



New Day in Medicine
Новый День в Медицине

NDM



TIBBIYOTDA YANGI KUN

Ilmiy referativ, marifiy-ma'naviy jurnal



AVICENNA-MED.UZ



ISSN 2181-712X.
EISSN 2181-2187

2 (88) 2026

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ТИББИЁТДА ЯНГИ КУН НОВЫЙ ДЕНЬ В МЕДИЦИНЕ NEW DAY IN MEDICINE

*Илмий-рефератив, маънавий-маърифий журнал
Научно-реферативный,
духовно-просветительский журнал*

УЧРЕДИТЕЛИ:

**БУХАРСКИЙ ГОСУДАРСТВЕННЫЙ
МЕДИЦИНСКИЙ ИНСТИТУТ
ООО «ТИББИЁТДА ЯНГИ КУН»**

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исследовательский центр хирургии имени
А.В. Вишневского является генеральным
научно-практическим
консультантом редакции

Журнал был включен в список журнальных
изданий, рецензируемых Высшей
Аттестационной Комиссией
Республики Узбекистан
(Протокол № 201/03 от 30.12.2013 г.)

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2 (88)

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2026
февраль

Received: 20.01.2026, Accepted: 06.02.2026, Published: 10.02.2026

UDK 617.37.002.1.08

ACUTE PANCREATITIS AND MODERN APPROACH TO SURGICAL TREATMENT (Literature Review)

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✓ Resume

Acute pancreatitis (AP) is an inflammatory disease of the pancreas, the clinical course of which ranges from a mild interstitial form to severe necrotizing-destructive forms. In recent years, early stratification, minimally invasive techniques, the "step-up" strategy, and a multidisciplinary approach have taken a central role in the management of AP. This article reviews contemporary classifications (Atlanta-2012), severity assessment scales (BISAP, APACHE II, SOFA), imaging diagnostics, intensive care, the use of antibiotics, endoscopic, percutaneous, and laparoscopic interventions, as well as the principles of delayed necrosectomy. In surgical management, indications and contraindications were clarified, and the advantages of the staged "step-up" approach in infected necrosis were highlighted.

Keywords: acute pancreatitis, necrosis, step-up, minimally invasive, necrosectomy, Atlanta-2012

ЎТКИР ПАНКРЕАТИТ ВА УНИ ЖАРРОҲЛИК ЙЎЛИ БИЛАН ДАВОЛАШГА ЗАМОНАВИЙ ЁНДАШУВ (адабиётлар шарҳи)

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✓ Резюме

Ўткир панкреатит (ЎП) — меъда ости безининг яллигланиш касаллиги бўлиб, клиник кечиши энгил интерстициал шаклдан тортиб, оғир некротик-деструктив шакллариغا фарқ қилади. Сўнгги йилларда ЎПни бошқаришда эрта стратификация, минимал инвазив усуллар, «step-up» тактикаси ва мултидисциплинар ёндашув асосий ўринни эгаллади. Мақолада замонавий таснифлар (Atlanta-2012), оғирликни баҳолаш шкаллари (BISAP, APACHE II, SOFA), тасвирий диагностика, интенсив терапия, антибиотик сиёсат, эндоскопик, перкутан ва лапароскопик аралашувлар ҳамда кечиктирилган некрэктомия тамойиллари ёритилди. Хирургик даволашда индикациялар аниқлаштирилиб, инфекцияланган некротизда босқичма-босқич («step-up») ёндашувнинг устунликлари кўрсатилди.

Калит сўзлар: ўткир панкреатит, некротиз, step-up, минимал инвазив, некрэктомия, Atlanta-2012.

СОВРЕМЕННЫЙ ПОДХОД К ОСТРОМУ ПАНКРЕАТИТУ И ЕГО ХИРУРГИЧЕСКОМУ ЛЕЧЕНИЮ (Обзор литературы)

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✓ Резюме

Острый панкреатит (ОП) — это воспалительное заболевание поджелудочной железы, клиническое течение которого варьирует от легкой интерстициальной формы до тяжелых некротически-деструктивных форм. В последние годы ранняя стратификация, малоинвазивные методы, тактика "наращивания" и мультидисциплинарный подход занимают центральное место в лечении ОП. В статье были рассмотрены современные классификации (Atlanta-2012), шкалы оценки тяжести заболевания (BISAP, APACHE II, SOFA), визуализирующая диагностика, интенсивная терапия, назначение антибиотиков, эндоскопические, чрескожные и лапароскопические вмешательства, а также принципы отсроченной некрэктомии. При хирургическом лечении были уточнены показания и противопоказания, преимущества поэтапного подхода ("step-up") при инфицированном некрозе.

Ключевые слова: острый панкреатит, некроз, оперативное вмешательство, малоинвазивная некрэктомия, Атланта-2012.

Introduction

The approach of modern surgery to acute pancreatitis (AP) should be based on the phasic nature of the disease and the diversity of its clinical picture [8,19,21]. This approach should be aimed at reducing overall and postoperative mortality in AP [6,8,13], as well as reducing the number of postoperative complications [11]. The phasic nature of the AP course, the identification of nosological forms and complications, as well as the principles of diagnosis are based on the international classification system adopted in Atlanta (USA) in 1992 and updated in 2012 (3rd revision) [19]. This concept is detailed in the "National Clinical Recommendations for Acute Pancreatitis" developed by the CIS Society of Hepatopancreatobiliary Surgeons, which is in accordance with the Resolution of the President of the Republic of Uzbekistan No. PP-5254 of October 4, 2021 "On measures to transform surgical services, improve the quality and expand the scale of surgical operations in the regions" [1,14].

According to the concept [18], two variants of the course of acute pancreatitis have been proposed: acute interstitial pancreatitis (i.e. mild acute pancreatitis) and acute necrotizing pancreatitis (i.e. moderate acute pancreatitis (MEPP) or severe acute pancreatitis (SAP)).

Acute interstitial pancreatitis should be treated strictly conservatively in general surgery departments. Acute necrotizing pancreatitis is more commonly referred to as acute pancreatic necrosis in the Russian literature [6,9,12,13]. As is known, the course of acute pancreatitis includes two phases: the early phase (the first 7–14 days of the disease) and the late phase (after 7–14 days). In the late phase of the disease, only moderate and severe acute pancreatitis is observed in patients [3,18,19]. In the medical literature, the clinical manifestations of pancreatic necrosis are described as pancreatogenic infiltrate (sterile or infected), abscess of the pancreas (PB) and/or retroperitoneal tissues, as well as pancreatogenic retroperitoneal phlegmon. Here, both unformed (adherent to the walls of the cavity) and formed (freely lying in the cavity) dense tissue sequestrations are noted [2,3,7]. As a variant of this (late)

period of limited pancreatogenic formations, acute (sterile or infected) early pseudocysts can also occur, which are clinically indistinguishable from pancreatogenic abscesses [8,18,21]. It is recommended that the strategy and tactics of treating OP be carried out in accordance with the severity of the disease and the stages of its development [16,17,20]. The most difficult problems for operating surgeons arise in the treatment of moderate and severe forms of OP. Most surgeons [1,8,21] include OP with transient multiorgan failure (MOF) that resolves within 48 hours as moderate severity of the disease. Severe acute pancreatitis (SAP) is characterized by persistent POF lasting more than 48 hours, not reversible with treatment, necrosis of the pancreas and/or peripancreatic, retropancreatic tissues, and can lead to the development of various complications, including purulent complications [3,16]. Sometimes it is proposed to determine the severity of OP in the first hours of the disease (24–48 hours), using integrated assessment scales of the patient's condition - Ranson, Balthazar, APACHE II, SOFA [5]. If it is not possible to accurately determine the severity, the OP should be assessed as “severe” and treatment regimens recommended in resuscitation and intensive care settings should be applied from the first day of hospitalization [21].

Objective: To provide a modern overview of the various surgical treatment methods used in acute pancreatitis, depending on the clinical picture, severity, and phase of the disease.

Surgical approaches in the early phase of acute severe pancreatitis

The early phase of acute pancreatitis covers the first 2 weeks of the disease. Treatment at this stage should be aimed at eliminating early local aseptic complications [21]. The most common of them are: hydrothorax - in 50% of patients with acute pancreatitis [18]; pancreatogenic exudate in the abdominal cavity (acute enzymatic peritonitis) - 51.0–92.6%; limited accumulation of pancreatogenic fluid in the abdominal cavity - 67%; simultaneous accumulation of pancreatogenic fluid in the abdominal cavity and retroperitoneal space - 38%; accumulation of fluid only in the omentum bursa - 36%; accumulation of pancreatogenic fluid only in the retroperitoneal space — 22% [8].

Most authors consider the use of minimally invasive procedures effective in the early phase of OA, and these procedures include: sanitation and drainage of the abdominal cavity using videolaparoscopy [7,19], as well as percutaneous puncture and/or drainage of areas of fluid accumulation under the control of ultrasound navigation [11,12]. Because the mortality rate after minimally invasive treatment methods is very low — 8.4% [11]. In most cases, such interventions are sufficient to stop the destructive process [5,6].

Open surgical interventions

The current literature recognizes that when performing laparotomy in the early stages of acute pancreatitis, the surgeon should limit himself to opening the area of acute fluid accumulation, sanitation of the abdominal cavity, and drainage [17,20]. Although some sources mention abdominization of the pancreas, most do not recommend direct interventions on the pancreas in the early stages of pancreatitis, even if the pancreas is revealed by opening the sac of the pancreas [21].

Some authors believe that open operations in the early stages of pancreatitis are associated with a high mortality rate. This is usually associated with early multiorgan failure, which is aggravated by laparotomy [20]. The mortality rate for early non-laparotomy puncture-drainage interventions (PDA) is 7.6%, while for operations performed with open laparotomy, this figure reaches 40% [11]. Almost all authors emphasize the existence of strict indications for open surgical interventions in the early phase. These include: biliary esophageal stricture [18,21]; widespread pancreatogenic purulent peritonitis; early-stage upper intestinal obstruction [8,18]; and abdominal compartment syndrome in cases where conservative and minimally invasive measures have failed [20,21]. In biliary esophageal stricture, it is necessary to eliminate the obstruction in the first hours of the patient's hospitalization, that is, as soon as the diagnosis is made. The following operations are considered the method of choice: cholecystostomy (mainly laparoscopic); percutaneous, percutaneous laparoscopic microcholecystostomy; cholecystostomy performed through a small incision. Papillosphincterotomy, papillosphincteroplasty (endoscopic or open), and external drainage of the common bile duct can also be used [14]. Early upper intestinal obstruction may develop secondary to compression of the duodenum or its gastric outlet by an enlarged pancreatogenic infiltrate. The minimum necessary volume of surgery in this case is sanitation and drainage, as well as nasintestinal intubation [21]. Abdominal compartment

syndrome (ACS) is characterized by an increase in intra-abdominal pressure (above 20 mm Hg or 27 cm Hg) and the simultaneous development of insufficiency of at least one organ or system. The occurrence of ACS worsens the prognosis, increases the risk of multiple organ failure, and requires urgent measures such as enteral lavage, enterosorption [6], percutaneous drainage, or open surgery, such as laparotomy. These operations usually lead to rapid improvement in the patient's condition [5,15].

Surgical interventions in the late phase of acute severe pancreatitis

The late phase of acute pancreatitis begins on the 7th–14th day of the disease and is divided into two periods: the period of aseptic pancreatic necrosis (PN) and the period of infected PN [14]. Almost all domestic and foreign authors note the appearance of aseptic pancreatogenic infiltrate as the end of the early phase and the beginning of the late phase [1,3]. The infiltrate detected during palpation of the abdominal cavity is one of the clinical signs of the presence of PN and/or retroperitoneal tissue necrosis [18]:

Aseptic pancreatic necrosis (PN) period

According to most authors, the treatment of sterile pancreatogenic infiltrate is a complex drug therapy of PN. The goal of treatment is to create conditions for aseptic resorption of the infiltrate [2,3,14]. According to some data, the mortality rate during surgical treatment of infiltrates was 52.2%, while with conservative antibacterial therapy it was 5.8% [2].

One of the local complications in the aseptic period of the late phase is early aseptic pseudocyst. If the diameter of the pseudocyst (according to ultrasound) is less than 5 cm, then intensive conservative therapy with antibacterial, anti-inflammatory drugs and immunocorrection is indicated. In large sizes and when there are signs of compression of neighboring organs (for example, the intrapancreatic part of the common bile duct), puncture-drainage intervention under ultrasound control can be used [8,17]. Sometimes, as a result of such interventions, an external pancreatic and/or intestinal fistula is formed, which requires a separate surgical strategy [1,21]. Most authors recommend an active-waiting strategy with dynamic ultrasound control [20].

Period of purulent-destructive complications

When a dense pancreatogenic infiltrate is detected in the retroperitoneal area, the “gold standard” for detecting infection is fine-needle aspiration (FNA) under ultrasound (or radio diagnostics) guidance and bacteriological examination of the obtained material [5]. One of the reliable signs of infection is the detection of gas bubbles in the infiltrate area during ultrasound or radio diagnostics [18,21]. Indirect signs of this are: increased procalcitonin in the blood; increased C-reactive protein; increased clinical signs of systemic inflammatory response syndrome (SRS); development of “late” multiorgan failure [5,21]. Indications for surgical intervention in infected pancreatogenic infiltrate are: signs of purulent fusion of the pancreatogenic infiltrate and the appearance of a liquid component in it on ultrasound or radiodiagnosis, as well as worsening of the patient's condition according to the APACHE II, SOFA scales; increased signs of systemic inflammatory response syndrome (SRS), late-onset POE; increased laboratory parameters: fibrinogen, procalcitonin, C-reactive protein, presepsin (PSEP), etc. [2,5,12,14]. If the patient does not have the above signs of abscess formation, even if infection is detected in the IIP, this is not a direct indication for surgical intervention [2,3,6,12].

Treatment of localized, infected pancreatic necrosis and retroperitoneal necrosis (pancreatogenic abscess)

One of the ways of transformation of infected pancreatic infiltrate is the formation of localized, infected PN and/or retroperitoneal necrosis (walled-off necrosis). The following morphological variants of these terms are given in the Russian literature: purulent omentobursitis, intrapancreatic abscess, retropancreatic abscess - local parapancreatitis [7]. Most surgeons recommend using a step-up surgical strategy for pancreatic abscesses [4,5,17,20]. Treatment begins with minimally invasive methods: transgastric, transduodenal or percutaneous drainage under ultrasound control, with regular monitoring of the patient's condition. If necessary, multiple drains or repeated punctures are performed [5,8,9,12]. If the patient's condition does not improve after adequate drainage and there are free-lying, formed sequesters in the cyst cavity, minimally invasive necrotizing necrotization is recommended [4,5]: in this

case, video-assisted retroperitoneoscopic necrotization or endoscopic transluminal (transgastric) necrotization is appropriate [5,17,20]. In such cases, laparoscopic resections are less commonly used, since this method is technically difficult and increases the risk of intra-abdominal infection [5,18]. It should be noted that in such forms of OP, i.e., when a clear border is formed between healthy tissue and the necrotic area, delaying "open" operations for 3–4 weeks reduces complications and mortality, as well as reduces treatment costs [1,5]. A stepwise approach to the treatment of this type of OP is gradually becoming the standard of care and allows to postpone or even avoid "open" operations [5,10]. G. Kokosis and co-authors express this approach by the "3D" principle, i.e.: Delay (delay) — Drain (drainage) — Debride (sanitation/necrectomy) [1,5,7]. Infected early pseudocysts are similar in structure and treatment tactics to pancreatogenic abscesses. In cases of asymptomatic course of OP, conservative and antibacterial therapy, and in the "cold" period, elective surgery is preferable [5]. In symptomatic cases, some authors prefer minimally invasive drainage procedures [7], while others prefer open surgery [5,8]. In 51.8% of the studied material, minimally invasive puncture-drainage methods were the final treatment [12].

Unconfined, infected pancreatic necrosis - pancreatogenic retroperitoneal phlegmon

This is the most severe purulent-destructive complication in the late phase. A.S. Ermolov classified retroperitoneal phlegmons according to their location: right, left, central and their combinations. The most common form is the central-left location (39.7%) [8]. The routes of access to the area where the inflammatory process is taking place are planned depending on the location of the destruction focus. Before the operation, topical diagnostics are performed using ultrasound, CT (with contrast), MRI. Combined (hybrid) methods have also been proposed: for example, first laparotomy, then videoretroperitoneoscopic necrotectomy through a small incision (mini-access) in the right lumbar region [4,5,6]. A review of the literature has shown the superiority of a stepwise approach: it reduces the incidence of TARS and POE, and allows for early recovery in critically ill patients [5,20]. Transluminal approaches to the ENT are also of interest to some surgeons. Transluminal approaches (through the stomach/intestine) have the advantages of being less painful, less likely to cause infection, and not requiring general anesthesia, but they have the disadvantage of not being able to reach distant foci of inflammation and of not being able to remove large sequestrations [4,5].

Conclusion

Thus, it is important to adhere to the following principles in the surgical treatment of acute pancreatitis:

1. Treatment of moderate to severe acute pancreatitis is carried out jointly by a multidisciplinary team, including an intensive care unit, interventional radiologist, endoscopist, and abdominal surgeon.
2. If a patient is diagnosed with moderate to severe acute pancreatitis, he or she is immediately admitted to the intensive care unit. If the severity cannot be determined, the patient's condition is assessed as "severe".
3. If a patient is diagnosed with moderate to severe acute pancreatitis of biliary origin, it is necessary to restore bile flow in the first hours, using minimally invasive or "open" surgical methods according to indications.
4. In the early stages of moderate to severe acute pancreatitis, "open" operations with minimally invasive puncture-drainage methods should be performed under strict indications.
5. If a patient is diagnosed with a pancreatogenic infiltrate, multicomponent drug therapy should be performed, with the use of antibiotic therapy and early enteral feeding methods. If the process transforms into abscess formation or develops phlegmon of the retroperitoneal region, and this process is confirmed by clinical, laboratory and instrumental examinations, surgical intervention should be performed in stages.
6. The route of entry into the area of the purulent process and surgical intervention are selected based on examinations such as UTT, CT (with contrast), MRI. The optimal period for surgical intervention is 4 weeks.
7. When using surgical methods, a step-by-step combination of minimally invasive and open methods is preferable ("Step up").

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Entered 20.01.2026