

# Comparison between open and laparoscopic elective cholecystectomy in elderly, in a teaching hospital

## *Comparação entre colecistectomia eletiva aberta e laparoscópica em idosos, em um hospital escola*

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### A B S T R A C T

**Objective:** to analyze the differences in mortality rates, length of hospital stay, time of surgery and the conversion rate between elective open cholecystectomies (OC) and laparoscopic ones (LC) in elderly patients. **Methods:** we evaluated medical records of patients 65 years of age or older undergoing open or laparoscopic cholecystectomy at the Hospital Regional de Mato Grosso do Sul between January 2008 and December 2011. We excluded individuals operated in non-elective scenarios or who underwent intraoperative cholangiography. **Results:** we studied 113 patients, of whom 38.1% were submitted to the OC and 61.9%, to LC. Women accounted for 69% of patients and men, for 31%. The conversion rate was 2.9%. The mean age and duration of the procedure was 70.1 and 84 minutes, respectively, with no significant difference between OC and LC. Patients undergoing LC had shorter hospital stays (2.01 versus 2.95 days,  $p=0.0001$ ). We identified operative complications in six patients (14%) after OC and in nine (12%) after LC, with no statistical difference. **Conclusion:** there was no difference in morbidity and mortality when comparing OC with LC. The laparoscopic approach led to shorter hospital stay. Operative time did not differ between the two access routes. The conversion rate was similar to other studies.

**Key words:** Cholecystectomy. Cholecystectomy, Laparoscopic. Aged. Postoperative Complications.

### INTRODUCTION

Life expectancy has increased over the past decades. Contributing factors for this change include improvements in primary prevention and advances in medical care, technology and pharmaceutical industries. The traditional definition of the World Health Organization (WHO) considers elderly people aged 60 or older if they live in developing countries, and 65 years of age and over in developed ones. However, in order to allow direct comparisons with other articles (which mostly are made in developing countries), we used as a cutoff age of 65 years.

In Brazil, approximately 7.3% of the population is over 65 years of age. About 50% of women and 16% men, 70 years of age, have biliary calculi<sup>1</sup>, and symptomatic or complicated cholelithiasis is the most common indication for abdominal surgery in the elderly<sup>2,3</sup>. Historically, associated diseases and the anesthetic risk have been an obstacle to perform interventions in the elderly. However, recent in anesthetic, surgical and postoperative care innovations made such patients candidates for surgery, even in the ninth and tenth decades of life<sup>4-7</sup>.

Laparoscopic cholecystectomy provides a safe alternative for symptomatic cholelithiasis or cholecystitis in elderly patients, and the benefits, lower morbidity and

reduced hospital stay, were demonstrated in prospective studies and meta-analyses<sup>8-11</sup>.

In the beginning of the minimally invasive surgery era, advanced age was a relative contraindication to the laparoscopic procedure. Despite recent evidence showing that the LC is feasible in elderly patients, including over 70 or 80 years of age, there are few studies in our country on the subject.

The aim of this study was to compare the conventional cholecystectomy with the laparoscopic, electively performed in elderly patients in a teaching hospital, a reference in the state, especially in relation to morbidity, length of stay, operative time and conversion rate to open surgery.

### METHODS

We searched The SAME database (Medical Records Section) of the Hospital Regional de Mato Grosso do Sul - Rosa Pedrossian (HRMS) for the medical records of patients aged over 65 years who underwent conventional and laparoscopic cholecystectomy between January 2008 and December 2011. We included all patients admitted for elective surgery, and excluded patients operated on a non-

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elective setting. Patients who underwent intraoperative cholangiography were also excluded.

The variables studied were age, gender, cardiovascular surgical risk, duration of surgery, accidents and intraoperative complications, postoperative complications, length of stay and conversion to open surgery.

Nominal variables were compared using the chi-square test or Fisher's exact test, as appropriate. Ordinal variables were compared using the Mann-Whitney test, with a p-value <0.05 accepted as significant.

## RESULTS

Between January 1, 2008 and December 31, 2011 113 elective cholecystectomy without cholangiography were performed in patients aged over 65 years for symptomatic cholelithiasis, of which 43 (38.1%) corresponded to open cholecystectomy (OC) and 70 (61.9%), laparoscopic cholecystectomy (LC). Regarding gender, 78 (69%) patients were female and 35 (31%) were men.

The conversion from laparoscopic surgery to open one was necessary in two (2.9%) cases, one relating to the difficulty in identifying the Calot triangle structures, and the second converted at the end of the procedure, after removal of the gallbladder, to carry out an of an intestinal puncture lesion perceived at the end of the procedure.

Overall, the average age, length of stay and duration of surgery was 70.1 years (65-91), 2.3 days (1-9) and 84 minutes (30-180), respectively. When we stratified the groups by the procedure (open and laparoscopic), there was no difference in mean age (70.2 years OC versus 70 LC, p=0.873) or cardiovascular surgical risk (p=0.146). The duration of the procedure was also not different between procedures, with an average of 76±27 minutes (30-150) for OC and 88±31 minutes (40-180) for LC (p=0.582).

The length of stay was shorter in patients undergoing LC, averaging 2.01±0.9 days, while the OC group stayed for 2.95±1.5 days (p=0.0001). The distribution of hospital stay between the groups is shown in figure 1.

Postoperative complications were identified in six (14%) patients after OC and in nine (12%) after LC, with no statistical difference between the two groups (p=0.8675). In LC there was one (1.4%) case of desaturation, corrected with changes in the mechanical ventilator, and one (1.4%) case of accidental damage of the small intestine, corrected during the procedure. The frequency of complications is shown in table 1 (two patients in the OC group and one of the LC group had two complications simultaneously).

## DISCUSSION

Laparoscopic cholecystectomy (LC) causes less pain after surgery, shorter hospital stay, faster return to

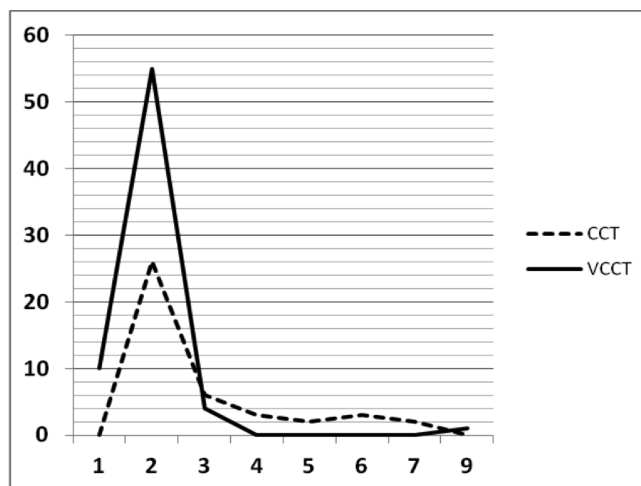


Figure 1 - Distribution of patients' hospital stay.

work activities and a lower metabolic-endocrine-immune response to trauma (REMIT)<sup>12-15</sup>. This procedure has been the gold standard for elective cholecystectomy for the general population in the last two decades<sup>16</sup>. Elderly patients with biliary tract disease have higher rates of complications, which explains their higher mortality.

LC could increase morbidity and mortality in the elderly, many of which have limited cardiopulmonary reserve. Although Behrman *et al.*<sup>17</sup> have not shown a higher incidence of hypotension and hypercarbia during the procedure in their series, they still recommend that LC be performed with caution in the elderly population, with a low threshold for conversion and considering open cholecystectomy (OC) as the initial indication.

However, LC has demonstrated results superior to OC in elderly patients with symptomatic cholelithiasis in terms of morbidity and hospital stay<sup>18</sup>. There is variability in global practices for the treatment of this disease in the elderly, and social, physiological and pathological

Table 1 - Postoperative complications.

Complications	OC (n=43)	LC (n=70)
Wound Seroma	3 (7%)	2 (2.9%)
Incisional hernia	3 (7%)	2 (2.9%)
Wound Hematoma	1 (2.3%)	1 (1.4%)
Surgical site infection	1 (2.3%)	1 (1.4%)
"Benign" biliary fistula	0 (0%)	1 (1.4%)
Cystic duct lesion	0 (0%)	1 (1.4%)
Desaturation	0 (0%)	1 (1.4%)
Small bowel lesion	0 (0%)	1 (1.4%)
Total	6 (14%)	9 (12.9%)

Source: SAME (Medical Records Section) database, Hospital Regional de Mato Grosso do Sul – Rosa Pedrossian (HRMS) – jan 2008-dec 2011.

characteristics of the elderly population also differ greatly between regions. In Brazil, there are few studies on the subject<sup>19-21</sup>. When one considers the population we studied (patients from SUS - National Health System) and procedures performed in the public system teaching hospitals, researches are even scarcer.

There were complications in 13.3% of patients, without differences in morbidity rates between groups, which differs from similar studies<sup>8,22</sup>, in which LC resulted in less morbidity. We believe that this divergence is due to under-reporting of minor complications. The conversion rate to open surgery in our series was 2.9%, compared with 2.5 to 14% in LC other series studying elective for symptomatic cholelithiasis in the elderly<sup>4,17-26</sup>, being similar to the conversion rate in young patients<sup>4,27,28</sup>, unlike Qasaimeh *et al.*<sup>29</sup>, who reported higher conversion rates in the elderly.

Many publications have reported that LC is associated with shorter hospital stay<sup>8,22,30</sup>. We also observed this result, with average length of stay of 2.01 days for LC, versus 2.95 days for OC.

As in other studies<sup>17,18</sup>, LC did not prolong surgical time, averaging 12 minutes greater than OC, with no statistical significance. We deem this result satisfactory, since the procedures are performed mostly by resident physicians, with less experience in laparoscopy.

There were no deaths in our study, as reported by Caglià<sup>31</sup> in his series of 50 patients.

We emphasize that possible biases related to the retrospective study and the small number of patients involved must be taken into account when interpreting the results.

In conclusion, elective laparoscopic cholecystectomy is a safe procedure in elderly patients, with no increased risk of complications compared with the open procedure. The recovery is faster and the hospital stay, shorter. It is important to correctly assess the cardiovascular surgical risk, since this group of patients have lower vital reserve, being more sensitive to surgical trauma. In the era of laparoscopic surgery, with increasing experience of surgeons and the advent of new technologies, old age is not a contraindication for LC, and there are no major complications of this surgery when electively performed.

## R E S U M O

**Objetivo:** analisar as diferenças nas taxas de morbimortalidade, o tempo de permanência hospitalar, o tempo de cirurgia e a taxa de conversão entre colecistectomia aberta (CA) e laparoscópica (CL) eletiva, em pacientes idosos. **Métodos:** pesquisa dos prontuários dos pacientes com 65 anos de idade ou mais, submetidos à colecistectomia aberta ou laparoscópica no Hospital Regional de Mato Grosso do Sul entre janeiro de 2008 e dezembro de 2011. Foram excluídos os operados em caráter não eletivo ou que realizaram colangiografia intraoperatória. **Resultados:** foram estudados 113 pacientes, 38,1% dos quais submetidos à CA e 61,9% à CL. Mulheres corresponderam a 69% dos pacientes e homens, 31%. A taxa de conversão foi 2,9%. A média de idade e duração da operação foram 70,1 anos e 84 minutos, respectivamente, sem diferença significativa entre CA e CL. Os pacientes submetidos à CL tiveram menor tempo de internação (2,01 x 2,95 dias,  $p=0,0001$ ). Complicações operatórias foram identificadas em seis (14%) pacientes após CA, e em nove (12%) pacientes após CL, sem diferença estatística. **Conclusão:** Não houve diferença de morbidade e mortalidade quando comparadas a CA e CL. A via laparoscópica propiciou menor tempo de hospitalização. O tempo de operação não diferiu entre as duas vias de acesso. A taxa de conversão foi semelhante a outros estudos.

**Descritores:** Colecistectomia. Colecistectomia Laparoscópica. Idoso. Complicações Pós-Operatórias.

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