılaştırıldı. Operasyon süresi laparoskopik kolesistektomi grubunda  $55.2 \pm 2.4$  dk olup aradaki fark istatistiksel olarak anlamlı değildi ( $p > 0.05$ ). Laparoskopik kolesistektomi grubundaki hospitalizasyon süresi ( $1.4 \pm 0.8$  gün) açık kolesistektomi grubundakinden ( $5.2 \pm 0.3$  gün) anlamlı derecede kısa idi ( $p > 0.05$ ). Komplikasyon açık kolesistektomi grubunda 18 (%13.2), laparoskopik kolesistektomi grubunda 3 (%5.5) olup aradaki fark yine istatistiksel olarak anlamlı bulundu ( $p < 0.05$ ).

Sonuçta, düşük komplikasyon oranı, kısa hospitalizasyon süresi ve operasyon süresi bakımından iki grup arasında önemli fark olmaması nedeniyle laparoskopik kolesistektominin geriatric yaş grubundaki hastalara da güvenle uygulanabileceği kanısındayız.

**Anahtar kelimeler:** Geriatric hastalar, laparoskopik kolesistektomi.

### INTRODUCTION

In geriatric patient, it is necessary to pay attention to some biological features in order for certain necessary surgical interventions to be successful. Disorders in the cardiovascular, urinary, metabolic, respiratory

and central nervous systems of these patients and a decrease in regenerative capacity are important factors affecting morbidity and mortality. It has been reported that degenerative changes in the elderly, malnutrition, malignancy and chronic infections have

\*: Precedent as poster in Geriatric Congress, 3-5 May 1994, İzmir

increased morbidity and mortality five times (1-5). Thus, there has recently been a trend towards minimally invasive methods such as laparoscopic and endoscopic surgery on both the elderly and the younger patients.

The advantages of these methods are short hospitalization time, decreased post-operative pain and disorders, avoidance of incisional hernias, good pulmonary functions and shortened healing period, enabling patients for early and rapid return to full activity and occupation<sup>(3,6-11)</sup>.

Thus, we compared the results of both open and laparoscopic cholecystectomy performed on 190 geriatric patients in our clinic over a 2 year period in this work.

#### **PATIENTS AND METHODS**

Between Oct. 1992- Jul. 1994 948 cholecystectomies (370 LC; +578 OC) were performed at Tepecik SSK. Hospital, 2nd Surgical Clinic, İZMİR, TURKEY. 190 (20.5%) cases were in the geriatric (older than 65 years old) age group and LC was performed on 54 patients while OC on 136 patients in this group. Concurrent diseases were assessed for each group.

Cholelithiasis and biliary colic was the most common cause for operation. Symptomatic or asymptomatic and polyps of the gallbladder, cholelithiasis with diabetes were also operated. Acute cholecystitis, complicated cases and malignancies were excluded because the goal of the study is to determine the morbidity and mortality of elective cholecystectomy in the geriatric patients. Single dose of 3rd generation cephalosporins were used preoperatively for prophylaxis. Median vertical incision was the most common whereas paramedian and subcostal incisions were also used for laparotomy in OC. Zero degree telescope and just three 10 mm trocars were placed in supraumbilical, right par-

aural and left epigastric locations to perform LC.

Parameters such as operating time, post-operative hospitalization time, complications and mortality in both the OC and the LC groups were compared. Patients in the non geriatric age group were not assessed. Statistical analysis was made by the use of student-t test in the work group.

The results were analysed with respect to concurrent diseases, operating time, postop hospitalization time, complications and mortality.

#### **RESULTS**

The mean age was 66.9 for 190 patients and both sex and age distribution was similar in each group. Concurrent diseases were encountered in 124 (65.3%) cases; 40 (74%) in the LC group, 84 (61.8%) in the OC group. Out of concurrent diseases, hypertension and arteriosclerotic heart diseases were the most common. These were followed by diabetes mellitus and arrhythmia (Table I). Operating time was  $48.7 \pm 3.0$  minutes in the LC group,  $55.2 \pm 2.4$  minutes in the OC group and the difference was not statistically significant ( $t=1.4$ ,  $p>0.05$ ). Postoperative hospitalization time was  $1.4 \pm 0.8$  days in the LC group compared to  $5.2 \pm 0.3$  days in the OC group, showing a significantly shorter duration for the LC group ( $t=8.7$ ,  $p<0.05$ ) (Table III). There was no mortality in either group. Complications were divided in two groups as medical and surgical (Table II). Complications were encountered in only 3 (5.5%) cases in the LC group. All were bile leakages that recovered spontaneously. Whereas other complication such as ileus, wound infection, wound dehiscence, bile peritonitis and incisional hernia, were not encountered. On the other hand, there were 10 incisional hernie and 5 other complications in OC group (Table II). On the other hand,

**Table I.** Concurrent Diseases Encountered in Geriatric Patients.

Concurrent diseases	n= 190(%)	LC	OC
		n= 54 (%)	n= 136 (%)
Hypertension	34 (17.8)	6 (11.1)	28 (20.6)
ASHD	26 (13.6)	6 (11.1)	20 (14.7)
Arrythmia	11 (5.8)	1 (1.9)	10 (7.4)
Valvulopathies	11 (5.8)	5 (9.2)	6 (4.4)
DM	8 (4.2)	5 (9.2)	3 (2.2)
A. Pancreatit	8 (4.2)	1 (1.9)	7 (5.1)
COPD	6 (3.0)	4 (7.4)	2 (1.5)
Cirrhosis	2 (1.0)	2 (3.7)	- -
Uremia	3 (1.5)	1 (1.9)	2 (1.5)
Hyperthyroidism	1 (0.5)	1 (1.9)	- -
Anemia	1 (0.5)	1 (1.9)	- -
Others	13 (6.8)	7 (12.9)	6 (4.4)
<b>Total</b>	<b>124 (65.3%)</b>	<b>40 (74.0)</b>	<b>84 (61.8)</b>

ASHD : Arteriosclerotic heart disease

COPD : Chronic obstructive pulmonary disease

LC : Laparoscopic cholecystectomy

OP : Open cholecystectomy

the rate of complication was 13.2% in 18 cases in the OC group. As a result, the rate of complication was also statistically lower in the LC group ( $t=7.7$ ,  $p<0.05$ ). Moreover, there were no significant medical complications in the LC group; compared to 3 (2.2%) cases in the OC group. Furthermore, although local complications (ileus, wound infection, wound dehiscence, incisional hernias) were encountered in 15 (11.0%) cases in the OC group, they were in only 3 patients in the LC group (Table III).

## DISCUSSION

The first usage of laparoscopic methods dates back to the 1930's and since then, they have been used for diagnostic purposes in diseases of liver and in gynecology<sup>(8)</sup>. First performed by Mauret in France in 1987, LC was carried out in the USA during the latter part of 1988 by Mc Kernan and Saye and shortly thereafter by Reddick and Olsen<sup>(12)</sup>.

In the management of cholelithiasis, alternative methods to OC such as lithotripsy and dissolution therapy have been implemented. These methods have enjoyed limited success as well as having high rates of recurrences up to 60 percent<sup>(9,13)</sup>.

In reported LC series, low complication rates (2-7%) short hospitalisation time (1-2 days), rapid return to usual preoperative activities (7-10 days), no or very low rates of mortality (0.3%) and low conversion rate to OC (3-8.5%) have been noted<sup>(7-10,14-18)</sup>.

Generally, reported mortality for OC ranges between 0.5-1.8% for heterogeneous series<sup>(19,20,21)</sup>. Excellent results from current studies revealed 0.17-0.18% mortality rates although acute cholecystitis and common bile duct exploration (CBDE) were included<sup>(13,19,22)</sup>. When analyzed carefully; CBDE, acute and complicated cholecystitis, age especially with the impact of concurrent diseases and comorbid factors appear to be in-

**Table II.** Complications Encountered in Geriatric Patients Performed Laparoscopic Cholecystectomy and Open Cholecystectomy

Coplications	LC n= 54	OC n= 136
MEDICAL**	-	3 (2.2%)
SURGICAL	3 (5.5%)	15 (11.0%)
Ileus	-	1
Wound infection	-	1
Wound dehiscence	-	1
Bile leakage	3	1
Bile peritonitis	-	1
Post-op hernia	-	10
<b>Total</b>	<b>3(5.5%)</b>	<b>18 (13.2%)*</b>

\* : (t= 7.6, P &lt; 0.05)

OC : Open cholecystectomy

LC : Laparoscopic cholecystectomy

\*\* : Pneumonitis, thromboflebitis, urinay infections, coronary insufficiency, arrythmiae, uremia...)

**Table III.** Parametric changes in each geriatric group

Parametrrers	LC n= 54	OC n= 136	P
Concurrent illnes	47 (74.0%)	84 (61.8%)	NS
Operating time (Min)	48.7 ± 3.0	55.2 ± 2.4	t = 1.7 p>0.05
Post-op hospitalization (Day)	1.4 ± 0.8	5.2 ± 0.3	t = 8.7 p< 0.05
Complication	3 (5.5%)	18 (13.2%)	t = 7.6 p< 0.05
Mortality	0	0	
Conversion to OC	0	-	

Mean ± SE : Arteriosclerotic heart disease

OC : Open Cholecystectomy

LC : Laparoscopic cholecystectomy

NS : Not Significant

creasing mortality and morbidity several times<sup>(13,19-24)</sup>. In elective cases mortality is similar for younger and for healthy elderly population<sup>(19,22)</sup> proving that age itself alone is not a contraindication for anesthesia and surgery<sup>(4,5,13,17,19)</sup>. For acute and complicated cases mortality ranges between 0.6-14%<sup>(19-24)</sup>. The major cause for death in the elective group was cardiovascular disorders, especially myocardial infarction and cirrhosis of the liver<sup>(19-22)</sup>. Sepsis and multiple organ failure was the leading cause for death in the

emergency group<sup>(11,13,20,23,24)</sup>. Patients with cirrhosis should not undergo a cholecystectomy for asymptomatic gallstones because having a high mortality risk between 7,5-25%<sup>(22)</sup>.

Overall mortality rates for LC ranges between 0-0.2% and 0.4-0.6% specially for the elderly having similar causes for death<sup>(7-10,15-18)</sup>. Both in OC and LC groups, mortality rates for geriatric patients were somewhat higher than for the younger patients<sup>(10,13,17-22)</sup>.

LC has been associated with a slightly

higher incidence of serious technical complications than OC some of which have been responsible for patient deaths; such as bile duct and bowel injury, portal and retroperitoneal major vascular injury causing lethal bleeding<sup>(17)</sup>.

We have faced no mortality in our series of 190 patients who have been treated with OC and LC. All 190 patients were elective cases.

Morbidity in the LC group was 5.5% while it was 13.2% in the OC group. Morbidity in LC group was found to be significantly lower than that in OC group ( $t= 7.6, p<0.05$ ).

Reported morbidity rates in OC for geriatric patients ranges between 15-25%<sup>(19,21)</sup> while %15 for LC<sup>(10)</sup>. Major biliary duct injury reported in LC is less than 1%, usually between 0-0.5% and directly related with the operative experience. Institutions performing LC less than 100 reported a mean rate of 0.65% while experienced institutions over 100 operations did 0.4%<sup>(17)</sup>. We have no bile duct injury in our group. Intraoperative cholangiography was not used except few cases. None of the patients was converted to OC although a median conversion rate of 5% have been reported. In fact, difficulties in dissection and defining the anatomical structures in Calot's area rather than complications cause a higher conversion rate in geriatrics<sup>(10)</sup>.

It has been reported in the literature that post operative hospitalisation time was 7.2 days for elderly in OC<sup>(19)</sup> while LC was 1-3 days<sup>(10,12,17)</sup>. In the present study it happened a mean value of 5.2 days in OC and 1.2 days in LC group respectively ( $p<0.05$ ).

As a result, due to the absence of significant differences between these two methods in respect to operating time, we consider that LC can also be performed on geriatric patients. LC is a safe procedure and appears to be the treatment of choice for symptomatic

gallstones in geriatric patients as well as in younger when available.

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