

**SPECIFIC FEATURES OF THE USE OF MINIMALLY INVASIVE METHODS IN  
THE TREATMENT OF MECHANICAL JAUNDICE IN ELDERLY PATIENTS**

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**Abstract:** This article discusses the peculiarities of using minimally invasive methods in the treatment of obstructive jaundice in elderly patients. Due to the high prevalence of comorbidities in this age group, minimally invasive techniques help reduce complications, shorten the rehabilitation period, and improve treatment outcomes. The advantages of endoscopic and percutaneous procedures over traditional surgical approaches are highlighted.

**Keywords:** elderly patients, obstructive jaundice, minimally invasive methods, endoscopic treatment, safety

The balance of caution and opportunity in modern medicine: Minimally invasive methods in the treatment of mechanical jaundice in elderly patients: Modern medicine serves to extend human life and improve the quality of life. As the number of elderly people increases, maintaining their health, early detection and effective treatment of diseases are one of the urgent issues of today. Especially in cases of life-threatening pathologies with severe complications - in particular, mechanical jaundice, the result can be tragic if not approached with caution.

Old age is not just the sum of years, it means physiological changes in the human body, a decrease in the regeneration capabilities of cells, and a slowdown in the functioning of internal organs. In such conditions, traditional, open surgical procedures are not always an acceptable solution. Therefore, modern medicine is widely introducing minimally invasive (i.e., less invasive or less traumatic) technologies. Especially in eliminating mechanical jaundice, these approaches are not only an option for elderly patients, but in many cases the only safe solution.

Mechanical jaundice - a hidden danger: Mechanical jaundice may initially seem like a simple condition - the sclera of the eyes turns yellow, the skin turns from pale to yellowish, the feces turn white, the urine turns orange. But behind these symptoms lie complex and life-threatening processes. In older people, this condition is often met with indifference, because they may perceive it as a "sign of old age." In fact, it is a serious warning. Bile duct obstruction can lead to serious conditions such as impaired bile flow, liver failure,

intoxication, sepsis. Especially in elderly patients, these processes quickly become progressive. Therefore, early diagnosis and correctly selected treatment are important.

**Surgical risks and elderly patients:** Patients over 60 years of age, especially those aged 75–80, cannot undergo open surgery. Cardiovascular disorders, diabetes, ischemic heart disease, heart failure, respiratory problems - all this makes general anesthesia dangerous. In addition, their recovery period is long, bed rest causes severe complications: thromboembolism, pneumonia, pressure sores. There is also severe psychological stress, deterioration of the postoperative mental state. Therefore, an individual approach to each patient is necessary, choosing the most optimal and safe treatment based on their health and capabilities.

**Minimally invasive approach - a revolutionary opportunity:** Minimally invasive methods have brought a revolutionary approach to medicine. Today we see that maximum results can be achieved with minimal intervention in the patient's body. Especially in elderly patients, this approach has fully justified itself. Endoscopic methods, stenting, laparoscopic procedures do not cause severe trauma to the patient's body. For example, with ERCP, the blockage is removed painlessly and in a short time, the bile duct is opened. External drainage is established through PTBD, and bile flow is ensured. In most cases, these procedures are performed under local anesthesia, which is also useful for patients with heart or respiratory failure.

**Real-life examples and real-world results:** In clinical practice, minimally invasive approaches have saved the lives of many patients. For example, an 82-year-old patient with mechanical jaundice on the background of heart failure and diabetes was hospitalized. He underwent ERCP, biliary obstruction was eliminated, stones were removed, and the patient left the hospital within 5 days. A conventional open operation would have put this patient's life at risk. In another case, a 76-year-old woman underwent percutaneous drainage. Despite the fact that this patient had hemorrhagic diathesis, the procedure performed locally was completed without complications and bile flow was restored.

There are hundreds of such examples. They clearly demonstrate the capabilities of modern medicine and the advantages of minimally invasive methods.

**The criterion of humanism in medicine:** Medicine is not only about treating the disease, but also about alleviating the patient's suffering, making his life easier, and restoring his mental state. A minimally invasive approach serves this very purpose. In old age, the human body becomes fragile and weak. Each intervention, each procedure must be carefully selected. In this case, endoscopic or percutaneous technologies not only save life, but also help it to a smooth and worthy end.

**Modern technologies are a step towards the future:** Innovations such as robotic surgery, artificial intelligence-based diagnostics, and 3D navigation are rapidly developing in medicine. Minimally invasive technologies are one of the main directions of this rise. For elderly patients, these innovations serve as a guarantee of quality of life.

Today, the goal in medicine is not only to cure the disease, but also to achieve maximum results with minimal harm to human health. That is why minimally invasive methods are becoming not only an alternative path, but also the main principle of modern medicine.

Minimally invasive procedures are an approach to modern medicine based on humanity, care and technological advances, which are especially vital for elderly patients. In complex cases such as mechanical jaundice, it is with the help of these methods that the patient's life is saved, rehabilitation is accelerated, and complications are reduced. Therefore, every doctor must deeply master these technologies in his work when working with elderly patients, be able to use them effectively, and approach the patient individually, with compassion. Because each person is not only a clinical situation, but also a life story. Our task is to preserve it and make it as easy as possible.

Mechanical jaundice is a clinical and pathological condition resulting from obstruction of the common bile duct or extrahepatic bile ducts, often due to gallstone disease, bile duct tumors, extrahepatic adhesions, pancreatic pathologies, parasitic infections, or other causes. Especially in elderly patients, this condition often occurs against the background of many comorbidities and requires caution in the selection of treatment methods. This article analyzes the advantages, disadvantages, and specific features of using minimally invasive (less invasive) methods to eliminate mechanical jaundice in elderly patients.

#### Etiology and pathogenesis of mechanical jaundice

The main etiological causes of mechanical jaundice are:

1. Gallstones and bile ducts are the most common cause, especially common in women over 60 years of age.
2. Periampullary tumors - tumors of the pancreatic head, the ampulla of Vater and the distal parts of the bile ducts.
3. Sclerosing cholangitis - chronic inflammation of the bile ducts.
4. Parasitic diseases - liver flukes and other invasions.

The pathogenesis is explained by the fact that as a result of the cessation of bile flow, bile pigments (mainly bilirubin) enter the circulatory system and accumulate in the tissues. This is accompanied by symptoms such as jaundice, itching, abdominal pain, and changes in the color of feces.

Specific features of jaundice in elderly patients: Aging is accompanied by physiological and pathological changes. These include: Decreased functional reserves of organs and systems, especially the liver and cardiovascular system.

There is a large number of comorbidities (hypertension, diabetes, ischemic heart disease). The risk of side effects is high due to polypharmacy (i.e., taking several medications at the same time). The immune system is weakened, which increases the risk of infectious complications. These conditions make radical surgical interventions risky for elderly patients, and therefore minimally invasive methods are preferred.

Types of minimally invasive methods and their advantages. Minimally invasive methods are less traumatic than traditional open surgical procedures and include the following methods:

1. ERCP (Endoscopic Retrograde Cholangiopancreatography): An endoscopic approach to identify and remove obstructions in the bile ducts. Sometimes it is possible to remove the stone or install a stent.
2. PTBD (Percutaneous Transhepatic Biliary Drainage): Providing bile flow by installing an external drain through the liver.
3. Laparoscopic Cholecystectomy: Removal of the gallbladder laparoscopically.
4. Stenting: Restoration of patency by installing a stent in the bile ducts.

Advantages: Less surgical trauma. No general anesthesia required (in some cases). Short rehabilitation period. Lower risk of infectious complications. Safer for elderly patients.

Clinical case analysis: When analyzing the results of minimally invasive procedures performed in clinical practice in patients over 70 years of age, the following conclusions were made: Using the ERCP method, bile duct stones were successfully removed and patients recovered within 5–7 days.

PTBD restored bile flow and prevented septic conditions.

Most patients did not require general anesthesia.

Few complications were observed in the postoperative period.

Minimally invasive methods are not always ideal. Caution is required in the following cases:

In the presence of severe coagulopathies.

ERCP may be used against the background of acute pancreatitis.

Endoscopic access is complicated by anatomical changes.

General weakness and psycho-emotional problems associated with old age.

After minimally invasive procedures, the following are important:

Antibacterial therapy.

Treatment with hepatoprotectors.

Monitoring the dynamics of blood biochemical parameters.

Coordination of the diet and drinking regimen.

Compensation of chronic diseases.

Minimally invasive methods in the treatment of mechanical jaundice in elderly patients are clinically effective, safe and important procedures that facilitate the rehabilitation process. These approaches improve the quality of life of patients, reduce complications, and reduce treatment costs. Therefore, minimally invasive strategies should be selected based on an individual approach to each patient's condition. It is recommended to conduct extensive scientific research in this area in the future.

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