Postoperative Management Following Fenestrating Subtotal Cholecystectomies; A Scoping Review

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Objective

To evaluate the existing literature regarding management of bile leaks and drains in patients who have undergone a fenestrating subtotal cholecystectomy (STC) and to identify areas for further investigation.

Introduction

Cholecystectomies are one of the most common surgeries performed in the United States annually, a majority of which are completed laparoscopically and involve removal of the entire gallbladder. The SAGES Safe Cholecystectomy Program offers strategies for reducing risk of bile duct injuries and encourages early recognition of cases in which an alternative approach, such as a subtotal cholecystectomy (STC), should be considered. STCs preserve a portion of the gallbladder intracorporeally and are classified as either reconstituting or fenestrating. STCs have well-documented postoperative complications, including bile leak. Nonetheless, little guidance exists on STC postoperative management, leading hospital systems to create their own protocols for addressing patient care (Image 1).

Methods

This study completed two comprehensive searches on PubMed and the Cochrane Database using the following keywords: "'subtotal cholecystectomy' OR 'fenestrating cholecystectomy' AND 'drain'" and "'subtotal cholecystectomy' OR 'fenestrating cholecystectomy' AND 'bile leak.'" The search yielded 67 abstracts in August 2024. The Study excluded those lacking full text, duplicate articles, those in which the surgical indication was not gallbladder in origin, those in which post-operative care was not addressed, those only discussing reconstituting STCs, and those not published in English (Image 2). Arksey and O'Malley's Six-Step Approach was the basis for the scoping review protocol.

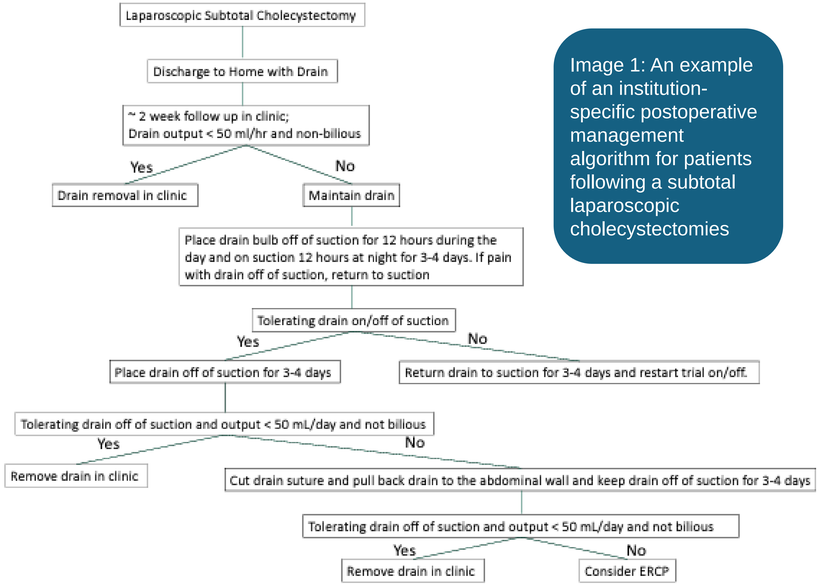


Image 1: An example of an institution-specific postoperative management algorithm for patients following a subtotal laparoscopic cholecystectomies

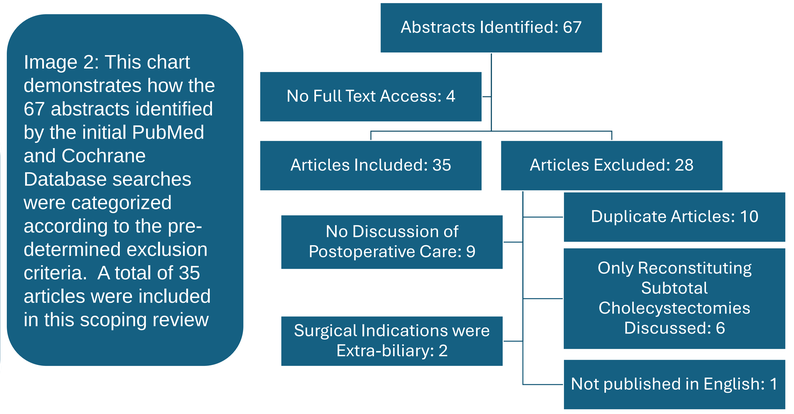


Image 2: This chart demonstrates how the 67 abstracts identified by the initial PubMed and Cochrane Database searches were categorized according to the pre-determined exclusion criteria. A total of 35 articles were included in this scoping review

Results

Full articles were available for 63 of the 67 abstracts identified, all of which were thoroughly reviewed. A total of 35 articles met the inclusion criteria.

In patients recovering from fenestrating STC, bile leaks were identified in 3.9-47%, of which, treatment was managed with drain alone in 5.6-69.7% across 1-37 days. The presence of a bile leak was evaluated via ultrasound, CT, HIDA, MRCP, ERCP, and drain bilirubin levels. Beyond drain placement, treatment options varied to include antibiotics, continued drainage, endoscopic decompression, and reoperation. There was no consensus on intraoperative drain placement, timing of post-operative drain placement, criteria for drain removal in the presence or absence of leak, simultaneous treatment modalities, or post-pull follow up.

Conclusion

Fenestrating STCs are a frequent option for gallbladders that are not amenable to complete removal but present an increased risk of bile leakage compared to the standard laparoscopic approach. Nonetheless, little data is present to direct post-operative management, particularly drain care. Within existing available literature, there is no evidence-based criteria to direct post-operative management, highlighting a significant deficiency in general surgery knowledge and recommending further focused investigation.

Disclosures: The views expressed are those of the authors and do not reflect the official policy or position of the United States Army, Department of Defense, or government.