PERSONALIZED TREATMENT ALGORITHM FOR DUODENAL WALL DEFECTS: INTEGRATION OF ENDOSCOPIC AND SURGICAL APPROACHES

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The aim of the study was to develop and substantiate a personalized treatment algorithm for patients with duodenal wall defects based on defect characteristics, localization, and clinical severity.

Materials and methods. The study included patients with duodenal injuries of various etiologies, including traumatic, iatrogenic, and postoperative defects. Treatment strategies were selected according to defect size, localization (anterior or posterior wall), degree of contamination, and patient comorbidity. Minimally invasive approaches, including endoscopic vacuum therapy (EVT) and Over-the-Scope Clip (OTSC) systems, were integrated with conventional surgical techniques. Clinical outcomes were evaluated based on healing type, complication rate, need for reoperation, and duration of hospitalization.

Results. It was established that treatment outcomes are critically dependent on the appropriate selection of therapeutic strategy based on defect characteristics and clinical conditions. Small defects (≤5 mm) were effectively managed using OTSC systems, providing immediate full-thickness closure, reliable sealing of the defect, and consistently high technical and clinical success rates without procedure-related complications. Larger or contaminated defects required the use of EVT, which ensured continuous active drainage of infected contents, effective evacuation of aggressive

digestive fluids, reduction of bacterial load, and stimulation of granulation tissue formation, thereby promoting controlled and accelerated reparative processes. In complex clinical scenarios, particularly in posterior wall perforations and retroperitoneal complications, where delayed diagnosis and atypical clinical presentation are common, combined approaches (EVT + OTSC or EVT integrated with surgical intervention) demonstrated superior effectiveness. These strategies enabled improved local control of infection, enhanced defect closure, and prevention of septic complications. The implementation of a personalized treatment algorithm allowed optimization of therapeutic decision-making, resulting in a reduction in postoperative complications, decreased need for relaparotomy, and significant shortening of hospital stay, especially in high-risk patients with severe comorbid conditions.

Conclusion. A personalized approach to the management of duodenal wall defects based on defect size, localization, and clinical condition significantly improves treatment outcomes. Integration of minimally invasive endoscopic technologies with conventional surgical methods represents an effective strategy for optimizing patient management, particularly in high-risk and complex clinical scenarios.

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