

# Combination of External Biliary and Cholecystoduodenal Fistula in an Obese Patient

Nazarbek Omarov <sup>1\*</sup>, Meyrbek Aimagambetov <sup>1</sup>, Medet Auenov <sup>1</sup>,  
Samatbek Abdrakhmanov <sup>1</sup>, Tolkyn Bulegenov <sup>1</sup>, Yoshihiro Noso <sup>6</sup>, Erlan Asylbekov <sup>1</sup>

<sup>1</sup> Department of Hospital Surgery, Semey State Medical University,  
Semey, 103 Abay Kunanbayev str. Republic of Kazakhstan

<sup>6</sup> Department of General Medicine, Faculty of Medicine, Shimane Medical University, Japan

\*Corresponding author: Nazarbek Omarov, [omarov.nazarbek@rambler.ru](mailto:omarov.nazarbek@rambler.ru)

## ABSTRACT

The attention of surgeons is actively growing on the matter of improving treatment outcomes in patients with acute calculous cholecystitis with concomitant overweight and obesity. Research objective is to share the experience of treating one case of a combination of an external biliary fistula with cholecystoduodenal fistula in an obese patient using our treatment method. A rare occurrence of acute destructive cholecystitis complicated by phlegmon of the anterior abdominal wall, with the formation of an external bile fistula with cholecystoduodenal fistula in a patient with concomitant obesity. We want to submit this case as a very rare complication of acute destructive calculous cholecystitis. The results of surgical treatment of 3,957 patients with cholelithiasis among those treated at the Semey State Medical University, Semey were analyzed from January 2011 until September 2018. The phased surgical treatment of the patient was carried out. The first stage of the patient is the calculi removal with the evacuation of purulent bile and the cholecystostomy setting. The second stage was performed using the Aimagambetov universal retractor device for clients with overweight and obesity after 6 days developed in the clinic, and performed the Method of dissociation of cholecystoduodenal fistula with subsequent cholecystectomy in obese patients from the mini-approach. Two-stage surgical treatment and the use of the "Method for disconnection of cholecystoduodenal fistula with subsequent cholecystectomy in obese patients from the mini-approach" developed in the clinic is the best way out in this case.

**Keywords:** gallstone disease; external bile fistula; cholecystoduodenal fistula; disconnection of cholecystoduodenal fistula; obesity.

## Correspondence:

Nazarbek Omarov

1 Department of Hospital Surgery, Semey State Medical University, Semey, 103 Abay Kunanbayev str. Republic of Kazakhstan

\*Corresponding author: Nazarbek Omarov email-address: [omarov.nazarbek@rambler.ru](mailto:omarov.nazarbek@rambler.ru)

## INTRODUCTION

Surgeons are highly focusing on improving treatment outcomes for patients with acute calculous cholecystitis with concomitant overweight and obesity, especially in more recent years. This pathology is still the most common in everyday work. It's extremely common among patients with overweight and <sup>1</sup>. Growing trends in obesity and metabolic syndrome have contributed to the growth of diagnosed forms of gallstone <sup>2,3</sup>.

Significant risk factors for the development of Mirizzi's syndrome are the following: a destructive inflammatory process in the area of the Hartmann's pocket, cystic duct or gallbladder neck, elderly age, concomitant obesity and prolonged gallstone carriage. The inflammatory process is caused by calculus and leads to a narrowing of the hepatic canal and the formation of a vesico-choledochal fistula. By the frequency of occurrence in the preoperative period it is diagnosed in 13-22% of patients. The number of men and women with this disease is equal. The prevalence of pathology among patients with gallstone disease is 0.25-6%. Sometimes this syndrome can be accompanied by the development of obstructive jaundice and cholangitis. There is an erosion of the bile duct or rupture of the gallbladder in severe <sup>3-6</sup>.

In connection with the introduction of new technologies, the last two decades have been marked by significant changes in the treatment of acute cholecystitis. New modern equipment made it possible to reconsider the prevailing understanding of tactics. The widespread use of ultrasound has made it possible to almost unmistakably establish the form of gallbladder inflammation, even with the erased clinical symptoms of the disease. This allows for patients to seek treatment and differentially approach tactical issues already in the early stages.

Using multi-stage treatment with decompression of the gallbladder at the first stage of care has proven itself. This technique is especially acceptable in patients with a combination of acute calculous cholecystitis with severe somatic pathology. However, the question about choosing the option of final treatment remains undiscovered.

Searching alternative methods of surgical treatment as minimally invasive technology helps to increase surgical activity and increase the number of radically treated patients with acute destructive calculous cholecystitis, even with severe somatic <sup>7,8</sup>.

Therefore, all plastic surgeons strive for minimally invasive surgical methods for the treatment of acute calculous cholecystitis, acceptable and accessible in everyday work in patients with overweight and obesity.

Acute destructive cholecystitis complicated by phlegmon of the anterior abdominal wall with the formation of an external bile fistula is a rare complication of chronic calculous cholecystitis, since gallstone disease is currently diagnosed and treated at an early <sup>9-11</sup>.

## METHODOLOGY

The results of surgical treatment of 3,957 patients with cholelithiasis among those treated at the University Hospital Semey Medical University, Semey were analyzed from January 2011 until September 2018.

Moreover, one of them was diagnosed with acute destructive cholecystitis, complicated by phlegmon of the anterior abdominal wall with the formation of an external bile fistula with cholecystoduodenal fistula. The patient had associated obesity. We haven't encountered a similar case in the literature available to us.

We want to introduce this case as a very rare one of the complications of acute destructive calculous cholecystitis. This study in no way violates human rights and ethical standards. The patient was informed and agreed that her

case will be described and considered in this scientific article, as well as her photographs will be used.

## RESULTS

### Medical history

Patient T., 86 years old, was hospitalized with phlegmon of the anterior abdominal wall due to destructive cholecystitis lasting 21 days and fever (39.3°C). Complaints of pain in the right hypochondrium, the presence of a fistulous opening with purulent-biliary discharge with the passage of stones, chills, fever up to 38-39°C, dry mouth, bitterness in the mouth, nausea, vomiting with bile several times. It was revealed from anamnesis that the patient was ill for about 20 days. The patient specifically notes the onset of pain after not keeping a diet by eating fatty foods. The pain appeared suddenly and was intense. I didn't seek medical help before going to the hospital. The patient took analgesics (analgin and ketorol pills). The patient had been suffering II-degree arterial hypertension for a long time. Risk 3. Chronic obstructive bronchitis. DN – I degree. The patient had III-degree obesity. (Height-167, Weight-116, BMI = 41.59).

Patient hypersthenic physique. When she was admitted to the hospital her condition was serious. Consciousness was clear. Objectively: The skin and visible mucous membranes were subjective and clean. The osseous-articular system had no visible pathology. Hemodynamics was stable. Blood pressure was 160/90mm RT. Art., heart rate was 96 beats/min. Heart sounds were muffled, the rhythm was correct. Lung harsh breathing with isolated rales. The liver couldn't be palpated. Spleen had no extraordinary features.

The tongue was yellowing and dry. The abdomen was symmetrical and was engaged in breathing. Palpation was soft, painful in the right hypochondrium and in the fistulous wound. Infiltrate 12.0x15.0cm in size with fluctuation in the center was palpated here, painful on palpation. There were bile stones sized 0.6cm, 0.7cm, 1.5cm and many small stones with sizes up to 0.2x0.3cm depart with the biliary discharge in the center of the infiltrate in 3 places. Shyotkin-Blumberg sign was negative. Peristalsis was sluggish.

The diagnosis is: acute destructive cholecystitis, complicated by phlegmon of the anterior abdominal wall of the abdomen with the formation of an external bile fistula in combination with cholecystoduodenal fistula with III-degree concomitant obesity.

### Laboratory and instrumental studies

Clinical blood test as of 01/22/2019:

- Hemoglobin – 108g/l;
- erythrocytes – 3.8x10<sup>12</sup>/l;
- Color index 0.87;
- white blood cells – 27.3x10<sup>9</sup>/l;
- hematocrit – 30%;
- stab – 12%;
- segmented – 70%;
- monocytes – 3%;
- lymphocytes – 5%;
- ESR – 42 mm/h.

General urine test as of 01/22/2019:

- Color – saturated yellow;
- transparency – transparent;
- relative density – 1,023;
- protein – 0.033 g/l;
- leucocytes – 0-1-2 in the visual field;
- mucus++.

Biochemical blood test as of 01/22/2019:

- BUN – 8.4 mmol/l;
- glucose – 5.4 mmol/l;
- total bilirubin – 54.0 mmol/l;
- direct bilirubin – 20.0 mmol/l;
- indirect bilirubin – 34.0 mmol/l;
- total amylase – 86.2 u/l;
- filtrate nitrogen – 31.4 mmol/l.

Coagulogram as of 01/22/2019:

- International normalized ratio – 1.98;
- fibrinogen – 4.23,
- thrombotest – VI;
- partial thromboplastin – 34.5;
- thrombin time – 14.1;
- soluble fibrin-monomer complexes – 4.0.

EIA blood for Anti-HIV as of 01/22/2019. *Report:* negative.

EIA on HbsAg and HCV as of 01/22/2019. *Report:* negative.

Ultrasound examination of the abdominal cavity as of 01/22/2019. Access was extremely difficult due to concomitant obesity of the III degree:

- Liver – the right lobe was 188x108mm, the left was 92x84mm, the contours are even, the echo structure was medium-grained, moderately diffuse inhomogeneous, the echo density was increased. Intrahepatic ducts dilated to 3mm.
- The gallbladder was examined on an ultrasound scan with difficulties: the shape was deformed, 89x48 mm in size. The wall of the bladder was thickened, not leveling with the hypoechoicity spot. There were several stones of various diameters from 5mm to 25mm in the lumen, with an acoustic track. Common bile duct was 6.0mm.
- Pancreas were 32x21x29mm; contours were fuzzy; the echostructure was heterogeneous; echo density was increased. Spleen is 134x48mm. The spleen contour was smooth, the echo structure was fine-grained.
- *Report:* Acute destructive calculous cholecystitis. Echoes were signs of perivesical infiltrate. Diffuse changed in the hepatic parenchyma and pancreas. Moderate hepatosplenomegaly.

Plain radiography chest X-ray 01/22/2019. *Report:* Signs of chronic bronchitis.

Electrocardiography test as of 01/22/2019. SR, heart rate – 96 beats per min. The horizontal position of the electrical cardiac axis. Supraventricular extrasystole was recorded. There were scars in the posterior wall of the left ventricle. Myocardial ischemia.

Fibrogastroduodenoscopy as of 01/22/2019. *Report:* Erosive esophagitis. Focal atrophic gastritis.

Therapist's examination as of 01/22/2019. Diagnosis: Arterial hypertension, degree III, risk IV. CHF – I. Acute calculous cholecystitis. Obesity III degree.

### Stages of the therapy

*The first stage*, on the 01/22/2019. The doctors removed the patient's calculi with the evacuation of purulent bile and the installation of cholecystostomy. After processing the surgical field three times with a 3% solution of vaccodine; local infiltration anesthesia is performed with a 0.5% -10 ml solution of novocaine. The wound on the anterior abdominal wall is widening. The stones are removed and purulent bile is evacuated. After that, a drain tube is installed in the lumen of the gallbladder, i.e.

cholecystostomy. Fistulocholecystocholangiography was carried out on the 2<sup>nd</sup> day.

Fistulocholecystocholangiography was carried out on 01/23/2019 *Description:* Contrast filled the entire gall bladder. Gall bladder dimensions: 85x53mm. The contour was not even, not clear. The choledoch was contrasted over a length of 6 mm. There were several calculus in the lumen with sizes ranging from 5mm to 25mm. Contrast flew into the duodenum through the fistulous opening. The sinus opening was located at the body of the gallbladder closer to the neck. *Report:* X-ray signs of acute destructive calculous cholecystitis. Cholecystoduodenal fistula. Following discussion and consultation, it was decided to carry out extreme surgical treatment. Following the preoperative preparation the patient was operated after 6 days, after removal of purulent-inflammatory phenomena.

*The second stage* was performed on January 28, 2018 by the upper median laparotomy. After the laparotomy, the Aimagambetov Universal Retractor for Overweight and Obese Patients was developed in the clinic. During examination it was found the following: liver with rounded edges, dense, dark greenish color. A liver biopsy was taken. The projection of the gallbladder was a dense infiltrate formed by the lock of the greater omentum, the hepatic angle of the colon, the stomach, the duodenum, and the liver. Adhesions were phased by a coagulator. There were several stones in the lumen with dimensions ranging from 5mm to 25mm. The hepatoduodenal ligament didn't differentiate. Tissues were difficult to

identify. A small area of the gallbladder was isolated, bile was obtained during puncture, and the gallbladder was identified. The bladder was opened after taking on the holders, calculi were removed, while bile with fibrin, cloudy with flakes, stood out from the bile ducts. The cavity was washed. The "Method for the isolation of cholecystoduodenal fistula with subsequent cholecystectomy in patients with obesity from the mini-approach" was developed. The method consisted in performing atypical cholecystectomy with a partial leaving of the serous and submucosal layer of the posterior gallbladder wall on the liver according to the "Pribram type", and with partial leaving of the serous and submucous layer of the anterior gallbladder wall in the duodenum. After ligation and cutting off of the cystic artery and cystic duct, the hole in the duodenum was sutured with double-row sutures.

Hemostasis was performed. Amount of wipes. The subhepatic space drainage with a spiral-shaped drainage of the clinic's own development (Patent of the Republic of Kazakhstan for utility model No. 3818 dated 04/02/2019) removed through contraception in the right upper quadrant. Universal retractor was removed from the wound. Layered seams on the wound. Aseptic dressing. Blood loss was 100 ml.

The postoperative period had no complications, the drain tube from the subhepatic space was removed on the 4th day. Sutures from the postoperative wound were removed on the 7th day. Recovery. Surgery process is presented at the figures 1-6.



**Figure 1.** View of the local status. There is phlegmon of the anterior abdominal wall in the right hypochondrium area with purulent biliary discharge, with cholesterol stones being evacuated outward



**Figure 2.** After processing the surgical field three times with a 3% solution of vakodin, local infiltration anesthesia with a 0.5% -10 ml solution of novocaine is performed



**Figure 3.** The wound on the anterior abdominal wall expands





**Figure 4.** It shows the evacuation of purulent bile with stones out



**Figure 5.** Inserting drain into the lumen of the gallbladder-cholecystostomy



**Figure 6.** An alcohol and aseptic dressing is applied to the wound

#### DISCUSSION

There are several reports in the modern literature on the formation of an external cholecystic-skin fistula, which is a rare complication of gallstone disease<sup>9-14</sup>. 29 cases of this complication are described in world practice. The presence of a destructive process in the gallbladder and the combination of the external bile fistula with cholecystoduodenal fistula in obese patients with the development of phlegmon of the anterior abdominal wall requires emergency care, as it can develop into a generalized septic state with severe disorders.

#### CONCLUSION

A timely undertaken two-stage surgical treatment consists of: Stage 1: under local anesthesia for the evacuation of purulent contents with calculi and drain of the gallbladder cavity with a drain tube, i.e. cholecystostomy; Stage 2: the use of the "Method for the separation of cholecystoduodenal fistula with subsequent cholecystectomy in patients with obesity from the mini-approach" developed in the clinic, which are appropriate in the current situation and allowed to obtain a satisfactory treatment result.

#### ACKNOWLEDGEMENTS

The authors gratitude the Director of the Public State Enterprise at the REM "Pavlodar Regional Hospital named after Sultanova" Syzdykov Serym for his help with collecting material when writing an article.

#### CONFLICT OF INTEREST

The authors confirm that there are no conflicts of interest.

#### REFERENCE

1. Schirmer BD, Winters KL, Edlich RF. Cholelithiasis and cholecystitis. *J Long Term Eff Med Implants.* 2005; 15(3): 329-338.
2. Andercou O, Olteanu G, Mihaileanu F, Stancu B, Dorin M. Risk factors for acute cholecystitis and for intraoperative complications. *Ann Ital Chir.* 2017; 88: 318-325.
3. Koneva ES, Lyadov K.V, Shapovalenko TV, Zhukova EV, Polushkin VG. The hardware techniques for the restoration of the gait stereotype in the patients following total hip replacement: the personalized approach. *Problems of balneology, physiotherapy, and exercise therapy.* 2018; 1: 26-34. DOI: 10.17116/kurort201895126-34
4. Mohseni M, Kruse B, Graham C. An Elderly Woman with Abdominal Pain: Mirizzi Syndrome. *Am J Case Rep.* 2019; 20: 394-397.
5. Isayeva GS. The state of coronary arteries in perimenopausal women with chest pain. *J Clin Med Res.* 2014; 6(6): 451-455.
6. Hrechanina O, Isayeva G, Kolesnikova O, Isakova Y. Relations between familial hypercholesterolemia and early ischemic heart disease: an analysis of medical documentation data. *Serbian Journal of Experimental and Clinical Research.* 2019. DOI: 10.2478/sjocr-2019-0056
7. Kapoor Y, Singh G, Khokhar M. Spontaneous cholecystocutaneous fistula – not an old time story. *Indian J Surg.* 2013; 75(Suppl. 1): 188-91.
8. Yüceyar S, Ertürk S, Karabiçak I, Onur E, Aydoğan F: Spontaneous cholecystocutaneous fistula presenting with an abscess containing multiple gallstones: a case report. *Mt Sinai J Med* 2005; 72: 402-404.
9. Gupta V, Benerjee S, Garg H, Vyas S. Spontaneous cholecysto-antral-cutaneous fistula: a consequence of neglected calculus cholecystitis. *Singapore Med J.* 2012; 53(10): e 201-203.

10. Ioannidis O, Paraskevas G, Kotronis A, Chatzopoulos S, Konstantara A, Papadimitriou N, Makrantonakis A, Kakoutis E. Spontaneous cholecystocutaneous fistula draining from an abdominal scar from previous surgical drainage. *Ann Ital Chir.* 2012; 83(1): 67-69.
11. Aguilar LT, López-Porrás M, López MJT, Jiménez MB, García DMO. Fístula colecistocutánea. Una rara complicación de la coledocistitis. *Gastroenterología y hepatología.* 2010; 33(7): 553-54.
12. Serrano PU, García LS, de León AM, Arrillaga IGP, González JG. Cholecystocutaneous fistula as a first sign of presentation of a gallbladder adenocarcinoma. *Cirugía Española (English Edition).* 2013; 6(91): 396-397.
13. de Andrade Urban C, Dellê Urban LAB, de Lima RS, Bleggi-Torres LF. Spontaneous Combined Internal and External Biliary Fistulae in Association with Gallstones. *Revista Brasileira de Cancerologia.* 2001; 47(3): 273-76.
14. Vasanth A, Siddiqui A, O'Donnell K. Spontaneous cholecystocutaneous fistula. *South Med J.* 2004; 97(2): 183-185.