Volume 3, Issue 3, March 2025 ISSN (E): 2938-3765

# LOGIT – MODEL OF RELATIVE PROBABILITY OF THE PRESENCE OF CHOLELITHIASIS IN THE POPULATION OF GERONTOLOGICAL AGE OF THE FERGANA VALLEY (BASED ON THE RESULTS OF LOGISTIC REGRESSION)

Mamasaliev N. S.,
Salakhidinov S. Z.,
Mamasaliev Z. N.,
Usmonov B. U.
Andijan State Medical Institute, Uzbekistan

**Abstract**
The article presents modern, foreign and domestic data on the problem of epidemiology, prevention and treatment of cholelithiasis (gallstone disease). The analysis of population studies and preventive programs forcholelithiasisin the population of the gerontological and geriatric group is carried out. The article discusses modern recommendations for the use of screening, various types of preventive studies, conservative and surgical methods of treatment of cholelithiasis.

**Keywords**: Cholelithiasis, epidemiology, prevention, pharmaco-epidemiology, risk factors, geriatric features of early detection and treatment of cholelithiasis.

## INTRODUCTION

**The aim of the study** is to study the prevalence, pharmacoepidemiology of cholelithiasis and its main risk factors among the male and female unorganized population of the gerontological group of the Fergana Valley to enable scientifically based planning and optimization of early diagnosis, prevention and treatment of this disease.

## Materials and Methods

The object of the study The sample included a contingent of 4,500 individuals from the gerontological age population, formed using random number tables based on the nominal electoral lists of men and women in three regions of the Fergana Valley; as well as 779 patients with cholelithiasis who were undergoing inpatient treatment in the regional multidisciplinary hospitals of Andijan, Namangan and Fergana (for VEN analysis).

**Subject of the research** There were results of general clinical and biochemical blood tests, a survey, physical, instrumental and pharmacoepidemiological monitoring; as well as the method of “daily nutrition reproduction” adapted to the peculiarities of Uzbek cuisine.



Web of Medicine: Journal of Medicine, Practice and Nursing
webofjournals.com/index.php/5

Web of Medicine: Journal of Medicine, Practice and Nursing
webofjournals.com/index.php/5

**Research Methods**

To solve the set tasks, epidemiological, clinical, laboratory, biochemical, instrumental, pharmacoepidemiological and statistical research methods were used, as well as the "daily nutrition reproduction" method.

**Results and Discussion**

The existing epidemiological studies state that gallstone disease and its risk factors have different prevalence in different regions of the world. Of interest is the analysis of the comparative assessment of the degree of connection between gallstone disease of gerontological age (≥ 60 – 90 years) in the Fergana Valley.

For this purpose, the coefficients of association were measured based on the results of logistic regression and a logit model of the relative probability of having gallstone disease in the population aged ≥ 60–90 years in the Fergana Valley was developed (Table 1). For this purpose, the following were calculated and used: 1) B – a coefficient that shows the influence of each risk factor on the development of gallstone disease; 2) StD – the standard error, which indicates the degree of uncertainty in the estimate of the B coefficient; 3) Wald (Wald Chi – Square Statistic) – the higher the Wald value, the more significant the variable (risk factor); 4) P – significance: the probability that the influence of variable B (risk factor for gallstone disease) is statistically insignificant; 5) E + p (B) – odds ratio: an indicator of how a change in the risk factor by 1 unit changes the probability of an event (gallbladder disease); 6) 95% confidence interval E+p (B): if the interval includes 1, then the variable is statistically insignificant.

Table 1 shows that the highest prevalence of cholelithiasis is observed with liver cirrhosis (B = 0.584; StD = 0.213; Wald = 7.504; ExpB = 1.794; 95% CI = 1.181 – 2.725; P<0.01), overweight (B = 0.256; StD = 0.150; Wald = 2.906; Exp (B) = 1.291; 95% CI = 0.962 – 1.733; P<0.05), obesity (B = 0.252; StD = 0.133; Wald = 3.584; Exp (B) = 1.287; 95% CI = 0.991 – 1.671; P<0.05). P<0.05), use of antihypertensive agents (B = 0.234; StD = 0.074; Wald = 9.044; Exp (B) = 1.264; 95% CI = 1.085 – 1.472; P<0.01) and a burdened heredity (B = 0.188; StD = 0.087; Wald = 4.612; Exp (B) = 1.206; 95% CI = 1.017 – 1.432; P<0.05).

**Table 1 Logit model of the relative probability of the presence of cholelithiasis in the gerontological population of the Fergana Valley (based on the results of logistic regression)***

| № | Risk factors | β | StD | Wald | Exp (β) | 95%CI | P |
|---|---|---|---|---|---|---|---|
| 1 | Dyslipidemia | 0,032 | 0,101 | 0,100 | 1,032 | 0,848-1,257 | >0,05 |
| 2 | Arterial hypertension | -0,211 | 0,093 | 5,132 | 0,810 | 0,675-0,972 | <0,05 |
| 3 | Alcohol consumption | 0,092 | 0,107 | 0,735 | 1,096 | 0,889-1,353 | >0,05 |
| 4 | Low consumption of vegetables and fruits | -0,287 | 0,086 | 11,25 | 0,750 | 0,634-0,887 | <0,001 |
| 5 | Diabetes mellitus | -0,064 | 0,086 | 0,560 | 0,938 | 0,792-1,110 | >0,05 |
| 6 | Use of antihypertensive drugs | 0,234 | 0,074 | 9,044 | 1,264 | 1,085-1,472 | <0,01 |
| 7 | Burdened heredity | 0,188 | 0,087 | 4,612 | 1,206 | 1,017-1,432 | <0,05 |
| 8 | Overweight | 0,256 | 0,150 | 2,906 | 1,291 | 0,962-1,733 | <0,05 |
| 9 | Obesity | 0,252 | 0,133 | 3,584 | 1,287 | 0,991-1,671 | <0,05 |
| 10 | Liver cirrhosis | 0,584 | 0,213 | 7,504 | 1,794 | 1,181-2,725 | <0,01 |
| 11 | Comorbidity | -0,055 | 0,078 | 0,490 | 0,947 | 0,813-1,103 | >0,05 |

***EXPLANATION OF THE LOGIT MODEL:**

**1. β-coefficient:** shows the influence of each independent variable on the target variable. If β>0 - the variable increases the probability of the target event, if β<0 - decreases.

**2. StD - root mean square error (standard error):** indicates the degree of uncertainty in the estimate of the β coefficient. Smaller error values indicate a more accurate estimate.

**3. Wald (Wald Chi-Square Statistic):** A test statistic used to test the significance of a coefficient. The higher the Wald value, the more significant the variable.

**4. P - significance (p-value):** The probability that the effect of the variable β is statistically insignificant. If p<0.05, the variable is significant, if p≥0.05, it is not.

**5. Exp(B) -** Odds Ratio: a measure of how a 1-unit change in a variable changes the probability of an event. Interpretation:
Exp(B)>1Exp(B) > 1: The variable increases the probability of an event.
Exp(B)<1Exp(B) < 1: The variable decreases the probability of an event.
Exp(B)=1Exp(B) = 1: The variable does not affect the probability of an event.

**6. 95% confidence interval for Exp(B):** The lower and upper boundaries of the interval show the range of values that are 95% likely to contain the true value of Exp(B)Exp(B). If the interval includes 1, the variable is statistically insignificant.
To a slightly lesser extent, the prevalence of cholelithiasis is associated with alcohol consumption (B = 0.092; StD = 0.107; Wald = 0.735; Exp (B) = 1.096; 95% CI = 0.889 – 1.353; P> 0.05) and dyslipidemia (B = 0.032; StD = 0.101; Wald = 0.100; Exp (B) = 1.032; 95% CI = 0.848 – 1.257; P> 0.05).
There is a significant relationship between the prevalence of cholelithiasis and low intake of fruits and vegetables (LIFV) (Wald = 11.25; 95% CI = 0.634 – 0.887; P<0.001). An insignificant relationship is noted between cholelithiasis and comorbidity (Wald = 0.490; 95% CI = 0.813 – 1.103; P>0.05), as well as with arterial hypertension (Wald = 0.735; 95% CI = 0.889 – 1.353; P>0.05) and diabetes mellitus (Wald = 0.560; 95% CI = 0.792 – 1.110; P>0.05).
The developed logit model shows that in the population of women of gerontological age in the Fergana Valley (according to the results of logistic regression), cholelithiasis has a reliable association with arterial hypertension (Wald = 2.880; 95% CI = 0.640 – 1.1,033; P <0.05), MPOF (Wald = 27.53; 95% CI = 0.428 – 0.679; P <0.001), the use of antihypertensive drugs (Wald = 5.076; 95% CI = 1.030 – 1.539; P <0.05), obesity (Wald = 3.144; 95% CI = 0.969 – 1.880; P <0.05), liver cirrhosis (Wald = 4.95% CI = 1.046 – 3.259; P<0.05) and comorbidity (Wald = 12.29; 95% CI = 0.532 – 0.837; P<0.001).



Web of Medicine: Journal of Medicine, Practice and Nursing
webofjournals.com/index.php/5

**Table – 2 Logit model of the relative probability of having cholelithiasis in the population of women of gerontological age in the Fergana Valley (based on the results of logistic regression)**

| № | Risk factors | β | StD | Wald | Exp (β) | 95%CI | P |
|---|---|---|---|---|---|---|---|
| 1 | Dyslipidemia | -0,020 | 0,131 | 0,023 | 0,980 | 0,758-1,267 | >0,05 |
| 2 | Arterial hypertension | -0,207 | 0,122 | 2,880 | 0,813 | 0,640-1,033 | <0,05 |
| 3 | Alcohol consumption | -0,387 | 0,773 | 0,251 | 0,679 | 0,149-3,089 | >0,05 |
| 4 | Low consumption of vegetables and fruits | -0,617 | 0,118 | 27,53 | 0,539 | 0,428-0,679 | <0,001 |
| 5 | Diabetes mellitus | 0,045 | 0,113 | 0,115 | 1,046 | 0,837-1,306 | >0,05 |
| 6 | Use of antihypertensive drugs | 0,231 | 0,102 | 5,076 | 1,259 | 1,030-1,539 | <0,05 |
| 7 | Burdened heredity | 0,178 | 0,124 | 2,038 | 1,194 | 0,936-1,524 | >0,05 |
| 8 | Overweight | 0,175 | 0,187 | 0,873 | 1,191 | 0,825-1,720 | >0,05 |
| 9 | Obesity | 0,300 | 0,169 | 3,144 | 1,350 | 0,969-1,880 | <0,05 |
| 10 | Liver cirrhosis | 0,613 | 0,290 | 4,479 | 1,847 | 1,046-3,259 | <0,05 |
| 11 | Comorbidity | -0,405 | 0,115 | 12,29 | 0,667 | 0,532-0,837 | <0,001 |

At the same time, it turned out that this relationship was insignificantly associated with dyslipidemia (Wald = 0.023; 95% CI = 0.758 – 1.267; P> 0.05), alcohol consumption (Wald = 0.251; 95% CI = 0.149 – 3.089; P> 0.05), diabetes mellitus (Wald = 0.115; 95% CI = 0.837 – 1.306; P> 0.05), aggravated heredity (Wald = 2.038; 95% CI = 0.936 – 1.524; P> 0.05) and overweight (Wald = 0.873; 95% CI = 0.825 – 1.720; P> 0.05). Data in this regard are presented in Table 2.

**Table – 3 Logit model of the relative probability of having cholelithiasis in the population of gerontologically aged men in the Fergana Valley (based on the results of logistic regression)**

| № | Risk factors | β | StD | Wald | Exp (β) | 95%CI | P |
|---|---|---|---|---|---|---|---|
| 1 | Dyslipidemia | 0,142 | 0,160 | 0,783 | 1,152 | 0,842-1,578 | >0,05 |
| 2 | Arterial hypertension | -0,224 | 0,147 | 2,327 | 0,799 | 0,599-1,066 | >0,05 |
| 3 | Alcohol consumption | 0,269 | 0,129 | 4,336 | 1,139 | 1,016-1,686 | <0,05 |
| 4 | Low consumption of vegetables and fruits | 0,130 | 0,128 | 1,030 | 1,139 | 0,886-1,465 | >0,05 |
| 5 | Diabetes mellitus | -0,167 | 0,135 | 1,530 | 0,847 | 0,650-1,102 | >0,05 |
| 6 | Use of antihypertensive drugs | 0,223 | 0,122 | 3,330 | 1,250 | 0,984-1,589 | <0,05 |
| 7 | Burdened heredity | 0,114 | 0,130 | 0,770 | 1,121 | 0,869-1,445 | >0,05 |
| 8 | Overweight | 0,401 | 0,257 | 2,435 | 1,493 | 0,903-2,468 | >0,05 |
| 9 | Obesity | 0,161 | 0,221 | 0,532 | 1,175 | 0,761-1,814 | >0,05 |
| 10 | Liver cirrhosis | 0,662 | 0,321 | 4,248 | 1,939 | 1,033-3,639 | <0,05 |
| 11 | Comorbidity | 0,094 | 0,126 | 0,558 | 1,099 | 0,858-1,407 | >0,05 |

Further, the analysis of the material revealed (Table 3) the presence of a statistically significant relationship between cholelithiasis and the following risk factors in the population of men of gerontological age: 1) alcohol consumption (B = 0.269; StD = 0.129; Wald = 4.336; Exp (B) = 1.139; 95% CI = 1.016 – 1.686; P<0.05); 2) the use of antihypertensive agents (B = 0.223; StD =



Web of Medicine: Journal of Medicine, Practice and Nursing
webofjournals.com/index.php/5

0.122; Wald = 3.330; Exp (B) = 1.250; 95% CI = 0.984 – 1.589; P<0.05); 3) liver cirrhosis (B = 0.662; StD = 0.321; Wald = 4.248; Exp (B) = 1.939; 95% CI = 1.033 – 3.639; P<0.05).

It was noted that there is an insignificant relationship between cholelithiasis and the other studied risk factors: 1) dyslipidemia (B = 0.142; StD = 0.160; Wald = 0.783; Exp (B) = 1.152; 95% CI = 0.842 – 1.578; P> 0.05); 2) arterial hypertension (B = 0.224; StD = 0.147; Wald = 2.327; Exp (B) = 0.799; 95% CI = 0.599 – 1.066; P> 0.05); 3) MPOF (B = 0.130; StD = 0.128; Wald = 1.030; Exp (B) = 1.139; 95% CI = 0.886 – 1.465; P> 0.05); 4) diabetes mellitus (B = 0.167; StD = 0.134; Wald = 1.530; Exp (B) = 0.847; 95% CI = 0.650 – 1.102; P> 0.05); 5) burdened heredity (B = 0.114; StD = 0.130; Wald = 0.770; Exp (B) = 1.121; 95% CI = 0.869 – 1.445; P> 0.05); 6) overweight (B = 0.401; StD = 0.257; Wald = 2.435; Exp (B) = 1.493; 95% CI = 0.903 – 2.468; P> 0.05); 7) obesity (B = 0.161; StD = 0.221; Wald = 0.532; Exp (B) = 1.175; 95% CI = 0.761 – 1.814; P> 0.05); 8) comorbidity (B = 0.094; StD = 0.126; Wald = 0.558; Exp (B) = 1.099; 95% CI = 0.858 – 1.407; P> 0.01). To determine the true values of risk factors in the prevalence of cholelithiasis, we conducted a multiple correlation analysis. A matrix of the relationship of cholelithiasis among the studied population of the Fergana Valley of gerontological age was compiled.

The obtained data are summarized and shown in Figure 1.

The presented figure shows that cholelithiasis itself is statistically significantly associated with metabolic factors (overweight, risk of obesity, dyslipidemia), behavioral and gender factors (alcohol consumption, gender, hereditary burden), hypertension and treatment (use of antihypertensive drugs, arterial), nutrition and diabetes (diabetes mellitus, low consumption of fruits and vegetables) and comorbidity.

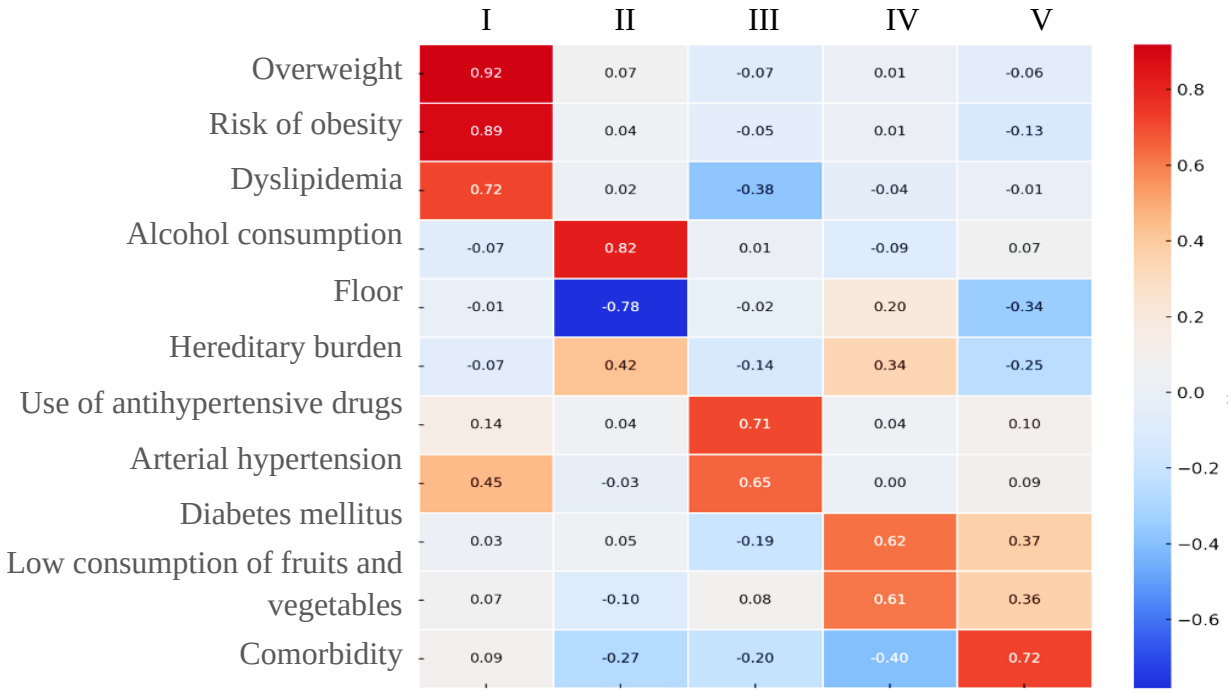


**Fig. 1. Correlation matrix of risk factors for the development of cholelithiasis among the population of the Fergana Valley gerontological group**



Web of Medicine: Journal of Medicine, Practice and Nursing
webofjournals.com/index.php/5

**Note:** I - Metabolic factor; II - Behavioral and gender factor;
III - Hypertension and treatment; IV - Nutrition and diabetes; V - Comorbidity

This proves the existence of a real connection between cholelithiasis and 5 noted risk factors among the population of the Fergana Valley gerontological group. During a mass examination of the population to identify cholelithiasis and the group of "threatened" with respect to this pathology, it is necessary to study, determine and evaluate these risk factors for the development of this pathology. The results of these and other subsequent prospective epidemiological conditions can be used to optimize early diagnostics, prevention and treatment of cholelithiasis in persons of the gerontological group in the Fergana Valley or in other regions of the country.

## Conclusion

Dyslipidemia as a risk factor for cholelithiasis in the Fergana Valley among the gerontological population is determined with a frequency of 42.1% in men and 57.9% in women. High rates of detection of DLP are noted in the age groups of 60–74 years (59.5%) and 75–89 years (37.7%); a comparatively lower frequency of DLP is observed in the age group ≥90 years.

## References

1. Абасов Ш.Ю., Алиев Р.К., Алиев А.К., Рамащенко П.Н. Предикторы “трудной” лапарсокической холецистэктомии в прогнозировании и профилактики поверждений желчных протоков. Известия Российской военно – медицинской академии. 2022; 41 (52): 14 – 15.
2. Алиев Р.К., Рамащенко П.Н., Майстренко М.А., Прядко А.С., Алиев А.К. Непреднамеренные травмы желчевыводящих протоков: пути профилактики и лечения Вестник Российской Военно – медицинской академии. 2021: 23 (3): 55 – 58.
3. Бебуришвими А.Г., Панин С.Н., Зюбина Е.Н., Нестеров С.С., Пузикова А.В. Холецистомия при острой холецистите//Хирургия. Журнал имени Н.И. Пирогова. – 2020; №6 – С. – 45.
4. Ботыров Д.А. Геронтологические особенности холецистита в условиях Ферганской долины//Хирургия. 2024.
5. Бурдюков М.С., Нечипай А.М. Холедохолитиаз: обзор литературы. Доказательная гастроэнтерология. 2020; 9 (4): 55 – 64.
6. Балалыкин А.С. Эндоскопическая папиллосфинктерапия. Руководства по химической эндоскопии М. 1985; 290 – 314.
7. Лыткин М.И., Тетдаев А.М., Стойко Ю.М. Нужно ли защищать холецистостомию при остром холецистите?//Хирургия. – 1978; 7: 10 – 12.
8. Майстренко Н.А., Рамащенко П.Н., Прядко А.С., Алиев А.К. Обоснование хирургической тактики при ятрогенных повреждениях желчевыводящих протоков. Вестник хирургии им И.И. Грекова 2015: 174 (5): 22 – 30.
9. Майстренко Н.А., Ромащенко П.Н., Алиев А.К., Сибиров С.А. Острое повреждение желчевыводящих протоков. Вестник Российской Военно – Медицинской академии. 2016: 1 (53): 124 – 128.



Web of Medicine: Journal of Medicine, Practice and Nursing
webofjournals.com/index.php/5

10. Нургазинова А.К. Происхождение, развитие и современная трактовка понятий “коморбидность и колиморбидность”//Казанский Медицинский журнал. 2014; 2: 95: 292 – 294.
11. Прядко А.С., Ромащенко П.Н., Майстренко М.А., Алиев А.К. и др. Реализация программы “безопасная холецистэктомия” в Ленинградской области//Хирургия. Журнал ишни Н.И. Пирогова. – 2023. - №10. – С. 109 – 116.
12. Ромащенко П.Н., Майстренко Н.А., Преядко А.С., Алиев А.К. Травмы желчевыводящих протоков и системный подход к их устранению//Анналы хирургической гепатологии. 2019; 24 (1): 71 – 80.
13. Ромащенко П.Н., Майсаренко Н.А., Прядко А.С., Алиев А.К., Алиев Р.К., Жеребцов Е.С. Профилактика и лечение повреждений желчевыводящих протоков у больных острым холециститам.//Анналы хирургической гепатологии. 2020: 25 (3): 20 – 31.
14. Цеймах А.Е., Куртуков В.А., Мищенко А.Н., Теплухин В.Н., Шойхет Я.Н. и др. Применение мини – инвазивных технологий литотрипсии и антеградной гидравлической литоэкстракции в комплексном лечении больных холедохолитиазам.//Хирургия. Журнал Имени Н.И. Пирогова. – 2023 - №4: С. 5 – 11.
15. ASGE Standards of Practice Committee, Buxbaum JL, Abbas Fehmi SM, Siltan S, Fishman DS, Qumseya BJ, Cortessis VK, Schilperoot H, Kysh L, Matsuoka L, Yachimski P, Agrawal D, Gurudu SR, Jamil LH, Jue TL, Khashab MA, Law JK, Lee SK, Naveed M, Sauhney MS, Thosani N, Yang J, Wani SB, ASGE guideline on the role of endoscopy in the evaluation and management of choledocholithiasis. Gastrointest Endose. 2019: 89 (6): 1075 – 1105. E 15. https://doi.org/10.1016/j.gie 2018.10.001.
16. Barbara L, Sama C, Morselli Labate AM, Taroni F, Rusticali AG, Festi D, Sapio C, Roda E, Banterle C, Puci A. A population study on the prevalence of gallstone disease: the Sirmione Study. Hepatology. 1987: 7(5):913-916. https://doi.org/10.1002/hep. 1840070520.
17. Bignell M, Dearing M, Hindmarsh A, Rhodes M. ERCP and endoscopic sphincterotomy (ES): a safe and definitine management of gallstone pancreatitis with the gallbladder left in situ. Journal of Gastrointestinal Surgery. 2011: 15(12): 2205 – 2210. https://doi.org/10.1007/S 11605 - 011 - 1729 – X
18. European Association for the Study of the Liver (EASL). EASL Clinical Practice Guidelines on the prevention. Diagnosis and treatment of gallstones. J Hepatol. 2016:65(1):146 – 180. https://doi.org/10.1016/j.jhep.2016.03.005.
19. Felekouras E, Petrou A, Neofytou K, Moris D, Dimitrokallis N, Bramis K, Griniatsos J, Pikoulis E, Diamantis T. Early of Delayed Intervention of Bile Duet Injuries tollowing Laparoscopic Chole cyctectomy? A Dilemma Looking for an Answer. Gastroenterology Research and Practice. 2015:2015:104235. https://doi.org/10.1115/2015/104235.
20. Hariharan D, Psaltis E, Schole Field JH, Lobo DN, Quality of life and Medico – Legal Implications Following latrogenic Bile Dust Injuries. World Journal of Surgery 2017:41 (1):98. https://doi.org/10.1007/S00268 - 016 - 3677 – 9.
21. Lukina Yu V, Kutishenko NP. Martsevich SYu. The problem of adherence to the treatment in modern medicine: possibilities of solution, impact on the effectiveness of therapy and disease out comes. Rational Pharmacotherapy in Cardiology. 2017:13 (4): 519 – 24.



Web of Medicine: Journal of Medicine, Practice and Nursing
webofjournals.com/index.php/5

22. L Yu J, Lin Q, Fang Z, et al. Complex impacts of gallstone disease on metabolic syndrome and nonalcoholic fatty liver disease. Front Endocrinol (Lausanne). 2022:13:1032557. doi:10.3389/fen do 2022. 1032557.
23. Lee HM, Min SK, Lee MK. Long – term results of laparoscopic common bile dust exploration by chole dichotomy for choledocholithiasis:15 – year experience from a single center – Ann Surg Treat Res. 2014:86:1 – 4. https://doi.org/10.4174/astr.2014.86.1.1.
24. Maystrenko N, Romashenko P, Aliev A, Sibirev SA. Acute injury of bile duets. Research Journal of Medical Sciences. 2016: 10(1): 740 – 742.
25. Manes G, Paspatis G, Aabakken L, Anderloni A, Arvanitakis M, Ah Soune P, Barthet M, Domogk D, DumonceauJM, Gigot JK, Hritz I, Karamanolis G, Laghi A, Mariani A, Paraskeva K, Pohl J, Ponchon I, Swahn F, Ter Stuge RWF, Tingali A, Verakis A, Willians EJ, van Hooft JE. Endoscopic management of common bile duct stones: Europaen Society of Gastrointestinal Endoscopy (ESGE) guideline. Endoscopy:2019:51(5): 472 – 490. https://doi.org/10.1055/a - 0862 - 0346.
26. Mc. Nicoll CF, Pastorino A, Farooq U, ST Hill CR. Choledocholithiasis. In: Stat Pearls [Internet]. Treasure Island (FL): Stat Pearls Publishing. 2022.PMID:28722990.
27. Masci E, Toti G, Mariani A, Curioni S, Lomarzi A. Dinelli M, Minoli G, Crosa C, Comin U, Fertitta A, Prada A, Passoni GR, Testoni PA. Complications of diagnostic and therapeutic ERCP: a prospective multi center Study American Journal of Gastroenterology. 2001:96 (2): 417 – 423. https://doi.org/10.1111/j.1572-0241-2001-03594-x.
28. Sahajpal AK, Chow SC, Dixon E, Greig PD, Gallinger S, Wei AC. Bile duct injuries associated with laparoscopic cholecystectomy: timing of repair and long – term outcomes. The Archives of Surgery. 2010:145 (8): 757 – 760. https://doi.org/10.1001/arch surg. 2010.153.
29. Strasberg SM, Brunt LM. Rationale and use of the critical view of safety in laparoscopic cholecystectomy. Journal of the American College of Surgeons. 2010:211 (1):132 – 137. https://doi.org/10.1016/j.jam collsurg.2010.02.053.
30. Schirmer BD, Winters KL, Edlich RF. Cholelithaisis and cholecystitis. J long Trem Eff Med Implants. 2005: 15 (3): 329 – 334. https://doi.org/10.1615/j longtremeffmedimplants. V 15:3 – 90.
31. Shojaiefard A, Esmaeilzadeh M, Ghafouri A, Mehrabi A, Various techniques for the surgical treatment of common bile duct stones: a meta review. Gastroenterolody Research and Practice. 2009:2009:840208. https://doi.org/10.1155/2009/840208.
32. Salminen P, Laine S, Gullichsen R. Severe and fatal complications after ERCP: analysis of 2555 procedures in a single experienced center. Surgical Endoscopy. 2008:22(9): 1965 – 1970. https://doi.org/10.1007/S00464 – 007 - 9711 - 0.
33. Siiki A, Tamminen A, Kuusanmaki P, ERCP procedures in a Finish community hospital: a retrospective analysis of 1207 cases. Scandinavian Journal of Surgery. 2012:101(1):45 – 50. https://doi.org/10.117/145749691210 100109.
34. Wang L, Yu WF. Obstructive jaundice and perioperatice management. Acta Anaes the siologica Taiwanica. 2014:52(1):22 – 25. https://doi.org/10.1016/j.aat.2014.03.002.



Web of Medicine: Journal of Medicine, Practice and Nursing
webofjournals.com/index.php/5