# PREDICTIVE FACTORS OF POSTOPERATIVE COMPLICATIONS IN PERFORATED DUODENAL ULCER: CLINICAL AND PATHOPHYSIOLOGICAL REVIEW BASED ON LITERATURE EVIDENCE

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**Review of Literature.** Multiple studies have identified that postoperative complications are closely associated with delayed hospital admission, the patient's preoperative condition (e.g., ASA score ≥3), hemodynamic instability, and generalized peritonitis. According to Tanaka et al. (2017), delayed surgical intervention beyond 12 hours significantly increases morbidity and mortality rates. The Boey score remains a reliable predictor of adverse outcomes, particularly when combined with the PULP and ASA classifications, which evaluate the physiological reserve and comorbid burden.

The laparoscopic modified Graham patch technique, especially the three-stitch method, has demonstrated favorable outcomes with reduced operative trauma and hospital stay. However, some authors have noted a higher rate of duodenal leakage when the perforation exceeds 10 mm or in cases with friable ulcer edges. This highlights the importance of intraoperative assessment of ulcer characteristics and the necessity for possible conversion to open surgery when indicated.

Dumping syndrome and biliary reflux gastritis are among the late complications of surgical intervention, resulting from rapid gastric emptying and pyloric dysfunction. Literature emphasizes that patients with large perforations or distorted duodenal anatomy are particularly prone to these issues. Functional outcomes and patient satisfaction are markedly lower in such cases, underscoring the importance of early diagnosis and structured follow-up.

Furthermore, metabolic changes following peritonitis — including systemic inflammatory response, bacterial translocation, and immune dysregulation — contribute to the development of multiple organ dysfunction in the early postoperative phase. Markers such as CRP, PCT, and serum lactate are now widely used for early detection of systemic complications and for guiding antibiotic therapy.

Recent advancements in perioperative care, such as enhanced recovery after surgery (ERAS) protocols, have shown promise in reducing postoperative morbidity.

These include strict fluid control, early mobilization, and targeted nutritional support, which are especially important in elderly or immunocompromised patients.

**Conclusion.** The success of surgical treatment for perforated duodenal ulcer depends not only on timely surgical intervention but also on accurate preoperative risk stratification and a thorough understanding of the potential postoperative complications. Laparoscopic approaches, while minimally invasive, require careful case selection based on ulcer size, patient stability, and peritoneal contamination. Prognostic scores such as Boey, PULP, and ASA provide critical guidance in identifying high-risk patients. Incorporating evidence-based perioperative strategies and individualized follow-up can significantly reduce morbidity and improve long-term functional outcomes. Continued research into the pathophysiology of postoperative complications will further enhance the safety and effectiveness of surgical treatment for this challenging condition.

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