

## Differentiated surgical tactics for Mirizzi syndrome in patients with cholelithiasis

**The aim of the work:** to improve the results of treatment of Mirizzi syndrome by developing rational surgical tactics depending on its type.

**Materials and Methods.** The work is based on the evaluation of the results of surgical treatment of 62 patients with cholelithiasis complicated by Mirizzi syndrome who were hospitalized in surgical departments of the Republican Specialized Scientific and Practical Center for Emergency Medical Care of the Samarkand branch for the period from 2016 to 2021.

**Results and Discussion.** Successful radical cholecystectomy largely depends on the correctly chosen surgical tactics, which significantly affects the course of the operation and has a certain significance in the outcome of surgical treatment, affects the course of the rehabilitation period. Based on the data of the preoperative examination the patients of the main group were divided into 3 subgroups of the degree of probability of Mirizzi syndrome. The proposed program for choosing surgical tactics in patients with cholelithiasis complicated MS allowed in 8.1 % and 29.0% of cases to perform laparoscopic cholecystectomy and cholecystectomy from a mini-access, respectively, and thereby allowed to avoid damage to the bile ducts and to complete the operation with minimal risk. The developed program for choosing the tactics of surgical treatment of patients with cholelithiasis complicated MS, taking into account an integrated approach to the choice of access, allowed to improve the quality of care by reducing the frequency of immediate postoperative complications to 3.2 %, and in the long-term postoperative period, complications were reduced to zero.

**Key words:** Mirizzi syndrome; classification; diagnosis; computed tomography; retrograde cholangiopancreatography; cholecystectomy; drainage of the common hepatic duct.

**Introduction.** Despite numerous scientific studies, the problem of diagnosis and treatment of Mirizzi syndrome (MS) in emergency biliary surgery remains relevant. At the same time, despite more than half a century of studying MS, it is one of the least studied problems in bile duct surgery. To date, there is no consensus on the morphological nature of the pathological changes that form the basis of the syndrome, the stages of the course and types, diagnosis, type and volume of surgery for this formidable complication of the cholelithiasis. So, in the research of the Republican Specialized Scientific and Practical Center of Surgery named after Academician V. Vakhidov focused on the detection of MS in the preoperative period. Data from the Keck Medical Center (Los Angeles), Alexandroupolis University Clinic (Greece) also indicate an increase in the number of intraoperative iatrogenic injuries in patients with MS.

Until recently, MS was considered one of the contraindications for performing laparoscopic cholecystectomy (LCE). However, recently there have been works indicating the effectiveness of laparoscopic correction in some types of MS.

The analysis of modern literature shows that there are several directions in the treatment of MS: traditional and minimally invasive surgical interventions. "However, open surgical interventions in MS remain the most accessible direction in everyday practice"

(Khadjibaev A.M.). Based on the results obtained, it was decided to reconsider the issues of training specialists, both in terms of early preoperative diagnosis of MS, and improving the technical skills of surgeons performing such operations (Prudkov M.I.). At the same time, it should be noted that to date, the role and place of modern radiation methods (MSCT, MRI-cholangiography) has not been definitively established in the diagnostic program of the MS. Along with this, specific indications for the use of various endobiliary interventions in the correction of the phenomena of mechanical jaundice and purulent cholangitis in these patients have not been fully developed, the role and place in the therapeutic scheme of laparoscopic interventions have not been established. Meanwhile, at present there is an urgent need "... to develop a reliable laparoscopic method of treating patients with cholelithiasis complicated by MS ...". Finally, a therapeutic and diagnostic algorithm for the management of patients with MS has not been developed, indicating clear standards of action in specific clinical cases.

The conducted analysis of the literature indicates that at the present time, therapeutic and diagnostic tactics in MS refers to one of the urgent and still unresolved problems of modern healthcare. In this regard, there is a need to revise the criteria for the radicality of surgical intervention in MS, depending on the informativeness of non-invasive medical imaging

methods, which allow at the preoperative stage to assess the features of the clinical course of the disease and identify signs of aggression of the disease, and therefore, optimization of the diagnostic algorithm becomes especially relevant in order to choose the most radical tactics of surgical treatment in each case.

**The aim of the work** – to improve the results of treatment of Mirizzi syndrome by developing rational surgical tactics depending on its type.

**Materials and Methods.** The work is based on the evaluation of the results of surgical treatment of 62 patients with cholelithiasis complicated by Mirizzi syndrome who were hospitalized in surgical departments of the Republican Specialized Scientific and Practical Center for Emergency Medical Care of the Samarkand branch (RSSPCEMCSB) for the period from 2016 to 2021.

In addition to clinical and laboratory studies, ultrasound, FGDS, ERCPG, MRCPG were performed in terms of diagnosis and differential diagnosis of Mirizzi syndrome.

In the process of standardization of surgical tactics for Mirizzi syndrome, it became necessary to revise existing classifications taking into account the level of localization of cholecystobiliary fistula, because the classifications of A. Csendes, C. K. McSherry, T. Nagakawa and their various modifications do not represent the level localization of the fistula, as well as the possibility of its location in the confluence area. In our practice, in 5 observations we encountered com-

plex forms of type II Mirizzi syndrome, when the cholecystobiliary fistula was localized in the confluence area with complete destruction of its anterior wall. Unfortunately, in the available literature we have not found descriptions of such complex cases of Mirizzi syndrome and, accordingly, methods of their surgical correction. In this regard, in recent years (since 2016), in order to clearly work out the tactics of treatment depending on the level of hepaticocholedocha lesion, we have proposed a classification of Mirizzi syndrome identical to the terminology adopted for strictures of the bile ducts (classification of strictures of the hepatic ducts according to E. I. Galperin, 2002):

**Type I** – there is no fistula; there is compression of the common bile or hepatic duct by a concretion fixed in the neck of the gallbladder or cystic duct (in our observations – 28 patients, or 45.2 %) (Fig. 1);

Type II Cholecystobiliary fistula

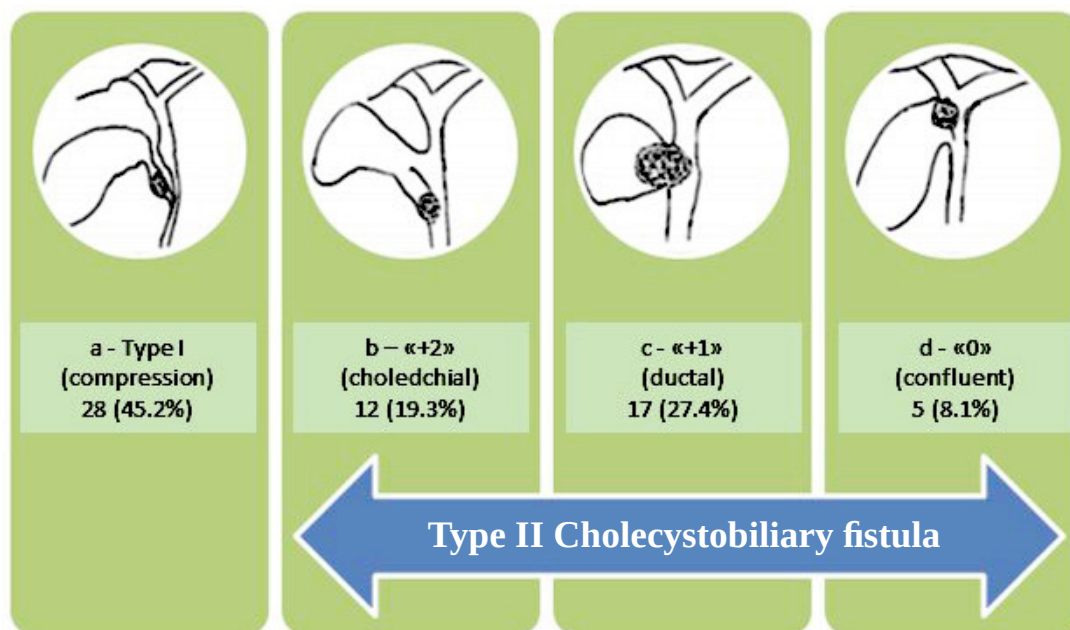
**Type II:**

“+2” type – cholecystolithiasis: localization cholecystoduodenal fistula distal to the confluence of the cystic duct in choledoch (12 patients, 19.3%);

“+1” – type ductal: cholecystolithiasis localization of the fistula at the level of the cystic duct with its destruction; there is a broad message of the gallbladder hepaticocholedochus (17 patients, or 27.4 per cent);

“0” type – confluent: localization of cholecystobiliary fistula at the confluence level (5 patients, or 8.1 %).

The presented classification, in our opinion, is structurally simple and practical in choosing tactical and technical solutions for Mirizzi syndrome.



**Fig. 1.** Classification of Mirizzi syndrome (identical to the terminology used for strictures of hepaticocholedocha).

**Results and Discussion.** Successful radical cholecystectomy largely depends on the correctly chosen surgical tactics, which significantly affects the course of the operation and has a certain significance in the outcome of surgical treatment, affects the course of the rehabilitation period.

Based on the data of the preoperative examination of patients described in chapter III, the patients of the main group were divided into 3 subgroups of the degree of probability of Mirizzi syndrome.

Therefore, in the main group, the choice of surgical treatment was more differentiated. Factors influencing the choice of treatment method were taken into account, as indicated in chapter III. We assessed these factors that influenced the results of treatment on a point scale (certificate of state registration of the computer program No. DGU 09487, Agency for Intellectual Property of the Republic of Uzbekistan).

Based on the comparative results of surgical treatment of patients in the comparison group, a program of actions of the surgeon for cholelithiasis complicated by Mirizzi syndrome was developed. The developed program made it possible to choose the optimal method of surgery taking into account the individual characteristics of the body and improve the results of treatment (Table 1).

Patients who scored up to 2 points were performed LCE. In this group of patients with Mirizzi syndrome type I, surgical treatment has its own technical features associated with the difficulty of removing the wedged concretion into the neck of the gallbladder. Thus, the Hartmann pocket was opened laparoscopically and the stone was removed through its lumen, followed by cholecystectomy, which was performed in 5 (8.1 % of 62 patients of the main group) observations.

**Table 1. The point system for choosing surgical tactics for Mirizzi syndrome.**

№	Factors influencing the choice of surgery	Characteristics of factors	Points	
1	Symptoms of intoxication	No symptoms	0	
		There are symptoms	1	
2	Clinical signs of Mirizzi syndrome	There is no clinic	0	
		Mechanical jaundice	1	
		Cholangitis	2	
3	Type of Mirizzi syndrome according to the proposed classification	Type I	0	
		Type II	“+2”	1
			“+1”	2
			“0”	3
4	Clinical course of cholelithiasis, which was complicated by Mirizzi syndrome	Chronic calculous cholecystitis	0	
		Acute calculous cholecystitis	1	
5	The size of the diameter of the hepaticocholedoch	Up to 1 cm	0	
		1.1 – 1.5 cm	1	
		1.6 cm or more	2	
6	BMI	Normal	0	
		Obesity of 1–2 grade.	1	
		Obesity of 3 grade.	2	
7	Concomitant pathology of vital organs	There is	0	
		No	1	

### З ДОСВІДУ РОБОТИ

If laparoscopic removal of a stone wedged into the neck of the gallbladder was impossible, we switched to minilaparotomic cholecystectomy in 18 (29.0 %) cases. They made up the second subgroup of the main group of patients who had a total number of points scored up to 4.

In the 3rd subgroup, patients in the number of 34 (54.8 %) people had a high risk of damage to the main bile ducts, they were with a total of up to 7 points scored. Of these, 10 (29.4 %) patients underwent mini-laparotomy cholecystectomy with external drainage of hepaticocholedoch. 24 (70.6 %) patients

underwent an autopsy of the gallbladder through the bottom, concretions were removed from its lumen and subtotal cholecystectomy was performed with external drainage of hepaticocholedoch, as they received mechanical jaundice and cholangitis.

5 (8.1 %) patients in the fourth subgroup who scored up to 9 points and with a “0” level of destruction of hepaticocholedocha underwent reconstructive surgery. Preference was given to high biliodigestive anastomoses, on a closed loop of the small intestine.

According to the above, the surgical treatment of Mirizzi syndrome is presented in Table 2.

**Table 2. Surgical options depending on the type of Mirizzi syndrome in patients of the main group (n=62)**

Types of operations	Types of Mirizzi syndrome (according to the proposed classification)			
	Type I	Type II		
		“+2”	“+1”	“0”
LCE	5 (17.8 %)	–	–	–
MLCE	18 (64.3 %)	–	–	–
MLCE with drainage of the common bile duct	5 (17.8 %)	3 (25.0 %)	2 (11.8 %)	–
Subtotal CE with choledochal wall plasty gallbladder flap and APP drainage	–	9 (75.0 %)	15 (88.2 %)	–
CE + HepEA by Ru	–	–	–	5 (100 %)
Total	28 (100 %)	12 (100 %)	17 (100 %)	5 (100%)

In 52 (83.9 %) cases, cholecystectomy was performed according to the Pribram method (cholecystectomy by lumping or “on the finger” with mucoclasia of the mucosa). This underscores the view that surgery for Mirizzi syndrome is difficult, and is referred to as a “trap in bile duct surgery”. In this syndrome, the anatomy of the bile ducts is very distorted, the gallbladder is wrinkled, fibrously altered, with dense infiltration in the area of the Calo triangle. The Pribram method allows you to avoid damage to the bile ducts and complete the operation with minimal risk.

**Conclusions:** The developed classification of Mirizzi syndrome, based on the identification of types and in type II, depending on the level of damage to the main bile ducts, identical terminology adopted for strictures of the bile ducts clarifies the clinical and

pathomorphological aspects of Mirizzi syndrome, which allows you to choose surgical tactics.

The proposed program for choosing surgical tactics in patients with cholelithiasis complicated MS allowed in 8.1 % and 29.0 % of cases to perform laparoscopic cholecystectomy and cholecystectomy from a mini-access, respectively, and thereby allowed to avoid damage to the bile ducts and to complete the operation with minimal risk.

The developed program for choosing the tactics of surgical treatment of patients with cholelithiasis complicated MS, taking into account an integrated approach to the choice of access, allowed to improve the quality of care by reducing the frequency of immediate postoperative complications to 3.2 %, and in the long-term postoperative period, complications were reduced to zero.

### LITERATURE

1. Alemi F. Gallstone disease: cholecystitis, Mirizzi syndrome, bouveret syndrome, gallstone ileus / F. Alemi, N. Seiser, S. Ayloo // *Surgical Clinics*. – 2019. – Vol. 99, No. 2. – P. 231–244.
2. Lee K. F. Mirizzi syndrome: a new approach to an old problem / K. F. Lee // *Hepatobiliary Surgery and Nutrition*. – 2018. – Vol. 7, No. 1. – P. 56.
3. Рахманов К. Е. Усовершенствованная хирургическая тактика при синдроме Мирizzi / К. Е. Рахманов // *Шпитальна хірургія. Журнал імені Л. Я. Ковальчука*. – 2020. – № 3. – С. 4–28.
4. Русин В. І. Лікування синдрому Міріззі / В. І. Русин, К. Е. Румянцев, Ф. М. Павук // *Шпитальна хірургія. Журнал імені Л. Я. Ковальчука*. 2019. – № 2. – С. 5–10.
5. Laparoscopic management of type II Mirizzi syndrome / F. Senra, L. Navaratne, A. Acosta, A. Martínez-Isla // *Surgical Endoscopy*. – 2020. – Vol. 34, No. 5. – P. 2303–2312.
6. Алиджанов Ф. Б., Хаджибаев Ф. А., Гуломов Ф. К. Дискуссионные вопросы синдрома Мирizzi // *Вестник неотлож-*

- ной и восстановительной хирургии. – 2018. – Т. 3. – №. 3. – С. 218-225.
7. Батвинков Н. И., Могилевец Э. В., Василевский В. П. Тактика хирурга при свищевых формах синдрома Мирizzi // *Хирургия Беларуси на современном этапе*. – 2018. – С. 19-20.
8. Мирзаева Х. Э., Данилова Е. В. Современные методы диагностики и лечения пациентов с синдромом Мирizzi // *Студенческая наука и медицина XXI века: традиции, инновации и приоритеты*. – 2018. – С. 275-276.
9. Тамм Т. И. и др. Особенности диагностики и лечения больных синдромом Мирizzi // *Шпитальна хірургія. Журнал імені ЛЯ Ковальчука*. – 2020. – С. 14-19.
10. Тарасенко С. В. и др. Клинический случай эндовидеоскопического лечения холедохолитиаза, осложненного синдромом Мирizzi // *Российский медико-биологический вестник имени академика ИП Павлова*. – 2018. – Т. 26. – №. 4. – С. 533-537.

### REFERENCES

1. Alemi, F., Seiser, N., & Ayloo, S. (2019). Gallstone disease: cholecystitis, Mirizzi syndrome, bouveret syndrome, gallstone ileus. *Surgical Clinics*, 99 (2), 231-244.
2. Lee, K.F. (2018). Mirizzi syndrome: a new approach to an old problem. *Hepatobiliary Surgery and Nutrition*, 7 (1), 56.
3. Rakhmanov, K.E., Davlatov, S.S., & Nasimov, A.M. (2020). Usovershenstvovannaya hirurgicheskaya taktika pri sindrome Mirizzi [Improved surgical tactics in Mirizzi syndrome]. *Shpytalna khirurhiia. Zhurnal imeni L. Ya. Kovalchuka – Hospital Surgery. Journal named after L. Ya. Kovalchuk*, (3), 24-28 [in Russian].
4. Rusyn, V.I., Rumiantsev, K.E., & Pavuk, F.M. (2019). Likuvannia syndrome Mirizzi [Mirizzi syndrome treatment]. *Shpytalna khirurhiia. Zhurnal imeni L. Ya. Kovalchuka – Hospital Surgery. Journal named after L. Ya. Kovalchuk*, 2, 5-10 [in Ukrainian].
5. Senra, F., Navaratne, L., Acosta, A., & Martínez-Isla, A. (2020). Laparoscopic management of type II Mirizzi syndrome. *Surgical Endoscopy*, 34 (5), 2303-2312.
6. Alidzhanov, F.B., Hadzhibayev, F.A., & Gulomov, F.K. (2018). Diskussionnye voprosy sindroma Mirizzi [Discussion issues of Mirizzi syndrome]. *Vestnik неотложной и восстановительной хирургии – Bulletin of Emergency and Recovery Surgery*, 3 (3), 218-225 [in Russian].
7. Batvinkov, N.I., Mogilevec, E.V., & Vasilevskiy, V.P. (2018). Taktika hirurga pri svishchevyh formah sindroma Mirizzi [Tac-

- tics of the surgeon in fistulous forms of Mirizzi's syndrome]. *Khirurgiya Belarusi na sovremennoy etape – Surgery of Belarus at Modern Stage*, 19-20 [in Russian].
8. Mirzaeva, H.E., & Danilova, E.V. (2018). Sovremennye metody diagnostiki i lecheniya patsientov s sindromom Mirizzi [Modern methods of diagnosis and treatment of patients with Mirizzi syndrome]. *Studencheskaya nauka i meditsina XXI veka: traditsii, innovatsii i priority – Student Science and Medicine of the 21st Century: Traditions, Innovations and Priorities*, 275-276 [in Russian].
9. Tamm, T., Mamontov, I., Zulfigarov, I., Kramarenko, K., Abud, H., Bardyuk, A., & Zaharchuk, A. (2020). Osobennosti diagnostiki i lecheniya bolnyh sindromom Mirizzi [Features of diagnosis and treatment of patients with Mirizzi syndrome] *Shpytalna khirurhiia. Zhurnal imeni L. Ya. Kovalchuka – Hospital Surgery. Journal named after L. Ya. Kovalchuk*, 14-19 [in Russian].
10. Tarasenko, S.V., Zaytsev, O.V., Tyulenev, D.O., & Kopeykin, A.A. (2018). Klinicheskiy sluchay endovideoskopicheskogo lecheniya holedoholitiaza, oslozhnennogo sindromom Mirizzi [A clinical case of endovideoscopic treatment of choledocholithiasis complicated by Mirizzi syndrome]. *Rossiyskiy mediko-biologicheskiy vestnik imeni akademika I.P. Pavlova – Russian Medical and Biological Bulletin named after Academician I.P. Pavlov*, 26 (4), 533-537 [in Russian].

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## З ДОСВІДУ РОБОТИ

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### ДИФЕРЕНЦІЙОВАНА ХІРУРГІЧНА ТАКТИКА ПРИ СИНДРОМІ МІРІЗІ У ХВОРИХ ІЗ ЖОВЧНОКАМ'ЯНОЮ ХВОРОБОЮ

**Мета роботи:** покращення результатів лікування синдрому Мірізі шляхом розробки раціональної хірургічної тактики залежно від його типу.

**Матеріали і методи.** Робота основана на оцінці результатів хірургічного лікування 62 хворих з жовчнокам'яною хворобою, ускладненою синдромом Мірізі, які перебували на стаціонарному лікуванні в хірургічних відділеннях Республіканського спеціалізованого науково-практичного Центру екстреної медичної допомоги Самаркандської філії за період з 2016 до 2021 р.

**Результати досліджень та їх обговорення.** Успішна радикальна холецистектомія залежить від правильно обраної хірургічної тактики, яка суттєво впливає на перебіг операції та має певне значення в результаті хірургічного лікування, відбивається на перебігу реабілітаційного періоду. Спираючись на дані доопераційного обстеження хворих, хворі основної групи були підрозділені на 3 підгрупи ступеня ймовірності синдрому Мірізі. Запропонована програма вибору хірургічної тактики у хворих з ЖКБ ускладненої СМ дозволила у 8,1% та 29,0 % випадків виконати лапароскопічну холецистектомію та холецистектомію з мінідоступу відповідно і тим самим дала змогу уникнути пошкоджень жовчних проток та з мінімальним ризиком завершити операцію. Розроблена програма вибору тактики хірургічного лікування хворих на ЖКБ, ускладненої СМ, з урахуванням комплексного підходу до вибору доступу дала змогу покращити якість допомоги за рахунок зниження частоти найближчих післяопераційних ускладнень до 3,2 %, а у віддаленому післяопераційному періоді ускладнення вдалося звести до нуля.

**Ключові слова:** синдром Мірізі; класифікація; діагностика; комп'ютерна томографія; ретроградна холангіопанкреатографія; холецистектомія; дренування загальної печінкової протоки.