International Journal of Medical Science and Clinical Research Studies

ISSN(print): 2767-8326, ISSN(online): 2767-8342

Volume 04 Issue 07 July 2024

Page No: 1351-1353

DOI: https://doi.org/10.47191/ijmscrs/v4-i07-11, Impact Factor: 7.949

Risk Factors for Biliary Duct Injuries: A Literature Review

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ABSTRACT

Bile duct injuries (BDI) are serious consequences of surgical treatment of the bile duct, with the majority occurring after cholecystectomy. The prevalence ranges from 0.3 to 0.6%, with 400 BDI recorded annually in the US. Hepaticojejunostomy is the preferred choice for repairing BDI, but factors like biliary peritonitis, localized inflammation, sepsis, and early repair time can affect the outcome. BDIs are more common in women in their forties due to higher cholelithiasis diagnosis. Laparoscopic cholecystectomy is considered the most effective therapy for cholelithiasis, but open cholecystectomy remains a viable choice in hospitals without sufficient laparoscopic technology or training. Roux-en-Y hepaticojejunostomy remains the optimal choice for long-term management. This review focuses on evaluating stenosis and treatment efficacy in patients with bile duct injuries. The efficiency of treatment has decreased, with 2.5% of patients avoiding additional surgeries.

KEYWORDS: Bile duct injuries, hepaticojejunostomy, jaudince, cholangitis

ARTICLE DETAILS

Published On:
13 July 2024

Available on:
https://ijmscr.org/

INTRODUCTION

Bile duct injuries (BDI) are the most serious consequences that can develop following surgical treatment of the bile duct. Most of these cases occurred following cholecystectomy. The documented prevalence ranges from 0.3 to 0.6%. Annually, 400 BDI are recorded exclusively in the United States. BDI can appear in several ways, including biliary fistula, chronic jaundice, cholangitis, biliary peritonitis, abdominal sepsis, cirrhosis, and potentially fatal outcomes [1, 2].

Hepaticojejunostomy continues to be the preferred choice for this kind of damage due to its longer duration without stenosis. However, other elements have been found that influence the outcome of repairing the BDI. Biliary peritonitis, localized inflammation, sepsis, and early repair time following BDI are all factors that are associated with worse outcomes and are often viewed as relative contraindications [3, 4].

Factors that increase the likelihood of a negative outcome or potential harm.

Biliary tract injuries are complex and serious consequences that have a significant impact on a person's quality of life, sometimes leading to high levels of morbidity. According to the research, these injuries are sadly on the rise due to the widespread occurrence of cholecystectomies globally. Our research revealed a pattern where these injuries are more likely to happen to women in their forties, which aligns with what has been previously described in scientific literature. This condition is due to the higher prevalence of cholelithiasis diagnosis in females within this age group, resulting in a greater number of cholecystectomies being performed [5].

In contrast to the findings of most studies conducted globally, including the study by Bobkiewicz et al., which states that 82.6% of injuries occur during laparoscopic cholecystectomies, recent series mostly involved open cholecystectomies, accounting for up to 62% of the injuries. Currently, laparoscopic cholecystectomy is considered the most effective therapy for cholelithiasis. This discrepancy arises from the fact that in our setting, open cholecystectomy remains a viable choice in hospitals without sufficient laparoscopic technology or adequate training to carry out such surgeries. This divergence is in contrast to the prevailing worldwide literature [6].

Rystedt et al., claims that up to 89% of these lesions may be recognized during the transoperative time. Regarding the categorization, the Bismuth classification is extensively employed for these injuries and is also utilized in general surgery services. According to this categorization, the most common abnormalities were classified as type II and type III. This occurred due to our status as a renowned facility specializing in HPB (hepatopancreatobiliary) surgery [7].

According to world literature, a state of tension without any external force or constraint Roux-en-Y hepaticojejunostomy remains a secure and efficient therapy with a reduced incidence of stricture, making it the optimal choice for long-term management in these patients. Based on our expertise, we concur with this data, and we consider this procedure to be the optimal choice for this particular type of damage [8].

When treating patients of this kind, it is crucial to minimize both short-term and long-term difficulties in order to enhance their overall quality of life. The occurrence of these problems varies according on the medical facility where the surgeries are conducted, with a lower frequency observed at high-volume HPB surgical centers. A multi-institutional analysis of risk variables using NSQIP was conducted to assess the morbidity and mortality associated with hepaticojejunostomy. The study found a morbidity rate of 26.3%. The incidence of cholangitis varied between 5% and 27% across different centers. One important biliary complication to consider is biliary leakage. Despite the expertise of the center and the careful management, biliary leakage remains a significant comorbidity. Some specialized centers in HPB surgery have achieved success by reducing this occurrence to 5.7% [9].

Regarding the investigation of variables impacting general morbidity, several studies have indicated that both duration and intraoperative bleeding had no significant influence on the result. Various research have indicated that the utilization of drains after surgery raises the occurrence of biliary leakages and postoperative problems. An extensively researched element is the duration between the occurrence of bile duct damage and the time required to carry out the ultimate therapy. The impact of this phase on the outcomes of later treatment remains a subject of debate [10].

Despite ongoing controversies, effectively managing sepsis, biliary peritonitis, and promptly referring patients to a specialized center with experience in such cases can enhance outcomes, reduce morbidity, and increase survival rates. Employing a multidisciplinary approach is crucial and strongly advised when making decisions regarding these patients. Bile duct injuries continue to be significant consequences of surgical procedures involving the biliary system. Various variables influence their results [11].

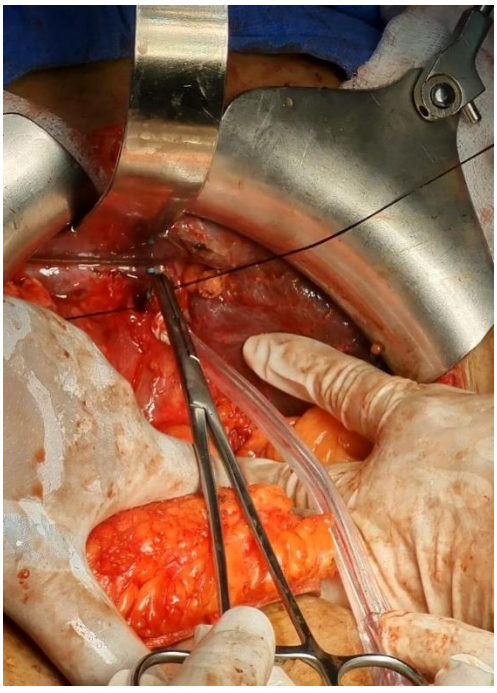
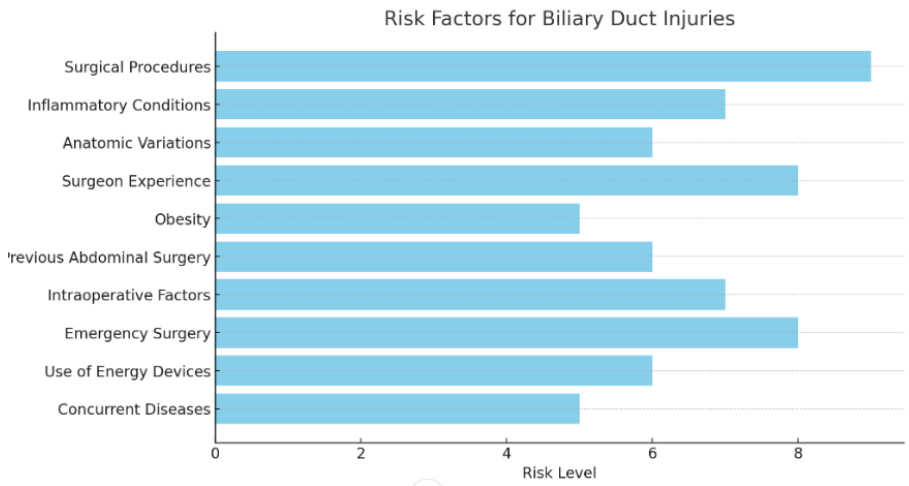


Figure 1. Site preparation for bilioenteric anastomosis



CONCLUSION

Bile duct injuries (BDI), occurring in 0.3% to 0.6% of cholecystectomy cases, pose severe risks, including chronic jaundice, cholangitis, and sepsis. Hepaticojejunostomy is the preferred repair method due to its lower stenosis risk, but factors like biliary peritonitis and sepsis worsen outcomes. Research highlights a higher prevalence of BDI in women in their forties due to increased cholelithiasis. While laparoscopic cholecystectomy is generally preferred, open surgeries remain common in settings lacking proper resources. Effective management of BDI requires prompt referral to specialized centers and a multidisciplinary approach to reduce morbidity and improve survival rates.

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