

УДК 616.361-089

**METHODS OF SURGICAL CORRECTION OF INTRAOPERATIVELY
DETECTED BILE DUCTS INJURIES (literature review)**

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Annotation. The article discusses the literature data of the last decade devoted to aspects of surgical tactics in case of intraoperative injuries of the bile ducts. It is noted that the main reasons for failures in the treatment of bile duct injuries are untimely diagnosis and inadequate reconstructive operations performed by surgeons who do not have the necessary experience in biliary surgery. There is no unity in the choice of the surgical method for bile duct injuries diagnosed intraoperatively or in the immediate postoperative period.

Key words: cholelithiasis, cholecystectomy, bile duct injury.

Diagnosis and treatment of damage to the main bile ducts (MBD) is becoming an increasingly important problem. This is due to the increase in the number of patients with biliary tract diseases and surgeries for them, which is due to improved diagnostics of gallstone disease. In Russia, more than 100 thousand, in the USA about 700 thousand, and in Uzbekistan more than 20 thousand cholecystectomies are performed annually [3, 13, 64].

Iatrogenic injuries to the bile ducts (BD) during cholecystectomy occur quite frequently, as evidenced by reports in various medical publications and average statistical data. With open cholecystectomy, they make up 0.1–1.0%, with laparoscopic operations – 0.4–3.5% and even 7% [22, 36, 64]. Thus, laparoscopic operations have not eliminated the risk of damage to the extrahepatic bile ducts. A characteristic feature is that the duct wall is exposed to electrical trauma, i.e., thermal burn, during laparoscopic intervention [21, 37, 58]. S. I. Emelianov et al. provide the following data: the frequency of BD damage during traditional cholecystectomy was 0.06%, with laparoscopic – 0.6% [10].

A. I. Nechay et al. (2006) present the results of treatment of 112 patients in whom bile ducts were accidentally damaged during open surgical interventions on the

gallbladder or stomach. The frequency of this complication during cholecystectomy was 0.13%, and during gastric resection – 0.06% [16].

F. G. Nazyrov et al. (2006) presented an analysis of surgical treatment of 336 patients with cicatricial strictures and external fistulas of the gallbladder of iatrogenic origin. The causes of formation of cicatricial strictures and external fistulas were intraoperative injuries during cholecystectomy, gastric resection and echinococcectomy [15].

The question of the causes and prevention of iatrogenic damage to the gallbladder is very important and of great and understandable interest. It is proposed to distinguish between the causes and predisposing circumstances of iatrogenic damage [1, 4, 12, 20].

It is fundamentally incorrect to interpret such circumstances as the causes of unintentional damage to the ducts during surgery, as reported repeatedly by N. A. Maistrenko et al. (2015) [13]. This is also written by N. A. Mizurov et al. (2010), a specialist, a professional should keep in mind various circumstances both related to the structural features of certain anatomical structures, and to changes in the usual topographic-anatomical relationships due to the inflammatory process [14]. In accordance with the above, it is appropriate to highlight the work of K. I. Delibatov (2011), devoted to damage to the bile ducts during laparoscopic cholecystectomy (LCE) [9]. The author warns surgeons against possible damage to the bile ducts and names the risk factors for this complication according to the classification of R. Martin et R. Rossi: dangerous anatomy, dangerous pathological changes and dangerous surgery (insufficient exposure, incorrect direction of gallbladder traction, electrocoagulation injuries).

Tornqvist B. (2016) draws attention to the danger of damage to the bile ducts during cholecystectomy and ways to prevent it. The author recommends achieving good exposure if complications arise during cholecystectomy, primarily by expanding the access and clearly identifying the common bile duct, pointing out the inadmissibility of blindly applying a hemostatic clamp [63]. According to Zhou XJ (2018), there are hardly any other operations associated with such a risk and many surprises as operations on the bile ducts. A technical error and a moment's inattention of the surgeon can cause so much harm to the patient that it cannot be eliminated for the rest of his life. However, most errors can be prevented if a number of technical and tactical rules are carefully followed [65].

Classification of injuries.

Many classifications of bile duct injuries have been proposed. Domestic and foreign surgeons have repeatedly attempted to create a classification of bile duct

injuries in order to unify research and evaluate results. The nature of the injury was usually taken as a basis [38, 39].

The nature of the damage to the pelvic organs is most accurately reflected in the classification of S. M. Strasberg – H. Bismuth (1995) [62], which identifies 5 types. This classification distinguishes between “fresh” damage and its consequences, is based on topographic-anatomical features, and reflects the nature of the damage, which ultimately determines the treatment tactics.

A classification developed at the Amsterdam Academic Medical Center (1996) has become widely used, according to which 4 types of damage were distinguished, taking into account, along with the nature of the damage, the level of the primary damage [32]. The classification should help the surgeon choose the method of damage correction; the modified Amsterdam classification by E. I. Galperin et al. (2009) is focused on subsequent surgical treatment tactics [7].

The immediate and long-term results of treatment of gallbladder injuries are unsatisfactory. The immediate mortality rate after reconstructive interventions is 8–10%, and in the later stages – 13–17% [33, 41]. The main reasons for failure are untimely diagnosis and the performance of complex reconstructive operations by doctors who do not have the necessary experience in this area of surgery [15].

The timing of detection of gallbladder damage – during surgery or in the early postoperative period – is of decisive importance in terms of treatment outcomes.

According to A. I. Nechay and K. V. Novikov (2006), in 30% of cases iatrogenic damage to the GB was recognized during surgery [16]. Up to 20% of injuries were diagnosed in the early postoperative period against the background of the development and rapid increase in mechanical jaundice or continued leakage of bile through a wound or drainage. In 37.5% of patients, damage to the bile ducts that occurred during surgery was recognized at a later stage based on signs of a developing stricture. In some cases (12.5%), damage to the CBD or URB was established only at autopsy, when patients died from progressive peritonitis, increasing jaundice or other postoperative complications that were not recognized in a timely manner [48, 49].

Intraoperative cholangiography (IOCG) is an indispensable diagnostic technique for early diagnosis of iatrogenic GB injuries. It provides valuable information about the structure, functional or organic changes in the bile ducts. With a proven examination technique, complications of intraoperative cholangiography are extremely rare or absent [42, 44]. ICG is considered absolutely indicated in anatomically complex situations and when intraoperative GB injury is suspected.

Conversion should also be considered as a measure for diagnosis and prevention of GB damage. The main principles in making a decision on conversion include two

cases: prudence and necessity. Conversion by prudence is associated with the detection of more complex anatomical and topographic relationships than expected before the operation (pronounced inflammatory changes near the neck of the gallbladder, difficulties in differentiating the GB). Conversion due to necessity is carried out when complications arise, sudden bleeding that cannot be safely stopped during laparotomy, or bile leakage when its source is not determined. During laparotomy, it is necessary to accurately determine and trace the GB and perform puncture ICG [45, 60].

Undiagnosed during surgery, bile duct injuries in the postoperative period have the following clinical manifestations: a) bile leakage through the drainage; b) increasing jaundice with cholangitis; c) clinical picture of bile peritonitis [9, 46].

Damage to the gallbladder manifests itself as pain and a feeling of distension in the right hypochondrium, hyperthermia, jaundice, loss of appetite, nausea, vomiting, peritoneal signs, bile leakage through the drainage. Complaints of severe abdominal pain the day after cholecystectomy are not typical for a smooth postoperative period and should alert the surgeon. If the pain is diffuse or at least tends to spread, and is accompanied by the appearance of protective tension of the muscles of the anterior abdominal wall, one should think about bile leakage or damage to the hollow organ. With a dull pain, distending pain in the liver area, there is most often a violation of bile outflow. The appearance of jaundice and cholangitis finally confirms the diagnosis [47, 50].

Ultrasound examination (US) is the most accessible and simple method of examination, which allows determining the presence of fluid in the free abdominal cavity, in the subhepatic space. However, the ultrasound data should also be compared with the clinical picture, since the detection of fluid in itself does not indicate the development of a complication. It is most informative in the progression of mechanical jaundice, the echographic picture of biliary hypertension can indirectly serve as confirmation of clipping (ligation) of the gallbladder [2, 43].

In addition to ultrasound, computed tomography (CT) can be used to detect fluid. CT differs from direct contrast methods for examining bile ducts, since it is not necessary to create hypertension in them to visualize dilated bile ducts, and bile in CT is a natural contrast agent that allows you to see dilated bile ducts against the background of the liver parenchyma, along the hepatoduodenal ligament and in the head of the pancreas. The purpose of CT examination is to establish the fact of mechanical jaundice, determine the level and cause of bile duct obstruction. In biliary hypertension, CT is a reliable method of examination. The presence of external bile leakage in combination with mechanical jaundice reduces the sensitivity of the method.

The main advantage of these methods is non-invasiveness, however, to make a final diagnosis, an additional procedure is required – percutaneous puncture of the fluid accumulation site under ultrasound or CT control. Diagnostic puncture allows determining the qualitative composition of the fluid, and in some cases – to perform therapeutic drainage of the cavity [41, 44].

Magnetic resonance imaging (MRI). Currently, MRI is becoming increasingly important, as it provides a specific topical characteristic of the damage, the level of damage, and the condition of the surrounding tissues [52].

The most common method of contrasting the interseptal septum is endoscopic retrograde cholangiopancreatography (ERCP). The study allows determining the location and nature of the injury to the interseptal septum. In case of bile leakage, ERCP can be used to diagnose insufficiency of the cystic duct stump, marginal injury of the main ducts, or their complete intersection. The method may be uninformative in case of bile leakage from an additional hepatic duct or the gallbladder bed. It is also very valuable that ERCP in some cases becomes not only a diagnostic, but also a therapeutic procedure. Thus, in case of bile leakage from the cystic duct or marginal injury of the cholangiopancreatitis, nasobiliary drainage of the bile ducts and stenting are performed for the purpose of decompression. It is most informative in diagnosing “fresh” injuries in the early postoperative period [34, 51].

Percutaneous transhepatic cholangiography (PTC) is a valuable diagnostic and therapeutic measure. PTC is also used to diagnose bile leakage. This method allows to detect bile leakage from additional ducts flowing into the gallbladder [52].

Percutaneous transhepatic drainage of the biliary tree can be used to eliminate biliary hypertension as a stage of preoperative preparation [53, 54].

According to E. I. Galperin (2009), there are several factors that can influence the choice of surgery and the method of its implementation:

- nature of the injury;
- possibility of endoscopic stenting;
- location of the injury;
- condition of the intersected duct: diameter and wall thickness;
- time of injury diagnosis: during cholecystectomy or in the early postoperative period;
- presence of peritonitis in the postoperative period;
- availability of a surgeon with experience in reconstructive surgery of the bile ducts [10].

The nature of the injury is of great importance in determining the indications for various surgeries. M. E. Nikitaylo et al. (2012) presented an analysis of the results of

surgical treatment of complete duct transection by restoring the duct with an end-to-end anastomosis. The authors observed a high frequency of anastomosis scarring and the need for reoperation within 6 months to 4 years in 91% of patients [17].

The surgeon's desire to restore the continuity of the bile duct is understandable, but it is undesirable to do so: the probability of cicatricial stricture formation after biliobiliary anastomosis is very high (70–100%) [11]. The main factors contributing to cicatricial biliobiliary anastomosis are tension due to diastasis of the duct ends, small diameter of the ducts (if there was no previous biliary hypertension), and impaired blood supply in the proximal segment of the common bile duct, since the hepaticocholedoch has an axillary ascending type of blood supply [8, 35].

E. I. Galperin and A. Yu. Chevokin (2010) presented an analysis of the treatment of 61 patients with “fresh” injuries to the main bile ducts and came to the conclusion that, in contrast to marginal injuries, patients with complete transection of the duct have poor results after reconstructive operations. Probably, the presence of a wide or even narrow “bridge” of the duct wall in case of marginal injuries does not cause such a sharp disruption of local blood circulation, which explains the good results obtained even in conditions of peritonitis [7].

An alternative to surgical intervention in case of marginal injury or injury to the duct of a size not exceeding 1/2 of its diameter can be endoscopic insertion of a stent into the duct, which ensures healing of the duct wound in the correct position and prevents further compression of the duct lumen by scar tissue. Endoscopic or transhepatic insertion of stents into the damaged duct undoubtedly marks progress in this area of surgery. The possibility of endoscopic removal of the stent, in contrast to “lost” drainage, makes this manipulation acceptable and manageable [8, 25, 31].

Undoubtedly, the localization of the complete intersection plays a major role in determining the technique of reconstructive surgery. N. N. Artemyeva et al. (2018) present the results of treatment of 54 patients with damage to the VZhP after LCE. To determine the level of damage, the authors use the classification of S. M. Strasberg - H. Bismuth. According to their data, the higher the level of damage, the more appropriate it is to use frame drains in various modifications [3, 56].

In recent years, preference has been given to anastomoses without the use of frame drainage, since long-term use of transhepatic drainage leads to the formation of bile duct strictures or, at least, does not prevent their development [26, 57].

M. E. Nikitaylo et al. (2012) performed reconstructive surgeries for type II-III injuries at the level of the bile duct bifurcation, with diastasis between duct segments of 30 mm or more, as well as in cases of injuries when it was not possible to detect the distal section of the common bile duct. In case of high injuries and strictures, an

anastomosis was formed between the stump of the hepatic duct with the small intestine, excluded according to the method of A. A. Shalimov or Roux, and in case of low injuries, the junction of the duct with the duodenum was formed [17].

Performing a bilioduodenoanastomosis is considered a simple and less traumatic operation. One of the serious disadvantages of hepaticoduodenostomy is constant duodenobiliary reflux, which contributes to the maintenance of chronic cholangiohepatitis and, often, the occurrence of multiple liver abscesses. Recurrent cholangitis and anastomotic stenosis were the cause of repeated operations in 30% of patients [18, 55, 59].

The small diameter of the proximal segment of the duct and its thin wall create great difficulties for the application of hepaticojejunostomy. S. I. Emelianov observed poor results in 8 out of 9 patients; in his opinion, the reason for the failure is the small diameter of the duct and its thin wall. The author believes that in most patients, with complete intersection of the duct, two-stage treatment should be used: at the first stage, a drainage tube should be inserted into the proximal section of the intersected duct, and at the second, reconstructive surgery should be performed [10]. H. Bismuth adheres to virtually the same treatment principle [29]. With a small diameter of the proximal segment of the duct and a high location of the injury, it is advisable to form a platform by dissecting the left hepatic duct after mobilizing it under the chiliary plate of the liver according to Hepp-Couinaud. The determining factor in the treatment tactics for “fresh” bile duct injuries is the time of its detection – during surgery or in the early postoperative period [27].

V. N. Chernyshev et al. draw attention to the choice of surgical intervention depending on the recognition of the time of damage to the interventricular septum. The authors observed the best long-term treatment results in patients with complete intersection, in whom reconstruction of the bile ducts was performed immediately after the detection of iatrogenic damage to the bile ducts on the operating table. Reconstructive operations on the bile ducts during intersection detected in the postoperative period must be performed as early as possible after the injury, after the elimination of bile peritonitis and other purulent complications, i.e., use a two-stage treatment [23]. N. N. Artemyeva et al. (2018) also adhere to a similar treatment principle. Any restorative and reconstructive operations in the conditions of peritonitis end with scarring of the anastomoses [3, 24].

E. I. Galperin (2011) believes that the main positive factor in the treatment of duct injuries is the presence of a surgeon who has experience in reconstructive surgery of the bile ducts, who can successfully perform surgery with a narrow duct and thin wall,

with bifurcation and lobar damage to the hepatic ducts in conditions of peritonitis and in the presence of bile sacs [6].

L. Stewart and L.W. Way report the success of the intervention in only 17% of patients when the operation was continued by the surgeon who had transected the duct. G. Nuzzo et al. provide data on 27 patients with transection of the hepatic duct, in whom the operation was continued by the surgeon performing the cholecystectomy; in 26 of them the result was poor and a repeat operation was required [61].

Thus, even minor injuries of the interventricular septum, but diagnosed late, can pose a threat to life and lead to severe complications in the postoperative period: widespread or limited peritonitis, formation of subhepatic abscesses, external biliary fistulas, posttraumatic cicatricial strictures. In case of severe injury of the bile ducts, its treatment is extremely difficult, and the results, both immediate and long-term, cannot be considered good. Mortality after reconstructive surgeries is 8–17% [30].

Despite certain successes achieved in this complex area of surgery, unsatisfactory results even among the most experienced surgeons are observed in an average of 10% of cases [19].

The main topics for discussion today are: the choice of the surgical method depending on the detection of damage to the interventricular septum intraoperatively or in the postoperative period, the choice of the optimal method of reconstruction of the biliary tree, indications for frame drainage of the anastomosis and its duration, risk factors for the development of stenosis of biliodigestive anastomoses, the place of endoscopic methods in the treatment of this category of patients. These circumstances indicate the need for further improvement of the system of views on this problem.

LIST OF REFERENCES

1. Abdurakhmanovich A. A., Furkatovich A. R. Methods of early surgical treatment of Burns //Web of Scientist: International Scientific Research Journal. – 2022. – T. 3. – №. 6. – С. 528-532.
2. Akhmedov R. F. et al. Diagnostic significance of procalcitonin level in burn disease //Journals of Emergency Surgery. Janelidze II. – 2021. – №. S1. – С. 11-12.
3. Akhmedov R. F. et al. Our experience in the treatment of burn sepsis //Actual problems of thermal trauma. Emergency Surgery.-Saint-Petersburg. – 2021. – С. 10-11.
4. AKHMEDOV R. F. Modern Views On The Etiopathogenesis And Diagnosis Of Burn Sepsis (Literature Review) //International Journal of Pharmaceutical Research (09752366). – 2021. – T. 13. – №. 1.
5. Nadirovich K. R., Jamshidovich N. H., Shukurullaevich A. D. ASPECTS OF SURGICAL CORRECTION OF INTRAOPERATIVE BILE DUCTS

- INJURIES //Journal of Survey in Fisheries Sciences. –2023. –Т. 10. –No. 2S. – С. 3921-3931.
6. Furqatovich A. R., Karabaevich K. K., Muxiddinovich T. F. OZONOTERAPIYANING KUYISH SEPSISI KECHISHIGA TA'SIRI //JOURNAL OF BIOMEDICINE AND PRACTICE. – 2022. – Т. 7. – №. 6.
 7. Furqatovich A. R., Karabaevich K. K., Muxiddinovich T. F. BURN SEPSIS-A TERRIBLE COMPLICATION THERMAL INJURY //JOURNAL OF BIOMEDICINE AND PRACTICE. – 2022. – Т. 7. – №. 6.
 8. Muhamadiev H. M. et al. A Retrospective Study Of The Clinical Significance Of Hemoconcentration As An Early Prognostic Marker For The Development Of Severe Acute Pancreatitis //The American Journal of Medical Sciences and Pharmaceutical Research. – 2020. – Т. 2. – №. 11. – С. 72-77.
 9. Zhamshitovich N. N., Alievich A. I. РЕЗУЛЬТАТЫ ХИРУРГИЧЕСКОГО ЛЕЧЕНИЯ ИНТРАОПЕРАЦИОННЫХ ПОВРЕЖДЕНИЙ ГЕПАТИКОХОЛЕДОХА //JOURNAL OF BIOMEDICINE AND PRACTICE. – 2022. – Т. 7. – №. 6.
 10. Ахмедов Р. Ф. и др. Диагностическая ценность прокальцитонина как маркера ожогового сепсиса у детей //Детская хирургия. – 2020. – Т. 24. – №. S1. – С. 18-18.
 11. Ахмедов Р. Ф. и др. Полиорганная недостаточность при ожоговом сепсисе //Роль больниц скорой помощи и научно исследовательских институтов в снижении предотвратимой смертности среди населения. – 2018. – С. 204-205.
 12. Ахмедов Р. Ф. и др. Наш опыт лечения ожогового сепсиса //Журнал Неотложная хирургия им. ИИ Джанелидзе. – 2021. – №. S1. – С. 10-11.
 13. Ахмедов Р. Ф. и др. Диагностическая значимость уровня прокальцитонина при ожоговой болезни //Журнал Неотложная хирургия им. ИИ Джанелидзе. – 2021. – №. S1. – С. 11-12.
 14. Ахмедов Р. Ф. и др. Ожоговый сепсис: грозное осложнение термической травмы //Инновационные технологии лечение ожогов и ран: достижения и перспективы: Всерос. симп. с междунар. участием. – 2018. – С. 19-21.
 15. Ахмедов Р. Ф., Карабаев Х. К. СОВРЕМЕННЫЕ ВЗГЛЯДЫ НА ЭТИОПАТОГЕНЕЗ И ДИАГНОСТИКИ ОЖОВОГО СЕПСИСА //Проблемы биологии и медицины. – 2020. – Т. 5. – С. 244-248.
 16. Ахмедов Р. Ф., Карабаев Х. К. Прогнозирование сепсиса при ожоговой болезни //Актуальные вопросы современной науки и образования. – 2022. – С. 183-185.
 17. Ахмедов Р. Ф., Тухтаев Ф. М., Хидиров Л. Ф. ОСЛОЖНЕНИЕ ТЕРМИЧЕСКОЙ ТРАВМЫ: ОЖГОВЫЙ СЕПСИС //Лучшие интеллектуальные исследования. – 2024. – Т. 30. – №. 2. – С. 8-15.
 18. Ахмедов Р. Ф. ХИРУРГИЧЕСКАЯ ТАКТИКА ЛЕЧЕНИЕ ЯТРОГЕННЫХ ПОВРЕЖДЕНИЙ ГЕПАТИКОХОЛЕДОХА //Лучшие интеллектуальные исследования. – 2024. – Т. 31. – №. 1. – С. 83-94.

19. Ахмедов Р. Ф. ОСОБЕННОСТИ РЕКОНСТРУКТИВНЫЕ ОПЕРАЦИИ ПРИ ЯТРОГЕННОМ ПОВРЕЖДЕНИИ ВНЕПЕЧЕНОЧНЫХ ЖЕЛЧНЫХ ПРОТОКОВ //Modern education and development. – 2024. – Т. 12. – №. 1. – С. 172-182.
20. Ахмедов Р. Ф. ОСОБЕННОСТИ ДИАГНОСТИКИ И ЛЕЧЕНИЕ ПРИ РАННИХ БИЛИАРНЫХ ОСЛОЖНЕНИЙ ПОСЛЕ ХОЛЕЦИСТЭКТОМИИ //Ta'lim innovatsiyasi va integratsiyasi. – 2024. – Т. 31. – №. 1. – С. 143-153.
21. Карабаев Х. К. и др. Результаты хирургического лечения ожогового сепсиса //Журнал Неотложная хирургия им. ИИ Джанелидзе. – 2021. – №. S1. – С. 29-30.
22. Курбонов Н. А., Ахмедов Р. Ф. Modern approaches to the treatment of deep burning patients //Узбекский медицинский журнал. – 2022. – Т. 3. – №. 2.
23. Нарзуллаев С. И., Ахмедов Р. Ф. СОВРЕМЕННЫЕ МЕТОДЫ МЕСТНОГО ЛЕЧЕНИЯ К ЛЕЧЕНИЮ ПАЦИЕНТОВ С ГЛУБОКИМИ ОЖОГАМИ //Boffin Academy. – 2023. – Т. 1. – №. 1. – С. 314-325.
24. Нарзуллаев С. И., Ахмедов Р. Ф. ОПТИМИЗАЦИЯ И ЛЕЧЕНИЕ ПОЛИОРГАННОЙ НЕДОСТАТОЧНОСТИ У БОЛЬНЫХ ТЕРМИЧЕСКОЙ ТРАВМОЙ //Research Focus. – 2023. – Т. 2. – №. 11. – С. 124-132.
25. Нуриллаев Х. Ж. У. и др. УЛЬТРАЗВУКОВОЕ ИССЛЕДОВАНИЕ ЖЕЛЧНОГО ПУЗЫРЯ //Scientific progress. – 2022. – Т. 3. – №. 3. – С. 808-811.
26. Рузибоев С. и др. Методы и средства местного консервативного лечения обожженных //Журнал проблемы биологии и медицины. – 2016. – №. 4 (91). – С. 186-192.
27. Хакимов Э. А. и др. Печеночная дисфункция у больных с ожоговым сепсисом //Журнал Неотложная хирургия им. ИИ Джанелидзе. – 2021. – №. S1. – С. 66-67.
28. Хидиров Л. Ф. и др. РАННЯЯ ДИАГНОСТИКА И ПРИНЦИПЫ ЛЕЧЕНИЯ СЕПСИСА У ТЯЖЕЛООБОЖЖЕННЫХ //Research Focus. – 2024. – Т. 3. – №. 3. – С. 169-172.
29. Шоназаров И. Ш., Ахмедов Р. Ф., Камолидинов С. А. ОСОБЕННОСТИ РАЗВИТИЯ ИНТРААБДОМИНАЛЬНОЙ ГИПЕРТЕНЗИИ У ПАЦИЕНТОВ С ТЯЖЕЛЫМ ОСТРЫМ ПАНКРЕАТИТОМ //Достижения науки и образования. – 2021. – №. 8 (80). – С. 66-70.
30. Шоназаров И. Ш., Камолидинов С. А., Ахмедов Р. Ф. ХИРУРГИЧЕСКОЕ ЛЕЧЕНИЕ ОСТРОЙ СПАЕЧНОЙ ТОНКОКИШЕЧНОЙ НЕПРОХОДИМОСТИ ЛАПАРОСКОПИЧЕСКИМ МЕТОДОМ //Вопросы науки и образования. – 2021. – №. 31 (156). – С. 69-78.