

DELAYED REPAIR OF MAJOR BILE DUCT INJURIES – A TERTIARY CARE HOSPITAL EXPERIENCE

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ABSTRACT

Background: Bile duct injuries remain a calamitous complication after laparoscopic cholecystectomy. An observational study was carried out to evaluate the outcome of a delayed repair carried out on major bile duct injuries and the complications associated with it.

Materials and Methods: A total of 25 patients with a mean age of 46.40 ± 14.24 years with major bile duct injuries evident on magnetic resonance cholangiopancreatography were included in the study.

Results: Two patients (8%) presented with a bile leak, 3 (12%) with a wound infection and 2 (8%) patients with cholangitis.

Conclusion: Bile duct injuries that require biliary reconstruction are commonly carried out by delayed intervention ensuring adequate optimization preoperatively. Less than half of patients (40%) experienced complications after undergoing surgery stressing that these injuries presented a substantial surgical challenge and hence, an early referral to an experienced hepatobiliary center is strongly recommended.

Key Words: Bile duct Injuries, delayed repair.

INTRODUCTION

Cholecystectomy is the principal management strategy for patients presenting with symptomatic gall stone disease since the 1980s.¹⁻⁴ With the laparoscopic technique being universally acknowledged now as the gold standard for treatment of symptomatic cholelithiasis, patients now experience a limited postoperative discomfort, a shorter hospital stay and rapid recovery after surgery. With the obvious advantages of the procedure, a sinister drawback has also been recognized in the form of an increased incidence of bile duct injury (BDI) when compared to the open technique with rates described at 0.5% to 0.8% compared to 0.1% – 0.2% for open.⁵⁻⁷

Bile duct injuries have potential catastrophic implications if unrecognized or inadequately managed at the time of initial surgical intervention.⁸ The gamut for these injuries is large with a range encompassing minor leaks to complete transection of the main duct requiring complex repair to be undertaken. A lot of literature is available debating the timing for initiating a complex repair for such injuries, however, most authorities prefer to undertake a delayed repair in these scenarios with a view to adequately resuscitate and stabilize the patient before carrying out surgery.⁹ The surgical mortality rate is less than 0.5% in younger patients below 65 years of age while being higher in

the elderly age group and in those undergoing emergency surgery.¹⁰ These injuries are associated with significant morbidity, prolonged hospitalization, increased financial burden, potential litigation and occasional mortality.¹¹ We report our experience with treating major BDI with delayed repair in patients referred to our tertiary care center and performed observational surveillance in these operated patients to reflect on the nature of complications that occurred on follow up.

MATERIALS AND METHODS

An observational, descriptive case series was carried out at the Department of General Surgery at Sheikh Zayed Postgraduate Medical Institute, Lahore during Jan, 2012 through May, 2013 to evaluate the outcome of delayed repair of major bile duct injuries carried out in our institution and the complications that ensued with it.

A total number of 25 patients were included in the study who presented with a transection or laceration of the common hepatic or the common bile duct, also classified as a major bile duct injury which was recognized on magnetic resonance cholangiopancreatography.

The details of the selected patients were documented in a proforma designed for the purpose. Data colle-

cted included the initial primary operation, the nature of injury, the time interval between its initial management and subsequent delayed repair and the complications that became evident on a follow up.

The collected data was entered and analyzed in SPSS version 16. Categorical variables were presented in the form of frequency (percentage) whereas continuous variables were presented in the form of mean \pm SD.

RESULTS

Sample Characteristics

A total of 25 patients who met the inclusion criteria were the study subjects with an age ranging from 24 years to 78 years and a mean age of 46.40 ± 14.24 years. An overall female preponderance of 1.5 was observed. All patients had to undergo open exploration for drainage of any intra-abdominal collection and making of a controlled external biliary fistula. Biliary reconstruction was performed after 6 – 8 weeks. Complications in the form of bile leak, wound infection, abdominal collection and cholangitis were documented at the end of the second week after biliary reconstruction.

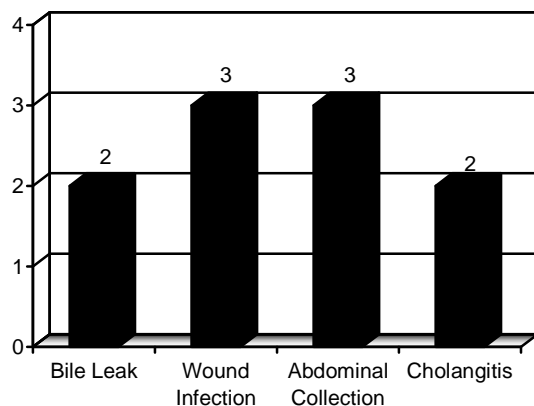


Fig. 1: Frequency of complications after biliary reconstruction.

Complications

Bile leak was found in 2(8%) of the cases while 23 (92%) did not suffer from any leak pertaining to the biliary tree. Three of the patients (12%) presented with an infection of their wound with a similar number ($n = 3$, 12%) had an intra-abdominal collection on follow up. Another 2 cases (8%) were observed to complain of signs and symptoms of cholangitis. No mortality was observed in this study.

DISCUSSION

Bile duct injury is still a serious complication of cholecystectomy with a long-term morbidity, reduced survival and impaired quality of life. The introduction of laparoscopic cholecystectomy revolutionized the surgical management of symptomatic gall stones. The initial

enthusiasm for this procedure was hampered by an increased incidence of bile duct injuries from 0.1% to 0.2% after open cholecystectomy to 0.5% to 0.8% after laparoscopic cholecystectomy.⁵ Despite expectations that the rate of bile duct injury would decrease over time as the learning curve of laparoscopic cholecystectomy flattened, the rates appear to have reached a plateau of 0.6%.¹² Bile duct injuries appear to be a complication that may continue to exist at rates greater than in the pre-laparoscopic era.

The follow up of patients with bile duct injuries showed that the patients who underwent reconstructive surgery had a three fold more chance of mortality.¹³ Sicklick et al reported that timing of repair did not affect the outcome.¹⁴ Sikora et al observed that the timing of repair was not a factor in outcome success¹⁵ and others have come to similar conclusions.^{17,18} However, looking at it in a more detailed manner, it is evident that they adopted a standard policy of controlling intra-abdominal infection and inflammation using percutaneous drainage of all abdominal bile collections. A large French survey concluded that the best time to carry out a repair would be beyond a window period of 45 days with best results obtained in the hands of an experienced hepatobiliary surgeon.¹⁹ We adopted the delayed repair approach in the light of all these literature reviews and presented our findings in this paper.

In this study, 40% of the complications were observed in the perioperative period. Complications noted were bile leak (8%), wound infection (12%), intra-abdominal collection (12%) and cholangitis (8%). Most of these complications were managed conservatively, and therefore, no patient required reoperation. deReuver et al reported 96 patients with complication rate of 25%.¹⁶ Complications were bile leak (3.1%), wound infection (6.2%), abdominal collection (9.3%) and cholangitis (3.1%) as per their collected data. They observed non-surgical complications as well. Sicklick et al recorded 200 patients with an overall complication rate of 42%. Complications were bile leak (4.6%), wound infection (7.4%), abdominal collection (2.9%) and cholangitis (5.7%).¹⁴ Other complications reported were related to cardiopulmonary systems.

With the admitted limitation of a small sample size in this study, it can be recommended that delayed repair should be considered for major bile duct injuries. It seems reasonable to adopt a policy to avoid further damage by initiating a drainage procedure and waiting for the inflammation to settle down before attempting to repair it in the first instant. However, the best time should be dictated by the circumstances of the individual case, as well as the preference and experience of surgeon.

It is **concluded** that although laparoscopic cholecystectomy has become the treatment of choice for symptomatic cholelithiasis, but it is associated with an

increase in incidence of bile duct injury. With increasing awareness of this problem, more attention should be paid both to prevention and to early recognition of such injury. Available evidence suggests that after recognition of a bile duct injury, the patient should be immediately referred to a center with experience in the management of such iatrogenic problems. The success of biliary reconstruction include the complete eradication of intra-abdominal infection, complete characterization of the injury with cholangiography, use of correct surgical technique, and repair performed by an experienced biliary surgeon.

Conflict of Interest

The authors declare no financial or non-financial competing interests.

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