

Is Index Admission Laparoscopic Cholecystectomy the Preferred Management Strategy for hot Gall Bladders in 2024?

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Gallstones are prevalent, affecting approximately 10-15% of adults in the western world¹. According to the third American National Health and Nutrition Examination Survey, an estimated 6.3 million men and 14.2 million women aged 20 to 74 in the United States have been diagnosed with gallstones.^{2,3} Common complications associated with gallstones include biliary colic, acute cholecystitis, acute pancreatitis, and jaundice resulting from gallstone migration into the common bile duct. Acute cholecystitis manifests in about 20% of patients with symptomatic gallstone disease, exhibiting varying degrees of severity.⁴

Laparoscopic cholecystectomy (LC) has emerged as the preferred approach for treating symptomatic gallbladder disease. Extensive research has focused on the management of acute cholecystitis, particularly in emergency settings. Recent guidelines, such as those outlined by the Tokyo guidelines and the World Society of Emergency Surgery (WSES), advocate for early or index admission LC. However, it is recommended with the stipulation that it be performed within a specific timeframe after admission and considering the severity of the condition.^{5,6} Early LC appears to result in reduced morbidity and mortality, a lower conversion rate to open surgery, and shorter hospital stays,

particularly when conducted within 7-10 days of symptom onset in appropriate low risk patients.⁷

However, a significant concern remains unresolved; the risk of major complications associated with the early LC approach, such as common bile duct (CBD) injury. A notable population-based study from Sweden found that the risk of CBD injury is doubled for patients undergoing early LC for acute cholecystitis.⁸ Additionally, various studies have reported a broad range of conversion rates (4.9-20%) from laparoscopic to open cholecystectomy, despite advancements in surgical expertise during early cholecystectomy.⁹ Nonetheless, the majority of these studies are underpowered, and thus, conclusive evidence regarding the increased risk of CBD injury and conversion to open surgery in early laparoscopic cholecystectomy remains elusive.

The timing of laparoscopic cholecystectomy (LC), whether early or delayed, as the definitive surgical management of acute cholecystitis, has long been a subject of controversy and debate. Existing literature overwhelmingly supports the advantages of early LC, which include shorter hospital stays and decreased morbidity. Delays in LC following the diagnosis of biliary colic or acute cholecystitis may heighten the likelihood of



recurrent emergency admissions while patients await elective delayed LC¹⁰.

Clinical practices vary significantly worldwide, contributing to ongoing debates regarding the optimal timing of LC. The latest Tokyo guidelines from 2018 strongly advocate for early LC within 72 hours of symptom onset as a safe and effective approach.⁵ Similarly, the World Society of Emergency Surgery (WSES) guidelines from 2016 suggest that operating within a 10-day window is generally safe for early LC. Notably, a systematic review and meta-analysis of randomized controlled trials, which informed the WSES guidelines, found no significant differences in complication rates or conversion to open cholecystectomy between early and delayed LC. Moreover, the early LC group exhibited a statistically shorter hospital stay by an average of 4 days compared to the delayed LC group⁶. Additionally, a study conducted by Lau et al. in 2006 demonstrated the cost-effectiveness of early LC compared to delayed LC due to its ability to reduce hospital stay duration¹¹.

Since the inception of the acute care surgery program at my current workplace, we conducted a prospective cohort study involving 233 patients who underwent laparoscopic cholecystectomy during their index admission for various indications over a two-year period. Among these patients, 61% presented with acute cholecystitis, 15% with choledocholithiasis, 11% with biliary colic, and 10% with acute biliary pancreatitis. The overall morbidity rate was 4.7%, with only 3 (1.3%) cases experiencing bile leaks and 1 (0.85%) requiring re-operation. Additionally, there was one instance of common bile duct injury and only one conversion to open surgery. Notably, there were no fatalities in this case series. The average hospital stay duration was 5 days, ranging from 2 to 14 days. Based on these favourable outcomes, index admission LC has now become the standard protocol in our workplace¹².

In summary, based on the presented evidence and guidelines, it is evident that index admission LC for hot gall bladders i.e. acute cholecystitis, choledocholithiasis, biliary colic, and acute biliary pancreatitis is a safe and feasible treatment option in 2024. This approach significantly reduces the morbidity rates associated with delayed surgery and alleviates patient anxiety. Ensuring safe practice involves adhering to a structured care pathway and implementing a multidisciplinary, consultant-led service. By offering index admission LC, healthcare providers can effectively minimize disease-related morbidity and the need for multiple readmissions among patients awaiting interval surgery.

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