

## DIAGNOSTIC OPTIMIZATION IN DUODENAL INTEGRITY DISORDERS: ROLE OF MODERN IMAGING AND ENDOSCOPIC TECHNIQUES

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**Keywords.** duodenal injuries, multislice computed tomography, esophagogastroduodenoscopy, multimodal diagnostics.

**The aim of the study** was to improve diagnostic accuracy in patients with duodenal integrity disorders through the implementation of modern instrumental and visualization methods.

**Materials and methods.** A prospective analysis included 25 patients with duodenal injuries and perforations treated between 2021 and 2025. A comprehensive diagnostic approach was applied, including ultrasound (100%), esophagogastroduodenoscopy (EGD), contrast radiography, contrast-enhanced multislice computed tomography (MSCT), magnetic resonance imaging (MRI), and diagnostic laparoscopy. The diagnostic value of these methods was compared with limited use of imaging techniques in retrospective cohorts.

**Results.** It was established that posterior duodenal wall injuries are characterized by nonspecific clinical manifestations and delayed presentation, which significantly complicates early diagnosis. The expanded use of modern diagnostic methods in the prospective group significantly improved detection rates and localization accuracy of pathological processes. Contrast-enhanced MSCT and MRI demonstrated high diagnostic value in identifying retroperitoneal air, fluid collections, and contrast leakage, while EGD allowed direct visualization of mucosal defects. Diagnostic laparoscopy enabled verification of diagnosis and timely surgical decision-making. Compared to the

control group, the application of a comprehensive diagnostic algorithm contributed to earlier detection, reduced diagnostic delays, improved treatment planning, and prevention of severe complications such as peritonitis and sepsis.

**Conclusion.** The use of a multimodal diagnostic approach, including advanced imaging and endoscopic techniques, plays a decisive role in the early detection and management of duodenal injuries. Implementation of these methods significantly improves clinical outcomes and should be considered a standard strategy in patients with suspected duodenal wall integrity disorders.

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