Timing of Laparoscopic Cholecystectomy in Acute Cholecystitis: Early Surgery, Delayed Surgery, and What the Evidence Supports

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Abstract

Background: Acute cholecystitis is one of the most common surgical emergencies worldwide, and laparoscopic cholecystectomy remains the definitive treatment. However, the optimal timing of surgery—whether performed early during index admission or delayed after an initial period of conservative management—has been a subject of longstanding debate. Historically, delayed cholecystectomy was favored due to concerns regarding inflammation-related technical difficulty, higher conversion rates, and increased bile duct injury. With advances in laparoscopic techniques, perioperative care, and surgeon experience, early laparoscopic cholecystectomy has gained increasing acceptance, yet variations in practice persist.

Aim: This review aims to critically evaluate and synthesize the available evidence comparing early versus delayed laparoscopic cholecystectomy in patients with acute cholecystitis, focusing on operative outcomes, complication rates, conversion to open surgery, bile duct injury, length of hospital stay, readmission rates, and healthcare resource utilization. Additionally, the review examines how disease severity, patient selection, and contemporary guideline recommendations influence surgical timing. Randomized controlled trials, meta-analyses, and international guidelines consistently demonstrate that early laparoscopic cholecystectomy—generally defined as surgery performed within 72 hours to 7 days of symptom onset or during index admission—is associated with similar or lower rates of morbidity and bile duct injury compared to delayed surgery. Early intervention significantly reduces total hospital stay, recurrent biliary events, and readmissions without increasing conversion rates when performed by experienced surgeons. Delayed cholecystectomy remains appropriate in selected high-risk patients or those with severe inflammation requiring initial stabilization or gallbladder drainage.

Conclusion: Current evidence strongly supports early laparoscopic cholecystectomy as the preferred strategy for most patients with acute cholecystitis, offering improved efficiency, reduced healthcare burden, and comparable safety to delayed surgery. Persistent delays in surgical management are often driven by institutional constraints rather than clinical necessity. Future research should focus on refining patient stratification, optimizing timing in severe disease, and addressing system-level barriers to early surgery implementation.

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Keywords: *Laparoscopic Cholecystectomy, Early, Delayed, Acute Cholecystitis*

Introduction

Acute cholecystitis represents a frequent cause of emergency hospital admission and remains one of the most common indications for urgent general surgical intervention worldwide. The condition most commonly results from obstruction of the cystic duct by gallstones, leading to gallbladder inflammation, bacterial infection, and, in severe cases, gangrene or perforation. Laparoscopic cholecystectomy has become the gold-standard definitive treatment, replacing open surgery due to its association with reduced postoperative pain, shorter hospital stay, faster recovery, and lower overall morbidity [1].

Despite broad consensus regarding the operative approach, the **optimal timing of laparoscopic cholecystectomy in acute cholecystitis remains controversial**. Traditionally, surgeons favored an initial conservative strategy consisting of antibiotics, bowel rest, and delayed (interval) cholecystectomy performed weeks later, based on concerns that acute inflammation increases operative difficulty, conversion to open surgery, and bile duct injury rates [2]. This paradigm was largely shaped during the early era of laparoscopy, when surgeon experience and advanced energy devices were limited.

Over the past two decades, accumulating evidence from randomized controlled trials and meta-analyses has challenged this traditional approach. Early laparoscopic cholecystectomy—performed during index admission or within a defined early window from symptom onset—has been shown to reduce total hospital stay, prevent recurrent biliary events, and lower readmission rates without increasing major complications when compared with delayed surgery [3,4]. As a result, several international guidelines, including the Tokyo Guidelines, now advocate early surgery for most patients with mild to moderate acute cholecystitis [5].

Nevertheless, **significant variation in clinical practice persists**. Delays in surgery are still common due to institutional constraints, limited emergency operating room access, surgeon availability, or concerns regarding disease severity and patient comorbidities. Furthermore, definitions of “early” and “delayed” cholecystectomy vary widely across studies, ranging from surgery within 24 hours of admission to within 7 days of symptom onset, contributing to heterogeneity in reported outcomes [6].

An important unresolved issue is the management of patients with severe acute cholecystitis or high surgical risk. In these populations, alternatives such as percutaneous cholecystostomy followed by delayed surgery are frequently employed, yet robust comparative data are limited. Additionally, the impact of early surgery on critical outcomes such as bile duct injury, conversion rates, and mortality continues to be debated, particularly outside high-volume centers [7].

The aim of this review is to critically appraise and synthesize the current evidence comparing early versus delayed laparoscopic cholecystectomy in acute cholecystitis, with a focus on surgical outcomes, patient selection, disease severity, and guideline recommendations. By addressing existing gaps between evidence and real-world practice, this review seeks to provide a practical, surgery-focused framework to guide optimal timing of intervention.

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Definitions and classification of acute cholecystitis and surgical timing

Acute cholecystitis is defined as acute inflammation of the gallbladder, most commonly caused by cystic duct obstruction due to gallstones. The diagnosis is based on a combination of clinical features such as right upper quadrant pain, fever, and Murphy’s sign, supported by laboratory evidence of inflammation and characteristic imaging findings. Ultrasonography remains the first-line imaging modality, while computed tomography and magnetic resonance imaging are reserved for equivocal cases or suspected complications [8].

To standardize diagnosis and severity assessment, the Tokyo Guidelines introduced a widely adopted classification system that stratifies acute cholecystitis into mild (Grade I), moderate (Grade II), and severe (Grade III) disease. Mild disease is characterized by the absence of organ dysfunction and limited inflammatory changes, whereas moderate disease includes marked local inflammation or symptom duration exceeding 72 hours. Severe acute cholecystitis is defined by the presence of organ dysfunction,

including cardiovascular, respiratory, renal, hepatic, or neurological impairment [9]. This severity grading plays a critical role in determining the appropriateness and timing of surgical intervention.

The concept of "early" laparoscopic cholecystectomy has evolved over time, resulting in heterogeneity across clinical studies. Early surgery has been variably defined as cholecystectomy performed within 24 hours of admission, within 72 hours of symptom onset, or during the same index hospital admission regardless of symptom duration. Despite these differences, most contemporary trials and guidelines converge on the principle that surgery performed during the index admission constitutes early cholecystectomy [10].

Delayed or interval laparoscopic cholecystectomy typically refers to surgery performed several weeks after resolution of the acute inflammatory episode, usually following an initial course of antibiotics and supportive care. The rationale for delay has traditionally been to allow inflammation and edema to subside, theoretically facilitating safer dissection and reducing operative complications. However, this approach exposes patients to the risk of recurrent biliary events, repeat hospitalizations, and prolonged overall treatment duration [11].

The lack of a universally accepted definition of surgical timing has contributed to inconsistencies in outcome reporting and interpretation of the literature. Some studies classify surgery performed after 72 hours as delayed, while others include such cases within the early surgery group if performed during the same admission. This variability complicates meta-analyses and may partly explain conflicting conclusions regarding operative difficulty and complication rates [12].

Importantly, the classification of disease severity and timing of surgery are interrelated. While early laparoscopic cholecystectomy is widely accepted for mild and moderate acute cholecystitis, its role in severe disease remains controversial. In high-risk patients or those with organ dysfunction, initial gallbladder drainage with percutaneous cholecystostomy followed by delayed surgery is often advocated, although high-quality comparative evidence remains limited [13].

A clear understanding of disease classification and standardized definitions of early and delayed surgery is essential for interpreting the evidence base and translating research findings into clinical practice. These definitions form the foundation for evaluating surgical outcomes, complication rates, and guideline recommendations, which will be addressed in subsequent sections.

Pathophysiological rationale for early versus delayed surgery in acute cholecystitis

The pathophysiology of acute cholecystitis begins with obstruction of the cystic duct, most commonly by gallstones, leading to gallbladder distension, increased intraluminal pressure, and ischemia of the gallbladder wall. This process initiates a local inflammatory cascade characterized by mucosal injury, bacterial overgrowth, and transmural inflammation. As the inflammatory response progresses, edema, fibrosis, and adhesions develop within Calot's triangle, potentially complicating surgical dissection [14].

From a theoretical standpoint, delayed cholecystectomy was historically justified by the belief that postponing surgery allows resolution of acute inflammation, thereby facilitating safer identification of biliary anatomy. With time, edema subsides and tissues may appear less friable, which was thought to reduce the risk of bile duct injury and conversion to open surgery. This rationale was particularly influential during the early era of laparoscopy, when limited experience and rudimentary instruments heightened concern regarding operative safety in inflamed fields [15].

Conversely, early laparoscopic cholecystectomy is supported by a distinct pathophysiological rationale. During the initial phase of acute inflammation, tissue planes are often edematous but still identifiable, allowing blunt dissection along natural anatomical layers. Delaying surgery may permit progression to chronic inflammation, fibrosis, and dense adhesions, which can obscure anatomy and increase technical difficulty. Several studies have demonstrated that surgery performed within the early inflammatory window may actually be less challenging than delayed operations performed weeks later [16].

Ongoing inflammation during conservative management exposes patients to persistent or recurrent biliary obstruction, bacterial translocation, and systemic inflammatory responses. Recurrent attacks of cholecystitis, biliary colic, pancreatitis, or cholangitis are well-documented during the waiting period before interval surgery. These events not only increase morbidity but may also worsen local

inflammation, negating the presumed benefits of surgical delay [17].

Another important consideration is the systemic physiological impact of prolonged inflammation, particularly in elderly patients and those with comorbidities. Extended antibiotic therapy, repeated hospital admissions, and delayed definitive management can contribute to deconditioning, nosocomial infections, and thromboembolic complications. Early definitive surgery limits the duration of inflammatory insult and may reduce the cumulative physiological stress experienced by patients [18].

In severe acute cholecystitis, particularly in the presence of organ dysfunction, the inflammatory process may extend beyond the gallbladder, involving surrounding structures and the systemic circulation. In such cases, immediate surgery may be unsafe, and gallbladder decompression via percutaneous cholecystostomy serves as a temporizing measure to control sepsis. This approach aligns with the severity-based management strategy proposed by the Tokyo Guidelines, emphasizing individualized timing based on physiological reserve rather than rigid temporal definitions [19].

Overall, the pathophysiological evidence increasingly supports early laparoscopic cholecystectomy for most patients with mild to moderate acute cholecystitis. Early intervention capitalizes on favorable tissue characteristics, prevents recurrent inflammatory episodes, and minimizes the systemic consequences of delayed definitive treatment. Understanding these mechanisms provides a biological foundation for interpreting clinical outcome data comparing early and delayed surgical strategies [20].

Meta-analyses and guideline synthesis: what the aggregated evidence and international recommendations conclude

As randomized trial evidence accumulated, multiple meta-analyses were undertaken to clarify the impact of surgical timing on clinically relevant outcomes. Across these pooled analyses, early (index-admission) laparoscopic cholecystectomy consistently demonstrates a reduction in total length of hospital stay and prevention of recurrent biliary events, while rates of major complications remain comparable between early and delayed approaches in operable patients. From a surgical systems perspective, this finding is particularly important, as delayed strategies often shift rather than reduce risk by exposing patients to recurrent attacks and unplanned readmissions during the waiting period [28].

The Cochrane systematic review led by Gurusamy and colleagues represents one of the most methodologically rigorous syntheses of the available randomized data. The review concluded that early laparoscopic cholecystectomy is safe and shortens total hospital stay compared with delayed surgery, with no significant differences in bile duct injury, overall morbidity, or mortality. Although individual complications are relatively infrequent, limiting statistical power for rare outcomes, the consistency of findings across trials strongly supports early surgery as an efficient and evidence-based strategy [28].

Earlier meta-analyses provided important insight into the real-world limitations of delayed management pathways. Lau and colleagues demonstrated that a substantial proportion of patients initially assigned to conservative management failed non-operative treatment and required urgent or emergency cholecystectomy before their planned interval surgery. This observation challenges the assumption that delayed surgery reliably reduces operative complexity, as these unplanned procedures may occur under less controlled circumstances and with heightened inflammatory burden [29].

Further pooled analyses reinforced that early laparoscopic cholecystectomy does not increase operative risk when performed by experienced teams. Siddiqui and colleagues reported that early surgery was associated with shorter total hospitalization without significant differences in conversion rates or postoperative complications, although operative time may be modestly increased in some early cohorts. Similarly, Gurusamy and colleagues, in a British Journal of Surgery meta-analysis, confirmed that early cholecystectomy is safe and effective based on randomized trial data, supporting its adoption as a standard approach rather than a selective strategy [30,31].

Beyond meta-analyses, international guideline recommendations have translated these findings into clinical practice frameworks. The World Society of Emergency Surgery guidelines advocate early laparoscopic cholecystectomy as the preferred treatment for acute cholecystitis whenever feasible, including in selected elderly and comorbid patients, provided that appropriate surgical expertise and perioperative support are available. This represents a significant shift away from routine surgical delay

based solely on age or comorbidity, emphasizing individualized risk assessment and optimized perioperative care [32].

The Tokyo Guidelines 2018 further refine this approach through a severity-based management algorithm. For patients with mild to moderate acute cholecystitis, early laparoscopic cholecystectomy is recommended as definitive treatment, while severe disease with organ dysfunction may require initial stabilization and gallbladder drainage before delayed surgery. Importantly, the guidelines stress safe operative strategies, including bailout techniques, to minimize bile duct injury when anatomy is obscured. Collectively, contemporary meta-analyses and guidelines converge on the conclusion that early laparoscopic cholecystectomy should be the default strategy for most patients, with delay reserved for carefully selected physiological or severity-based indications [33].

Operative outcomes in detail: conversion to open surgery, bile duct injury, morbidity profiles, and bailout strategies

A central concern driving delayed surgery has been the fear of higher technical difficulty leading to conversion to open cholecystectomy and major complications. However, across randomized trials and pooled analyses, conversion rates are generally similar between early and delayed laparoscopic cholecystectomy when patients are appropriately selected and procedures are performed by experienced teams. Clinically, this suggests that inflammation alone does not mandate delay; rather, conversion risk is better predicted by severity grade, dense adhesions, impacted Hartmann's pouch/neck stones, male sex, older age, obesity, and delayed presentation with advanced local inflammatory change. Importantly, "conversion" should be interpreted as a safety decision rather than a failure—yet modern evidence indicates early surgery does not inherently increase the need for conversion in most Grade I–II patients. [34,35]

Bile duct injury remains the most feared complication of laparoscopic cholecystectomy because it carries substantial morbidity and long-term consequences. Contemporary prevention strategies focus less on the timing of surgery and more on cognitive discipline and standardized anatomic identification. The multi-society safe cholecystectomy practice guideline emphasizes achieving the Critical View of Safety, using timeouts for anatomic confirmation, and employing intraoperative biliary imaging (such as cholangiography) when anatomy is uncertain or injury is suspected. This guideline approach reframes difficult acute cholecystitis as a "safe decision-making" problem—recognizing that proceeding despite unclear anatomy is more dangerous than delaying, converting, or using bailout techniques. [36,37]

When safe dissection in Calot's triangle cannot be achieved, bailout strategies become pivotal to preventing bile duct injury and hemorrhage. Subtotal cholecystectomy has emerged as the most evidence-supported bailout operation for the "difficult gallbladder," including severe inflammation and fibrosis, and is endorsed within emergency surgery guidance as a valuable alternative when total cholecystectomy is unsafe. Systematic review and meta-analysis data suggest subtotal cholecystectomy reduces the likelihood of major bile duct injury in hostile anatomy at the expense of higher rates of postoperative bile leak and retained stones compared with standard total cholecystectomy—complications that are usually manageable with drains, ERCP, or planned follow-up. Technical refinements (fenestrating vs reconstituting approaches, cystic duct closure methods, mucosal ablation) aim to reduce bile leak and recurrent symptoms, and the choice should be individualized to intraoperative findings and surgeon expertise. [38–40]

Another operative principle in acute cholecystitis is that early surgery should not be equated with "forced completion" of a standard dissection. Safe cholecystectomy culture includes early recognition of danger, readiness to change strategy (fundus-first dissection, subtotal cholecystectomy, conversion, or aborting and draining), and appropriate postoperative pathways if complications occur. In patients with severe disease or organ dysfunction, temporizing measures such as percutaneous gallbladder drainage can stabilize sepsis and allow delayed definitive management, consistent with severity-based algorithms. Overall, modern evidence supports early laparoscopic cholecystectomy for most patients while emphasizing that safety hinges on technique standardization, judicious use of imaging, and timely bailout decisions rather than the clock alone. [32,33,36]

Clinical outcomes beyond the operating room: length of stay, readmissions, recurrent biliary events, and cost-effectiveness

From a general surgery service perspective, the most reproducible advantage of early (index-admission) laparoscopic cholecystectomy is not a dramatic reduction in rare intraoperative catastrophes, but a clear improvement in the overall clinical course. Early surgery consolidates diagnosis, definitive treatment, and recovery into a single admission, which reliably reduces total bed-days compared with delayed pathways that require an initial admission for conservative treatment and a second planned admission for interval cholecystectomy. In the large ACDC randomized trial, immediate cholecystectomy within 24 hours of admission was associated with improved outcomes and lower overall costs compared with initial conservative management followed by delayed surgery, supporting early surgery as both a clinically and economically superior default for operable patients. [41]

Readmissions and recurrent biliary events are the "hidden morbidity" of delayed strategies. Patients awaiting interval cholecystectomy remain at risk for recurrent biliary colic, recurrent cholecystitis, gallstone pancreatitis, and cholangitis, which frequently lead to emergency department visits, repeat imaging, and unplanned admissions. Meta-analytic data have consistently shown that early surgery shortens total hospitalization even if the index operative admission is slightly longer or the operation time is modestly increased in some series. Importantly, these analyses highlight that the total system burden is driven by repeated encounters during the waiting period, not by the early operation itself. [42]

Cost-effectiveness follows the same logic as length of stay: early surgery reduces duplicative care. The Cochrane review comparing early versus delayed laparoscopic cholecystectomy found no meaningful differences in major complications, while supporting shorter total hospital stay with early surgery. In practical terms, even when clinical endpoints such as bile duct injury or mortality are too rare for trials to show differences, the day-to-day outcomes that matter to patients and hospitals—total days in hospital, repeated antibiotic exposure, and recurrent symptoms—consistently favor early definitive management. This is a key point for surgeons advocating for protected emergency operating capacity, as the benefit of early surgery is often realized at the level of the hospital system and patient journey rather than only in intraoperative metrics. [43]

Economic and patient-centered outcomes have also been incorporated into broader evidence syntheses. A meta-analysis in the British Journal of Surgery reported that early laparoscopic cholecystectomy appears as safe and effective as delayed surgery, with signals toward lower hospital costs and fewer work days lost, reflecting the societal impact of preventing recurrent episodes and second admissions. These findings are aligned with contemporary emergency surgery guidance, including the WSES 2020 guidelines, which recommend early laparoscopic cholecystectomy as standard care whenever feasible—even in selected fragile patients—because delaying definitive treatment often increases cumulative risk and resource utilization. [44,45]

Patient selection and severity-based pathways: who benefits from early surgery and when delay is justified

For the majority of patients with mild to moderate acute cholecystitis (Tokyo Grade I–II) who are fit for general anesthesia, the evidence and contemporary guidelines converge on early (index-admission) laparoscopic cholecystectomy as the preferred strategy. In clinical practice, suitability for early surgery should be determined primarily by physiological reserve and anesthetic risk rather than symptom duration alone, as delays are often driven by institutional factors rather than patient-related contraindications. Severity grading provides a structured framework linking local inflammatory burden and systemic response to operative decision-making, supporting early definitive management in Grade I–II disease while identifying patients who may require staged care [46,47].

In patients with severe acute cholecystitis (Tokyo Grade III), organ dysfunction is the dominant determinant of operative risk, and immediate laparoscopic cholecystectomy may be unsafe. In these cases, prompt resuscitation, broad-spectrum antibiotics, and stabilization take precedence, with gallbladder drainage serving as a temporizing measure to control sepsis. Importantly, severe disease does not uniformly mandate non-operative management; selected patients with controlled physiology

may still benefit from early surgery in high-volume centers with experienced teams and access to advanced bailout techniques. Contemporary emergency surgery recommendations emphasize individualized assessment rather than routine deferral of surgery based solely on severity classification [48,49].

The role of gallbladder drainage in high-risk patients has been clarified by randomized evidence. The CHOCOLATE trial demonstrated that laparoscopic cholecystectomy was associated with fewer major complications than percutaneous cholecystostomy in high-risk patients with acute cholecystitis. These findings challenge the traditional assumption that drainage is inherently safer and underscore that it should be reserved for patients who are genuinely unable to tolerate surgery in the acute setting, rather than used as a default strategy in all high-risk presentations [50].

A practical severity-based approach to timing integrates three key considerations: patient physiology and comorbidities, predicted technical difficulty and availability of bailout strategies, and institutional capacity for timely surgery during index admission. When these factors align, early laparoscopic cholecystectomy minimizes recurrent biliary events, repeat admissions, and cumulative healthcare utilization. Conversely, staged management with drainage followed by delayed surgery remains appropriate when acute operative risk is prohibitive, provided that definitive cholecystectomy is not indefinitely postponed. This balanced, physiology-driven strategy reflects the most consistent interpretation of current evidence for real-world surgical practice [46,48,50].

Ongoing controversies, evidence gaps, and future directions

Despite strong evidence supporting early laparoscopic cholecystectomy for most patients with acute cholecystitis, several areas of controversy and uncertainty remain. One persistent issue is the lack of a universally accepted definition of “early” surgery. While many studies define early cholecystectomy as surgery within 72 hours of symptom onset, others consider any operation performed during the index admission as early, regardless of symptom duration. This heterogeneity complicates comparisons across trials and meta-analyses and may contribute to continued variation in clinical practice. Standardization of timing definitions would improve the interpretability of future research and facilitate clearer guideline implementation [51].

Another unresolved question relates to the optimal management of patients presenting beyond the traditional early window, particularly those with symptoms exceeding 72 hours but without severe organ dysfunction. Emerging randomized and observational data suggest that early surgery in this subgroup can still be safe and beneficial, yet many surgeons remain hesitant due to concerns about inflammation-related technical difficulty. Further high-quality trials focusing specifically on late-presenting but physiologically stable patients are needed to refine timing recommendations and reduce reliance on arbitrary temporal thresholds [52].

The management of severe acute cholecystitis also remains an area of active debate. While severity-based algorithms recommend gallbladder drainage for patients with organ dysfunction, the ideal timing of definitive cholecystectomy following drainage is poorly defined. Delays of several months are common in practice and may expose patients to recurrent biliary symptoms or catheter-related complications. Prospective studies evaluating optimal timing after percutaneous cholecystostomy and identifying predictors of successful early definitive surgery are needed to improve outcomes in this high-risk population [53].

System-level barriers represent an additional evidence-to-practice gap. Limited access to emergency operating rooms, surgeon availability, and institutional prioritization of elective over urgent cases often drive delays in definitive management. These constraints disproportionately affect older patients and those admitted outside standard working hours. Health services research focusing on emergency surgery pathways, protected operating time, and multidisciplinary acute care models may be as impactful as further clinical trials in improving adherence to evidence-based timing strategies [54].

Finally, future research should increasingly incorporate patient-centered outcomes, including quality of life, functional recovery, and patient preference, alongside traditional surgical endpoints. As bile duct injury and mortality are rare events, large registries and collaborative databases may be required to detect

meaningful differences in these outcomes. Integration of severity grading, frailty assessment, and standardized reporting of bailout strategies will further enhance the quality and applicability of future evidence. Addressing these gaps will be essential to fully translating the robust evidence base for early laparoscopic cholecystectomy into consistent, high-quality surgical care [55].

Conclusion

The cumulative evidence from randomized controlled trials, meta-analyses, and international guidelines consistently supports early (index-admission) laparoscopic cholecystectomy as the preferred management strategy for the majority of patients with acute cholecystitis. When performed in appropriately selected patients with mild to moderate disease, early surgery is safe, does not increase the risk of bile duct injury or conversion to open surgery, and offers clear advantages in terms of reduced total hospital stay, fewer recurrent biliary events, and improved healthcare efficiency.

Concerns that acute inflammation inevitably increases operative risk have largely been mitigated by advances in laparoscopic technique, standardized safety principles, and the widespread adoption of bailout strategies such as subtotal cholecystectomy. Contemporary surgical practice emphasizes anatomical safety and decision-making discipline over rigid adherence to symptom-duration thresholds. As such, delay should be a deliberate, physiology-driven choice rather than a default response to acute inflammation.

In patients with severe acute cholecystitis or significant organ dysfunction, staged management with initial stabilization and gallbladder drainage remains appropriate. However, high-risk status alone should not automatically preclude early surgery, as emerging evidence demonstrates that selected high-risk patients may benefit from definitive operative management when expertise and resources are available. Individualized assessment, severity grading, and institutional capability should guide timing decisions in this population.

Ultimately, the persistent gap between evidence and practice is driven less by clinical uncertainty than by system-level constraints. Addressing barriers such as limited emergency operating capacity and inconsistent access to experienced surgical teams will be essential to fully realizing the benefits of early cholecystectomy. Aligning surgical timing with robust evidence and patient-centered priorities offers an opportunity to improve outcomes, optimize resource utilization, and standardize high-quality care for patients with acute cholecystitis.

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