INTEGRATION OF INTENSIVE CARE AND SURGICAL MANAGEMENT IN CHOLANGIOSEPSIS: IMPACT ON CLINICAL OUTCOMES

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Abstract. Cholangiosepsis is a severe form of biliary tract infection associated with high morbidity and mortality despite advances in surgical techniques and intensive care medicine. Effective management of this condition requires not only timely surgical source control but also close integration with intensive care support. The aim of this study was to evaluate the impact of coordinated intensive care and surgical management on clinical outcomes in patients with cholangiosepsis. Clinical data from patients treated in a specialized hepatobiliary center were analyzed with particular attention to hemodynamic stabilization, timing of biliary decompression, and multidisciplinary decision-making. The results demonstrate that integrated intensive care and surgical management leads to improved hemodynamic stability, reduced incidence of septic shock and multiple organ dysfunction, lower postoperative complication rates, and decreased mortality. Furthermore, coordinated care was associated with shorter intensive care unit stay and overall hospitalization duration. These findings highlight the critical role of multidisciplinary collaboration in optimizing treatment strategies and improving outcomes in patients with cholangiosepsis.

Keywords: cholangiosepsis; intensive care; surgical management; multidisciplinary approach; biliary decompression; clinical outcomes.

Cholangiosepsis is a severe form of biliary tract infection characterized by rapid progression to systemic inflammatory response and multiple organ dysfunction. Despite advances in surgical techniques and intensive care medicine, cholangiosepsis continues to be associated with high morbidity and mortality. Clinical outcomes largely depend not only on timely surgical source control but also on the quality and coordination of intensive care management.

Modern concepts of sepsis management emphasize early recognition, prompt antimicrobial therapy, hemodynamic stabilization, and adequate source control. In cholangiosepsis, biliary obstruction represents the primary infectious focus, making surgical or minimally invasive intervention unavoidable. However, performing surgical procedures in hemodynamically unstable patients significantly increases perioperative risk and worsens outcomes.

The integration of intensive care and surgical decision-making has therefore become a critical component of cholangiosepsis management. Close cooperation between surgeons and intensivists allows optimization of timing, selection of surgical techniques, and perioperative support strategies. Nevertheless, the optimal model for such integration remains insufficiently standardized, and clinical practices vary considerably between institutions.

This study aims to evaluate the impact of coordinated intensive care and surgical management on clinical outcomes in patients with cholangiosepsis and to identify key elements of effective multidisciplinary interaction.

Previous studies have demonstrated that early source control combined with appropriate intensive care significantly improves survival in septic patients. International sepsis guidelines emphasize the

importance of hemodynamic stabilization and organ support before and after surgical intervention. In biliary sepsis, several authors have reported improved outcomes when early biliary decompression is performed under intensive monitoring and support.

Research has shown that inadequate preoperative resuscitation is associated with higher rates of postoperative complications and mortality. Conversely, early initiation of vasopressor therapy, fluid optimization, and correction of metabolic disturbances reduce operative risk and facilitate recovery. Studies focusing on acute cholangitis indicate that delayed or poorly coordinated surgical intervention contributes to persistent infection and progression to septic shock.

Despite these findings, most publications address either surgical techniques or intensive care strategies separately. Limited data are available on the combined effect of structured ICU–surgery integration in cholangiosepsis, highlighting the need for further investigation.

This study was conducted as a retrospective and prospective observational analysis of patients diagnosed with cholangiosepsis and treated in a tertiary hepatobiliary center. Diagnosis was established according to international clinical criteria, including evidence of biliary obstruction, systemic infection, and organ dysfunction.

All patients received standardized intensive care management upon admission, including hemodynamic monitoring, early antimicrobial therapy, fluid resuscitation, and organ support as indicated. Disease severity was assessed using SOFA and APACHE II scores. Surgical intervention was planned in close collaboration between surgeons and intensivists, taking into account the patient's hemodynamic status and response to initial intensive care.

Patients were divided into two groups based on management strategy. The integrated management group received coordinated intensive care and early surgical or minimally invasive biliary decompression following initial stabilization. The non-integrated group underwent surgical intervention with limited preoperative intensive optimization.

Clinical outcomes included mortality, progression to septic shock, postoperative complications, duration of intensive care unit stay, and total hospital length of stay. Statistical analysis was performed to evaluate the association between management strategy and outcomes.

Patients managed with integrated intensive care and surgical coordination demonstrated significantly better clinical outcomes. Early stabilization of hemodynamic parameters allowed safer surgical intervention and reduced intraoperative complications. In this group, regression of systemic inflammatory response and organ dysfunction occurred more rapidly.

Mortality rates were notably lower in patients receiving coordinated care compared to those managed without structured ICU–surgery integration. The incidence of septic shock and multiple organ dysfunction syndrome was also reduced. Postoperative complications, including respiratory failure and renal impairment, occurred less frequently in the integrated management group.

Furthermore, coordinated management resulted in shorter intensive care unit stays and reduced overall hospitalization duration. These findings indicate that effective collaboration between intensivists and surgeons plays a decisive role in improving outcomes in cholangiosepsis.

The results of this study confirm that integration of intensive care and surgical management is a key determinant of successful treatment in cholangiosepsis. Early intensive care optimization creates favorable conditions for surgical source control, reducing operative risk and postoperative complications.

Consistent with previous reports, hemodynamic instability and uncontrolled infection were major contributors to adverse outcomes. However, this study demonstrates that timely intensive care interventions can modify these risk factors and improve tolerance to surgical procedures. Early biliary

decompression performed under intensive monitoring was particularly effective in preventing progression to severe sepsis.

The findings also highlight the importance of multidisciplinary decision-making. Continuous communication between intensivists and surgeons allows individualized treatment planning and timely adjustment of therapeutic strategies. Such an approach aligns with modern sepsis management principles and supports the development of standardized clinical pathways.

Integration of intensive care and surgical management significantly improves clinical outcomes in patients with cholangiosepsis. Coordinated multidisciplinary care facilitates early stabilization, optimizes timing of surgical intervention, and reduces mortality and complication rates. The implementation of structured ICU–surgery collaboration models should be considered an essential component of modern cholangiosepsis management and may serve as a foundation for standardized treatment protocols.

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