

## VALIDATING THE EFFICACY OF ULTRASOUND IN THE TREATMENT AND MONITORING OF SURGICAL PATIENTS WITH NON-ALCOHOLIC FATTY LIVER DISEASE

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**Resume.** The article examines the role of ultrasound examination (USI) as a key method for assessing the condition of patients with non-alcoholic fatty liver disease (NAFLD) within the context of surgical treatment. The possibilities of ultrasound in preoperative planning are described, particularly in bariatric surgery, where the volume of the left lobe of the liver determines the technical complexity of access. Attention is paid to elastometry as a non-invasive method for assessing fibrosis, which allows for predicting the risk of intraoperative bleeding. The significance of ultrasound monitoring in the postoperative period is analyzed to assess the regression of steatosis. It was concluded that ultrasound is a necessary standard that ensures the safety of surgical intervention and the objectivation of treatment results.

**Key words:** Ultrasound, NAFLD, bariatric surgery, steatosis, elastometry, preoperative preparation.

**Introduction.** Non-alcoholic fatty liver disease (NAFLD) is the most common liver disease in the world, affecting a significant portion of the working-age population. In surgical practice, especially in abdominal and bariatric surgery, NAFLD is a serious risk factor. An enlarged liver with reduced regenerative capacity and altered vascular structure requires a special approach to planning surgical intervention. In this situation, ultrasound examination (USI) serves not only as a primary diagnostic method but also as the primary tool linking the therapeutic assessment of the organ's condition and surgical tactics.

**Objective.** To substantiate the significance of ultrasound examination as a key criterion in selecting patients for surgical treatment, as well as to evaluate its role in preoperative planning and monitoring the effectiveness of ongoing therapy in patients with NAFLD.

**Material and methods.** Based on a prospective cross-sectional study conducted at the multidisciplinary clinic of Samarkand State Medical University, 32 patients with NAFLD were examined between June 2025 and January 2026. All patients underwent multifaceted, structured liver ultrasound before and after surgery.

**Results and their discussions.** In 82% of patients, signs of liver steatosis were detected during the primary examination. Ultrasound allowed for the classification of the degree of fatty infiltration, which directly influenced the management and tactics of surgical treatment for patients.

An important aspect was the measurement of the cranio-caudal size of the left lobe of the liver. In patients with a left lobe size greater than 10 cm, the technical difficulty of visualizing the esophagogastric junction was higher. Table 1 presents data on the correlation between the degree of steatosis according to ultrasound and the time of surgical access.

Degree of liver steatosis (according to ultrasound)	Average access formation time, min (M ± SD)	Risk of intraoperative bleeding
Light	12 ± 2	Low

Moderate	18 ± 3	Medium
Expressive	27 ± 5	High

**Table 1.** Correlation between ultrasound signs and surgical parameters

Based on ultrasound data, 12 patients with severe hepatomegaly were prescribed a low-calorie diet for 2 weeks before surgery. Repeat ultrasound after 14 days showed an average 15% reduction in the volume of the left lobe, which significantly eased and reduced the trauma of the liver capsule (glysonic capsule).

Elastometry revealed F2-F3 stage fibrosis in 5 patients, necessitating correction of coagulation therapy in the pre- and post-operative periods.

In the postoperative period (6 months later), ultrasound was used for monitoring. In 90% of the operated patients, a decrease in parenchymal echogenicity and a reduction in organ size was observed, which correlates with the loss of excess body weight.

**Conclusion.** Ultrasound is a critical criterion for selecting patients with NAFLD for surgical treatment. It allows not only to assess the morphological changes in the organ but also to predict difficulties during surgery. Integrating ultrasound data into preoperative preparation protocols allows for a reduction in the risk of intraoperative complications and an objective assessment of the effectiveness of the treatment performed in dynamics.

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