

**DIFFERENCES IN  
PROCEDURAL  
CHARACTER: NON-  
ONCOLOGICAL  
CHOLECISTOPATIES  
SUBMITTED TO  
VIDEOLAPAROSCOPIC  
AND OPEN TECHNIQUE  
BETWEEN 2015-2020 IN  
THE STATE OF BAHIA**

---

***Clarissa Vitoria Santos***

Metropolitan Union for the Development of  
Education and Culture (UNIME)  
Lauro de Freitas – BA

***Juliane Silva Schmitt***

Metropolitan Union for the Development of  
Education and Culture (UNIME)  
Lauro de Freitas – BA

***Lourival Duarte De Almeida Neto***

Metropolitan Union for the Development of  
Education and Culture (UNIME)  
Lauro de Freitas – BA

***Manoel Januário dos Reis Neto***

Metropolitan Union for the Development of  
Education and Culture (UNIME)  
Lauro de Freitas – BA

***Saulo Souza Silva***

Metropolitan Union for the Development of  
Education and Culture (UNIME)  
Lauro de Freitas – BA

All content in this magazine is  
licensed under a Creative Com-  
mons Attribution License. Attri-  
bution-Non-Commercial-Non-  
Derivatives 4.0 International (CC  
BY-NC-ND 4.0).



**Abstract: Introduction:** Cholecystopathies are known as an inflammatory, colonic or lithiasic condition, with a chronic or acute etiology, resulting from a dysfunction in the gallbladder. The treatment for both cases of cholecystopathies consists of cholecystectomy, that is, total removal of the gallbladder. **Objective:** To analyze the difference in the character of the procedure for non-cancer cholecystopathies submitted to videolaparoscopic and open technique between the years 2015 to 2020 in the state of Bahia. **Methodology:** This is an exploratory descriptive study, whose data were obtained via TabWin software provided free of charge by the Informatics Department of the Unified Health System (DATASUS - UNIFIED SAUDE SYSTEM). In addition, TABNET Health Information data were used, framed in health care, which were researched Hospital Production data (SIH/SUS - UNIFIED HEALTH SYSTEM), in the period from 2015 to 2020. **Results:** A reduction The risk of mortality was observed when comparing the surgical nature, but mortality must not be a factor for decision-making when reporting in this context. When the “elective” and “urgency” variables are related in deaths due to cholecystostomy and videolaparoscopic cholecystostomy procedures, in the background, the difference in numbers is presented, with a prevalence in the performance of procedures with the “urgency” variable index. Regarding the age group, there was a decrease in the performance of procedures with increasing age, with the age group between 35-39 years being the most prevalent in both cases. These data are in disagreement with what is reported in the literature, where the prevalence of indication and performance of procedures for surgical removal of the gallbladder increased with age. **Conclusion:** It is possible to observe with the study the differences present, when compared to the technique for cholecystectomy, being

it open or videolaparoscopic. It was possible to observe the importance of carrying out screening for pathologies of biliary origin.

**Keywords:** Cholecystectomy, Laparoscopy, Surgery.

## INTRODUCTION

Historically, since the 19th century, there has been an evolution in the surgical process to resolve extrahepatic obstruction. In 1880, Alexandre von Winiwarter performed the first bilioenteric anastomosis in a patient who had choledocholithiasis, and was therefore submitted to cholecystectomy.<sup>9</sup>

From the 20th century onwards, imaging tests have been used to be a diagnostic and even therapeutic measure in patients with diseases involving the wall and biliary tract. Cholecystopathies are known as an inflammatory, colonic or lithiasic condition, with a chronic or acute etiology, resulting from a dysfunction in the gallbladder. The treatment for both cases of cholecystopathies consists of cholecystectomy, that is, total removal of the gallbladder. Thus, it is possible to use the open technique, with a Kocher incision, located in the right subcostal region, or with a transverse, paramedian or median subcostal incision. In the videolaparoscopic technique, the trocars are inserted, in an umbilical window, and two or three more incisions can be made, expanding the visualization of the anatomical landmarks for the surgery.<sup>9</sup>

In the United States, the prevalence of gallstones in adults ranges from 15 to 20%. The age at which the incidence begins in the country varies exponentially from 35 to 55 years, with a gradual increase above 55 years.<sup>2</sup> In Brazil, in a study evaluating the incidence of cholelithiasis, 10.3% of the patients analyzed had the pathology, in one total of 2,355 necropsies performed. Of these, the prevalent age was around 80 years old, with a predominance of the white race.<sup>5</sup>

Videolaparoscopic cholecystectomy has been the gold standard in relation to the open surgical technique for the treatment of cholecystopathies in general, due to better recovery of the patient's clinical condition, being less invasive, generating less scarring and presenting a lower risk of surgical infections and surgical posts. This technique has been used with about four openings, in a simplified, efficient and low-cost way.<sup>1</sup>

## METHODOLOGY

This is an exploratory descriptive study, whose data were obtained via TabWin software through consultation with the Information Technology Department of the Unified Health System (DATASUS - UNIFIED SAUDE SYSTEM). In addition, TABNET Health Information data were used, framed in health care, which were researched Hospital Production data (SIH/SUS - UNIFIED HEALTH SYSTEM), in the period of years between 2015 and 2020. The present study Its target population is patients undergoing surgical techniques for cholecystectomy, being framed in non-oncologic surgeries, which were exclusion criteria from the present study, in the state of Bahia, covering the different population characteristics of the state. The present study evaluated the variables: elective or emergency, gender, male and female, race, white, black, brown, yellow, indigenous and data without information on race. The cut-off age was between 30 and 64 years, other age cuts being discarded. The construction of tables and graphs was used the Microsoft Excel Program (Version 2013), using absolute numbers, performing a descriptive statistical analysis, to identify the main characteristics that differentiate the surgical techniques.

## RESULTS

To evaluate the aforementioned surgical technique, it shows the increase in the

“elective” variable for cholecystectomy with a number of patients of 42,217 against 7,410 for the “urgency” variable for the same technique, as shown in table 1. It is observed that the values indicate the number of hospitalizations for procedures performed for laparoscopic cholecystectomy and cholecystectomy procedures. The analysis shows that of the 70,659 patients who were hospitalized to undergo the cholecystectomy procedure, 59.74% of them were hospitalized to undergo the procedure in an elective laparotomy, followed by 21.15% who underwent elective videolaparoscopy, soon then came 10.48% who underwent emergency laparotomy technique and finally those patients who underwent urgent procedure, however, through videolaparoscopy, totaling 8.61%.

When relating the variables “elective” and “urgency” in deaths from procedures performed in laparoscopic cholecystectomy and cholecystectomy, as shown in the data in table 2. In the elective character, 94% of deaths were in the performance of cholecystectomies and 6% in laparoscopic cholecystectomy, in a total of 36 deaths from elective procedures. As a matter of urgency, 88% of deaths in cholecystectomies were obtained, and 12% when the laparoscopic technique was used, in a total of 111 deaths.

In the case of the mortality coefficient, shown in table 03, in the case of cholecystectomies performed, in the elective character, 0.08% of the patients died, and when urgent, about 1.3% of the patients died. In cases of laparoscopic cholecystectomy, 0.01% of the patients died, and in cases of urgency, 0.21%.

In the analysis of the gender variable, the data obtained from admissions for cholecystectomy and laparoscopic cholecystectomy was higher in females (Table 4), with 59,921 admissions. Noting that about 69.78% of female patients went

<i>HOSPITALIZATION FOR PROCEDURES PERFORMED</i>	<i>ELECTIVE</i>		<i>URGENCY</i>		<i>TOTAL</i>	
	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>
<i>CHOLECYSTECTOMY</i>	42.217	73,85%	7.410	54,9%	49.627	70,2%
<i>VIDEOLAPAROSCOPIC CHOLECYSTECTOMY</i>	14.946	26,15%	6.086	45,1%	21.032	29,8%
<i>TOTAL</i>	57.163	100%	13.496	100%	70.659	100%

Table 1 - Number of admissions per procedure performed

Source: Ministry of Health - SUS Hospital Information System - UNIFIED HEALTH SYSTEM (SIH/SUS - UNIFIED HEALTH SYSTEM)

<i>DEATHS FROM PROCEDURES PERFORMED</i>	<i>ELECTIVE</i>		<i>URGENCY</i>		<i>TOTAL</i>	
	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>
<i>CHOLECYSTECTOMY</i>	34	94%	98	88%	132	89,8%
<i>VIDEOLAPAROSCOPIC CHOLECYSTECTOMY</i>	2	6%	13	12%	15	10,2%
<i>TOTAL</i>	36	100%	111	100%	147	100%

Table 2: Deaths from procedures performed, elective and urgent character for cholecystectomies

Source: Ministry of Health - SUS Hospital Information System - UNIFIED HEALTH SYSTEM (SIH/SUS - UNIFIED HEALTH SYSTEM)

<i>DEATHS BY PROCEDURE: CHOLECISTECTOMY / HOSPITALIZATION</i>	<i>ELECTIVE</i>		<i>URGENCY</i>		<i>TOTAL</i>	
	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>
<i>DEATHS IN CHOLECYSTECTOMY</i>	34	94%	98	88%	132	89,8%
<i>TOTAL HOSPITALIZATIONS FOR CHOLECYSTECTOMY</i>	42.217	73,85%	7.410	54,9%	49.627	70,2%
<i>HOSPITAL MORTALITY COEFFICIENT IN CHOLECISTECTOMY</i>	34	0,08%	98	1,3%	132	0,26%
<i>DEATHS IN VIDEOLAPAROSCOPIC CHOLECYSTECTOMY</i>	2	6%	13	12%	15	10,2%
<i>TOTAL ADMISSIONS FOR VIDEOLAPAROSCOPIC CHOLECYSTECTOMY</i>	14.946	26,15%	6.086	45,1%	21.032	29,8%
<i>HOSPITAL MORTALITY COEFFICIENT IN CHOLECISTECTOMY VIDEOLAPAROSCOPIC</i>	2	0,01%	13	0,21%	15	0,07%

Table 3: Hospital mortality coefficient for cholecystectomy (deaths/admissions)

Source: Ministry of Health - SUS Hospital Information System - UNIFIED HEALTH SYSTEM (SIH/SUS - UNIFIED HEALTH SYSTEM)

<i>ADMISSIONS BY GENDER</i>	<i>CHOLECYSTECTOMY</i>		<i>CHOLECYSTECTOMY VIDEOLAPAROSCOPIC</i>	
<i>MALE</i>	7811	72,74%	2927	27,26%
<i>FEMALE</i>	41816	69,78%	18105	30,22%

Table 4: Hospitalizations by sex, comparison of laparoscopic cholecystectomy and cholecystectomy

Source: Ministry of Health - SUS Hospital Information System - UNIFIED HEALTH SYSTEM (SIH/SUS - UNIFIED HEALTH SYSTEM)

through the cholecystectomy procedure, while 30.22% of hospitalized patients correspond to those who went through the laparoscopic cholecystectomy procedure. On the other hand, males presented the data of 10,738 hospitalizations in the same period, with 72.74% of the patients undergoing cholecystectomy, while 27.26% of the patients corresponded to the laparoscopic cholecystectomy procedure.

Table 5 shows systematized indicators on admissions performed during the study period by color/race for cholecystectomy and laparoscopic cholecystectomy procedures. The ethnicity analysis shows that of the 49,627 patients who underwent the cholecystectomy procedure, 56.09% are mixed race, followed by 6.87% white and 3.35% black. While from the total of 21,032 patients who underwent laparoscopic cholecystectomy procedure, 44.77% are brown, followed by 6.55% black and 5.75% white.

Finally, analyzing table 6, the data referring to the total of procedures performed between 2015 and 2020 distributed by age group. Of a total of 35,225 cholecystectomies performed, 17.55% were of patients aged between 35-39 years, being the age group with the highest number of patients undergoing surgery. The age group with the lowest percentage of procedures performed was 60-64 years old, with 10.03%. Regarding the total of 15,120 videolaparoscopic cholecystectomies performed in this period, 17.52% were from patients aged between 35-39 years, being the age group with the most patients undergoing the surgical technique, on the other hand, the age group with the lowest number of cases, it occurred in a patient between 60-64 years of age, reaching 10.23%.

## DISCUSSION

In 1882, Carl Langenbuch performed the first open cholecystectomy, which agreed

with the theory that the gallbladder must be removed, not because of the presence of stones, but because it was “sick”. From then on, this technique used was popularized through large incisions. The first laparoscopic cholecystectomy (LC) was performed in 1985 by Erich Mühe in Böblingen, Germany, and became the main dominant process in the treatment of cholecystitis in the late 1980s.<sup>8</sup>

Biliary disease is a global health problem. In this study, the number of cholecystectomy performed in the analyzed period still exerts a significant prevalence over laparoscopic cholecystectomy, which is possibly explained by the notorious inequality in the distribution of equipment, in addition to the scarce offer of services related to the procedure, where the most advanced techniques are still it is limited to some regions, especially the north and northeast regions, where most of the municipalities do not enjoy the technology or even a qualified professional for the execution. On the other hand, this is not what is observed in the private sector in Brazil, which shows a predominance of the use of less invasive techniques, shown in tables 2 and 3.<sup>10</sup>

The mortality coefficient was a factor analyzed in table 03, where a reduction is observed when compared to the mortality rate of the elective and urgent nature, using the two techniques as a basis, either open or by video. According to a study published in the Brazilian Archives of Digestive Surgery, with the variables of the “elective” and “urgency” types, it demonstrated that there is a reduction in the risk of mortality, which suggests that mortality must not be a factor for decision-making, even being of clinical importance, reported in this context.<sup>2</sup>

Table 1 shows the indicators systematized according to the number of admissions followed by the type of approach chosen to perform the procedure. It is observed that of the total patients, most of them were submitted

ADMISSIONS BY COLOR/RACE	CHOLECYSTECTOMY		CHOLECYSTECTOMY VIDEOLAPAROSCOPIC	
	N	%	N	%
WHITE	3458	6,87%	1208	5,75%
BLACK	1663	3,35%	1377	6,55%
BROWN	27838	59,09%	9417	44,77%
YELLOW	1639	3,25%	557	2,65%
INDIGENOUS	14	0,02%	3	0,01%
NO INFORMATION	15015	29,8%	8470	40,3%

Table 5: Admissions by Color/Race for cholecystectomies

Source: Ministry of Health – SUS Hospital Information System - UNIFIED HEALTH SYSTEM (SIH/SUS - UNIFIED HEALTH SYSTEM)

ADMISSIONS BY AGE GROUP	CHOLECYSTECTOMY	CHOLECYSTECTOMY VIDEOLAPAROSCOPIC
30-34 YEARS	5681	2376
35-39 YEARS	6184	2650
40-44 YEARS	5537	2428
45-49 YEARS	5113	2147
50-54 YEARS	4883	2060
55-59 YEARS	4292	1911
60-64 YEARS	3535	1548

Table 6: Admissions by age group for cholecystectomies

Source: Ministry of Health – Unified Health System Hospital Information System (SIH/SUS - SISTEMA UNIFIED DE SAUDE)

to hospitalization to perform the laparotomic surgical technique electively. According to RUBERT, the comparison between elective open and laparoscopic cholecystectomy in the elderly, in a teaching hospital “There was no difference in morbidity and mortality when compared to AC (open cholecystectomy) and CL (laparoscopic cholecystectomy). The laparoscopic approach provided a shorter hospital stay. The operating time did not differ between the two access routes.”<sup>8</sup>

When comparing the gender variable, the difference between the number of hospitalizations for females is visible when compared to males. Which indicates that males have fewer hospitalizations. This is justified in the literature, as shown by the publication of the Revista do Colégio de Cirurgiões do Brasil, which demonstrates in its publication relating gender to postoperative complications, with male gender being a likely risk factor for complications in cholecystectomies.<sup>3</sup> This results in an increase in surgery time, need for drain placement, and high mortality, thus justifying a decrease in the number of surgical cases shown in table 3.

Predictive factors such as gender are consistent with the analyzed bibliographies, where there is a significant prevalence of hospitalizations in female patients compared to males. A divergent data is observed in the age factor, where studies at national level show a prevalence in patients aged between 40 and 49 years, while in patients in the state of Bahia, the predominance of hospitalizations is observed in patients aged between 35 and 39 years.<sup>9</sup> Also considering admissions by race, it is predominant in brown individuals, which is consistent with the statement of Brazilians, where more than 60% of the population consider themselves brown, especially in the northeast region of Brazil.

When it comes to diseases related to the use of anesthesia, it has become taboo when

interventions in the elderly are reported, due to the anesthetic risk. With new technologies and improved techniques, elderly patients have become candidates for surgical indications, even those who are already over 60 years old.<sup>9</sup> Regarding the age group, a decrease in the number of surgical procedures performed with increasing age is shown, with the age group between 35-39 years being the most prevalent in both cases. These data are in disagreement with what is reported in the literature, where increasing age characterizes a predictor of severity for the indication and performance of procedures for surgical removal of the gallbladder, which demonstrates that the increase in age in patients aged over 40 years is related to increased risk for conversion from the cholecystectomy technique.<sup>7</sup>

## CONCLUSION

The present study showed the importance of screening for pathologies of biliary origin, where elective procedures have a lower mortality rate when compared to emergency procedures, even though this factor is not a predictor for choosing the type of procedure. Therefore, variables such as sex, color and age have descriptive differences, having epidemiological importance in light of the surgical procedures analyzed in this study.

Furthermore, the study demonstrates the importance of knowledge, bringing a comparison of techniques, listing the main quantitative variables found in the Ministry of Health's database. Thus, making known the main techniques used to treat the disease, and addressing the factors that influence the surgical procedure.

## REFERENCES

1. ABAID, Rafael Antoniazzi; CECCONELLO, Ivan; ZILBERSTEIN, Bruno. Colectistomia videolaparoscópica simplificada com duas incisões. **ABCD, Arquivo Brasileiro de Cirurgia Digestiva**, São Paulo, v. 27, n. 2, p. 154-156, 2014. Acesso em: 25 set. 2019
2. FELICIO, Saulo José Oliveira et al. MORTALIDADE DA COLECISTECTOMIA VIDEOLAPAROSCÓPICA DE URGÊNCIA VERSUS - SISTEMA UNIFIED DE SAUDE OPERAÇÃO ELETIVA PARA COLECISTITE AGUDA. **ABCD, arq. bras. cir. dig.**, São Paulo, v. 30, n. 1, p. 47-50, Mar. 2017. Available from <[http://www.scielo.br/scielo.php?script=sci\\_arttext&pid=S0102-67202017000100047&lng=en&nrm=iso](http://www.scielo.br/scielo.php?script=sci_arttext&pid=S0102-67202017000100047&lng=en&nrm=iso)>. access on 16 Oct. 2020
3. HANGUI, Roberto Mariano Gómez et al. Complicações pós-operatórias de colecistectomias: análise comparativa em relação ao sexo. **Rev. Col. Bras. Cir.**, Rio de Janeiro, v. 31, n. 1, p. 57-63, fev. 2004. Disponível em <[http://www.scielo.br/scielo.php?script=sci\\_arttext&pid=S0100-69912004000100011&lng=pt&nrm=iso](http://www.scielo.br/scielo.php?script=sci_arttext&pid=S0100-69912004000100011&lng=pt&nrm=iso)>. acessos em 16 out. 2020.
4. HERMMAN, Robert E. The spectrum of biliary stone disease. **Annual Meeting of the Society for Surgery**. n 158, p.171-3, 1989. Acesso em: 08 ago. 2019
5. MINISTÉRIO DA SAÚDE – Sistema de Informações Hospitalares do SUS - SISTEMA UNIFIED DE SAUDE (SIH/SUS - SISTEMA UNIFIED DE SAUDE); <<http://tabnet.dataSUS - Sistema UNIFIED de Saude.gov.br/cgi/deftohtm.exe?sih/cnv/qiBA.def>> Acesso em: 01 de setembro de 2020.
6. MANTOVANI, Mario; LEAL, Raquel Franco; FONTELLES, Mauro José. Incidência de colelitíase em necropsias realizadas em hospital universitário no município de Campinas-SP. **Rev. Col. Bras. Cir.**, Rio de Janeiro, v. 28, n. 4, p. 259-263, Aug. 2001. Acesso em: 08 ago. 2019
7. NUNES Emeline Caldana, ROSA Roger dos Santos, BORDIN Ronaldo. HOSPITALIZATIONS FOR CHOLECYSTITIS AND CHOLELITHIASIS IN THE STATE OF RIO GRANDE DO SUL, BRAZIL. **ABCD, arq. bras. cir. dig.** [Internet]. 2016 June [cited 2020 Oct 02]; 29(2): 77-80. Available from: <[http://www.scielo.br/scielo.php?script=sci\\_arttext&pid=S0102->](http://www.scielo.br/scielo.php?script=sci_arttext&pid=S0102->)>.
8. RUBERT, Cássio Padilha; HIGA, Roberta Alves; FARIAS, Fabiano Vilas Boas. Comparação entre colecistectomia eletiva aberta e laparoscópica em idosos, em um hospital escola. **Rev. Col. Bras. Cir.**, Rio de Janeiro, v. 43, n. 1, p. 2-5, Feb. 2016. Available from <[http://www.scielo.br/scielo.php?script=sci\\_arttext&pid=S0100-69912016000100002&lng=en&nrm=iso](http://www.scielo.br/scielo.php?script=sci_arttext&pid=S0100-69912016000100002&lng=en&nrm=iso)>.
9. SABINSTON, tratado de cirurgia / Courtney M. Townsend. (et al.); (tradução Débora Rodrigues Fonseca ... et ai.). - Rio de Janeiro: Elsevier, 2010.
10. TAKI-ELDIN, Ahmed; BADAWY, Abd-Elnaser. RESULTADO DA COLECISTECTOMIA LAPAROSCÓPICA EM PACIENTES COM DOENÇA DE GALLSTONE EM UM HOSPITAL DE ASSISTÊNCIA DE NÍVEL SECUNDÁRIO. **ABCD, arq. sutiás cir. escavação.**, São Paulo, v. 31, n. 1, e1347, 2018. Disponível em <[http://www.scielo.br/scielo.php?script=sci\\_arttext&pid=S0102-67202018000100308&lng=en&nrm=iso](http://www.scielo.br/scielo.php?script=sci_arttext&pid=S0102-67202018000100308&lng=en&nrm=iso)>. acesso em 29 de outubro de 2020. Epub 21 de junho de 2018.