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Immediate and long-term consequences of the treatment of cholelithiasis by laparoscopic cholecystolithoextraction

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Summary

The use of organ-preserving interventions for cholelithiasis is not widely used in modern medicine, although there are publications in the literature about the implementation of such interventions in some clinics.

In the period 2004–2006 in the Republican Center for Functional Surgical Gastroenterology (Krasnodar), 12 surgical interventions were performed for cholelithiasis with preservation of the gallbladder (laparoscopic cholecystolithoextraction). From 2009 to 2011 the patients were called and examined (the first follow-up examination, on average 2.2 years after the operation). There were no signs of recurrence in 9 operated patients (of which 4 had an echogenic homogeneous suspension), in 3 patients a recurrence of stone formation was detected. Due to the reorganization and subsequent closure of the center, communication with patients was terminated.

In 2023 (on average 15.5 years after surgery), patients who did not have a relapse at the first follow-up examination were examined. It was found that 3 out of 9 patients had no gallbladder stones, 3 patients underwent laparoscopic cholecystectomy due to relapse after the first follow-up examination, with 3 patients the relationship could not be established.

The results of laparoscopic cholecystolithoextraction were analyzed depending on the clinical situation.

EDN: FRLDHS

Keywords: cholelithiasis, laparoscopic cholecystectomy, sphincter of Oddi dysfunction, postcholecystectomy syndrome, postoperative care

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Ближайшие и отдаленные последствия лечения желчнокаменной болезни путем лапароскопической холецистолитоэкстракции

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Резюме

Применение органосохраняющих вмешательств при желчнокаменной болезни не получает широкого распространения в современной медицине, хотя в литературных источниках имеются публикации о выполнении подобных вмешательств в различных клиниках.

В период 2004–2006 гг. в Республиканском центре функциональной хирургической гастроэнтерологии (г. Краснодар) было выполнено 12 оперативных вмешательств при желчнокаменной болезни с сохранением желчного пузыря (лапароскопическая холецистолитоэкстракция). С 2009 по 2011 гг. пациенты были вызваны и обследованы (первый контрольный осмотр, в средние сроки 2,2 года после операции). У 9 прооперированных больных признаков рецидива не выявлено (из них у 4 выявлялась эхогенная гомогенная взвесь), у 3 пациентов — выявлен рецидив камнеобразования. В связи с реорганизацией и последующим закрытием центра связь с пациентами была прекращена.

В 2023 году (в средние сроки 15,5 лет после операции) пациенты, у которых отсутствовал рецидив при первом контрольном осмотре были обследованы. Выявлено, что у 3 пациентов из 9 камни в желчном пузыре отсутствовали, 3 пациентам после первого контрольного осмотра была проведена лапароскопическая холецистэктомия в связи с рецидивом, с 3 пациентами связь установить не удалось.

Проведен анализ результатов проведения лапароскопической холецистолитоэкстракции в зависимости от клинической ситуации.

Ключевые слова: желчнокаменная болезнь, лапароскопическая холецистэктомия, дисфункция сфинктера Одди, постхолецистэктомический синдром, послеоперационное ведение

Конфликт интересов. Авторы заявляют об отсутствии конфликта интересов.

Introduction

The widespread use of endoscopic research methods in the 2000s led to a sharp increase in the removal of the gallbladder in some cases without mandatory indications for surgical treatment in the presence of concomitant pathology of the hepatopancreatoduodenal zone [1].

The concept of organ-preserving operations is based on the minimally invasiveness of surgical interventions and has always been welcomed in the scientific world. At the same time, the use of organ-preserving interventions for cholelithiasis with an unchanged gallbladder with preserved motor-evacuation function is not widely used, although publications on the implementation of such interventions in some clinics can be found in the literature.

This surgical treatment was previously called "ideal cholecystotomy", however, this term was used by surgeons during the period of open laparotomy operations, currently laparoscopic methods of treatment are used.

Indeed, in the literature data, we did not meet publications covering the results of organ-preserving operations in cholelithiasis.

Methods and materials

In the Republican Center for Functional Surgical Gastroenterology (RCFSG, Krasnodar) in the period 2004–2006 under the guidance of Doctor of Medical Sciences Onopriev A.V. and Head of the Endoscopy Department Gabriel S.A. 12 surgical interventions were performed, consisting in endoscopic removal of stones from the gallbladder with subsequent suturing of the gallbladder wall in the development of cholecystolithiasis [2].

For cholecystolithoextraction (removal of stones from the gallbladder) a special device was developed that allows during endoscopic operations to capture stones under visual control with special petals, crush large stones, and remove small stones using a suction system after removing the endoscope [3].

In addition to performing surgical intervention, patients underwent pathogenetic treatment aimed at such mechanisms of development of cholecystolithiasis as inflammation, infectious factors, and increased protein concentration in bile. The gallbladder cavity was repeatedly washed during the operation and in the early postoperative period with a special solution containing furacilin, chymotrypsin, hydrocortisone [4].

Surgical interventions were carried out mainly in the period from December 2006 to September 2008. Later, due to the reorganization and subsequent closure of the RCFSG, the performance of laparoscopic cholecystoextraction was stopped, but for some time we continued to monitor the operated patients.

All operated patients were female, the youngest at the time of the operation was 19 years old, the oldest 57 years old (mean 41.7 years).

Results

At the first control examination (from 8 months to 5 years and 4 months) in 9 operated patients, there were no signs of recurrence (the presence of newly emerging cholelithiasis) (we will denote them further as group 1), in 3 patients a recurrence of stone formation was detected (designation hereinafter — group 2). At the same time, 4 patients from group 1 showed signs of an echogenic homogeneous suspension in different amounts.

Of the 12 patients, 9 noted minor periodic pain in the right hypochondrium before surgery, dyspeptic disorders, but 3 patients focused on the presence of pain. It was in them that recurrence of stone formation was noted in the future (all belong to group 2).

Objectively the pain in the right hypochondrium during palpation was noted by 8 people, one person — in the epigastrium, one person in the epigastrium and the left hypochondrium, one in the right lateral region, in one patient pain was not detected on palpation (no connection with selected groups was established).

The presence of the onset of the disease was noted in patients either from the moment the pain syndrome appeared, or from the moment of accidental detection of stones during ultrasound examination. Also, there were no correlations with recurrence of cholecystolithiasis.

All patients were determined by the body mass index according to the Quetelet index. The average BMI was 25.8, in 2 patients with newly diagnosed cholecystolithiasis it was more than 30, in the third — 18.9.

Conducting a general blood test and biochemical studies in all patients also did not reveal any dependence.

All patients underwent ECG, no correlations were found.

According to the size of the liver, the width of the common bile duct and portal vein, there were no differences between group 1 and group 2.

In 12 patients undergoing surgery during ultrasound examination before surgery, from 1 to 3 stones were found, with a diameter of 8 to 20 mm. The average stone diameter was 13.9 mm. According to the number of stone detected, the following trend was noted: among patients of group 1 — 6 patients had 1 stone before surgery, 2 had 2 stones, and 1 had 3 stones; among patients of group 2 — two had 2 calculi, one had 1. So among patients with 1 stone before surgery a relapse developed in 1 case out of 7 (14.3%), in 5 patients with 2 or 3 stones during ultrasound examination before surgery — stones reappeared in 2 cases (40%).

Patients were measured the size of the gallbladder on an empty stomach, followed by giving a choleretic breakfast and re-measurement of its size.

The presence of preserved contractile function of the gallbladder more than 50% was one of the main criteria for selecting patients for laparoscopic cholecystolithoextraction. Among all operated patients, only one had a contractility of 24.1% (taken as an exception), but he did not develop stone formation. In all patients of group 2, the reduction of the gallbladder before surgery was more than 50%.

For the selection of patients, the absence of previously established chronic pancreatitis was also taken into account, as well as the normal size of the pancreas, echogenicity and contours of the organ were not taken into account.

All patients in the preoperative period underwent endoscopic examination of the stomach and duodenum with a mandatory examination of the region of the major duodenal papilla (MPD). Only patients with no apparent MPD pathology were admitted.

Concomitant diseases of patients were taken into account in connection with the upcoming surgical intervention, but did not affect the selection of patients. However, for organ-preserving surgery, we tried not to take patients with severe comorbidities.

The early and late postoperative period in all 12 patients proceeded well, however, in one patient, after 1 year and 3 months, an exacerbation of chronic pancreatitis was recorded after taking melon, which required hospitalization. No evidence of cholelithiasis was found in her.

The first follow-up examination of the operated patients was scheduled in the period from May 2009 to January 2011 in the period after the operation, respectively, from 8 months to 5 years and 4 months (average 2 years and 2 months). The earliest follow-up

examination of the patient — 8 months was caused by the appearance of pain in the epigastric region and an independent ultrasound examination of the gallbladder, on which stones were detected. Patient Sh. was the first to undergo laparoscopic cholecystolithoextraction (in 2004), but due to living in another city, she could not come for a follow-up examination for a long time. As a result, she was looked at 5 years and 4 months after the operation.

At the first follow-up examination, 4 patients did not show any complaints (two from the first group, one from the 2nd group). 3 patients noted recurrent pain in the upper abdomen (two from the first group, one from the 2nd group). 5 women noted pain in various parts of the abdomen, including the umbilical region (1 person) and the lower abdomen (1 person).

Objectively after the operation, no peculiarities were found on palpation of the abdominal cavity in 5 patients, in 7 patients there was pain on palpation in the upper abdomen.

When conducting a laboratory study (general blood test, biochemical study), 2 patients had a slight leukocytosis up to $9.5x10^9$/l, two had hypercholesterolemia, one patient from group 2 had an increase in total bilirubin up to 44.1 μmol / l, direct to 12.8 μmol/l.

Ultrasound examination of the liver, common bile duct, portal vein did not reveal any abnormalities in any of the groups of patients. Especially valuable is the absence of expansion of the common bile duct in operated patients, which usually occurs after cholecystectomy performed by any of the possible methods (open, laparoscopic, mini-access).

The contractility of the gallbladder after laparoscopic cholecystolithoextraction, despite the linear incisions of the gallbladder wall, remained at a fairly high level in all patients undergoing surgery (ranged from 42% to 91.2%, on average — 67%), which indicates a low trauma and minimally invasive surgical intervention and preservation of the motor-evacuation function of the gallbladder after surgery. At the same time, in patients with newly diagnosed cholelithiasis, it was 90.1%, 87.1% and 49.6%.

Patient K. had 5 stones up to 8 mm in diameter (postoperative period 8 months), patient S. 2 stones 4 mm (postoperative period 2 years and 4 months), patient Sh. 2 stones 11 and 12 mm (after 5 years and 4 months). The average growth of stones in operated patients was 5.3 mm per year.

Ultrasound examination of the pancreas did not reveal any significant changes from the parameters in the preoperative period.

Further, communication with patients was lost due to the reorganization and subsequent closure of the RCFSG. In 2023, patients of the 1st group were called and interviewed, it turned out that in 3 patients there was no recurrence of cholecystolithiasis, 3 patients underwent removal of the gallbladder due to the presence of cholelithiasis, and communication with 3 patients could not be restored.

Discussion

The reorganization and subsequent closure of the Republican Center for Functional Surgical Gastroenterology (RCFSG) did not allow to continue the study, however, the results of laparoscopic cholecystolithic extraction in 12 patients with cholelithiasis indicate the possibility of this surgical treatment. In our study, we did not encounter cases of dissatisfaction in patients with the organ-preserving intervention and the need for laparoscopic cholecystectomy in case of relapse of the disease. On the contrary, all patients who were invited to participate in the study almost without hesitation agreed to participate.

We assume that the limited distribution of organ-preserving methods of treatment for cholecystolithiasis can be explained by the good immediate results of laparoscopic cholecystectomy, insufficiently debugged follow-up of operated patients after organ-preserving methods, as well as the unwillingness of a second operation in case of recurrence of stone formation by surgeons, not by patients.

Gallstone disease as a nosology is at the intersection of therapy and surgery. The therapist should be responsible not only for preoperative preparation and postoperative management of the patient, but also for recommending the choice of the method of surgical treatment, since the operated patients will be followed up by the therapist in the future.

Conclusions

Based on the results of the analysis of the immediate and long-term results of laparoscopic cholecystolithoextraction, some preliminary conclusions can be drawn, recognizing the high error in the results obtained due to the small sample.

1. Laparoscopic cholecystolithoextraction can be considered as a method of treating cholelithiasis, since no complications of the disease from this method of treatment were identified, all operated patients were warned about the possibility of recurrence of cholelithiasis, if stones reappeared, they removed the gallbladder from the same surgeon who performed before laparoscopic cholecystolithoextraction.
2. All operated patients require obligatory dispensary observation (in 3 patients at the first control examination, a recurrence of cholecystolithiasis was detected in an average of 2 years and 2 months after the operation, in 4 patients there was congestive echogenic bile in different amounts).
3. Violations of the motor-evacuation function of the gallbladder after laparoscopic cholecystolithoextraction is not observed (on average, it was 67% at the first follow-up examination after surgical treatment).
4. Expansion of the common bile duct was not observed in any of the operated patients, which indicates the normal functioning of the sphincter apparatus of the biliary tract in the postoperative period.

5. In the study, we noted a clear correlation between the pain syndrome reported by patients before surgery and the subsequent development of cholecystolithiasis recurrence (3 out of 3 patients), however, given the small sample size, it is premature to draw any conclusions.
6. There were no other correlations between the data of the patient survey, objective examination, data of laboratory and instrumental methods of research and the recurrence of cholelithiasis.
7. A special device developed at the RCFHG in 2006 allows capturing stones under visual control, crushing large stones, and removing small stones using a suction system.
8. The average growth of recurrent gallstones in our study was 5.3 mm per year. Perhaps in the case of dynamic monitoring of these patients before surgery, we would have noted the growth of stones in the unoperated gallbladder.
9. There was a certain trend between the number of stones detected before surgery and the development of cholecystolithiasis in the postoperative period — among patients with 1 stone — recurrence developed in 1 case out of 7 (14.3%), in patients with 2 or 3 stones before operation — stones reappeared in 2 cases out of 5 (40%).
10. According to the results of the study, it turned out that at least 3 out of 12 patients (25%) subjected to laparoscopic cholecystolithoextraction did not have a recurrence of stone formation 15 years after surgery, despite the lack of dispensary follow-up.

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