LAPAROSCOPIC CHOLECYSTECTOMY: MODERN METHODS OF CYSTIC DUCT CLOSURE AND THEIR IMPACT ON COMPLICATIONS

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Background: In recent years, laparoscopic cholecystectomy (LC) has become the gold standard for the surgical treatment of gallbladder diseases. However, literature analysis indicates that the risk of complications, particularly bile leakage, remains significant.

Materials and Methods: This study analyzed scientific literature, including original articles, systemic reviews, and meta-analyses, focusing on cystic duct management techniques during LC. Particular attention was paid to comparing modern methods, such as vessel-sealing devices, with traditional ligation and clipping techniques.

Results: The analysis demonstrated that modern methods based on energy-driven vessel-sealing devices significantly reduce operative time; however, they may carry higher risks of specific complications and present certain technical limitations. In contrast, the ligation method (suturing) demonstrates a lower complication rate and high cost-effectiveness, although it demands advanced manual dexterity and specific surgical skills.

Discussion: The selection of the cystic duct closure technique plays a pivotal role in reducing post-operative complications in LC. While modern energy devices shorten surgery duration, they require further investigation to confirm their long-term safety and efficacy profile compared to mechanical methods. Despite the steeper learning curve for surgeons, the ligation method appears to be a promising direction due to its personalized approach, economic efficiency, and low incidence of bile leaks.

Conclusions: Successful LC and minimization of surgical risks require an individualized approach to cystic duct management, accounting for the unique anatomical and pathological features of each case. Further research in this field is essential to develop more effective and safe protocols, ultimately improving the quality of care for patients with gallbladder diseases.

Recommendations: Based on the results and discussion, the following is recommended:

Conduct further prospective studies to compare the efficacy and safety of various cystic duct closure methods.

Develop specialized educational programs for surgeons to master intracorporeal suturing/ligation and other advanced ductal management techniques.

Implement a standardized monitoring and assessment system for post-laparoscopic complications to ensure continuous quality improvement in surgical care.

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