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Incidence and Management of Post Cholecystectomy Biliary Fistula at Tertiary Care Hospital

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Authors' contributions

This work was carried out in collaboration among all authors. Authors AUH and SAM designed the study, wrote the protocol and wrote the first draft of the manuscript. Author RAM, BR and SK managed the manuscript writing and analyses of the study. Author SHK literature search and guidelines. All authors read and approved the final manuscript.

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ABSTRACT

Objective: To determine the incidence and management of post cholecystectomy biliary fistula at tertiary care Hospital.
Methodology: This was a prospective study which was conducted at general surgery department of Liaquat University of Medical and health Sciences, during one year from March 2017 to February 2018. All the patients those underwent laparoscopic cholecystectomy or open cholecystectomy, age more than15 years and either of gender were included. All the patients were evaluated for developed biliary fistula after cholecystectomies. All the patients of biliary fistula were managed conservatively and surgically and their management outcome was recorded. After operation most of patients were followed up to 6 months. The data was collected via study designed proforma. Data was analyzed by using SPSS version 20.
Results: Out of 318 patients, 280 patients underwent laparoscopic cholecystectomies, 38 patients underwent open cholecystectomies. Mean age of the patients was 41.34±8.23 years. Females were in majority 233(73.3%) and males were 95(29.7%). Out of all post-cholecystectomy biliary fistula was seen in 10(3.14%) patients. Incidence of post-cholecystectomy biliary fistula was insignificantly associated with types of cholecystectomies (p=0.425), while it was highly prevalent in

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females (p=0.001).
Conclusion: In the conclusion of this study the post cholecystectomy biliary fistula was observed to be 3.14% and mostly patients were manged via conservative treatment.

Keywords: Biliary fistulae; cholecystectomy; incidence; management.

1. INTRODUCTION

Surgical removal of the gall bladder is the most effective treatment of symptomatic cholelithiasis and other diseases of the gallbladder [1]. There are two broad types of the cholecystectomies, laparoscopic cholecystectomy, and the open cholecystectomy [1]. Many classifications of bile duct injury (BDI) occurred that address several types of the injuries, management techniques, prognosis and the associated injuries [2]. Biliary leakage or the fistula is one of the commonest events of the bile duct injury and is comprised in several of the widely used bile duct injury classifications [3,4]. Several complications arise subsequent to biliary tract and hepatic surgeries, which comprises that surgical site infection, iatrogenic biliary and vascular and leakage of the anastomosis [5]. Usually, the bile duct injuries are iatrogenic and may be observed during surgeries or post-operatively. Mostly the iatrogenic biliary tract injuries cannot be observed during surgeries [5,6]. Biliary fistula is the rare complication of the cholelithiasis, which can affect either the gastrointestinal or biliary tract and generally classified as primary or secondary. The primary fistula is associated to the biliary stones, whereas the secondary ones are associated to the surgical procedures (complications) [7]. However, the prevalence of the primary biliary fistulas is estimated from 1 to 2%, in symptomatic cases; in Latin America it is estimated higher as 4.7–5.7% [7,8]. Biliary tract injuries perceived higher during laparoscopic cholecystectomies as compared to the open cholecystectomies [6]. However laparoscopic cholecystectomy has been most preferred due to less hospital stay low morbidity but has a greater rate of the bile duct injuries and biliary leakages compared to the open one due to misunderstanding of the anatomy or the technical errors [9].Sometimes the cholecystectomy done under the difficult conditions, like the occurrence of the gangrenous gallbladder related to the inflammation and fibrosis in the region of the calot's triangle (cystohepatic triangle) [10].Due to these situations the proper identification of the cystic stump cannot be achievable and cases left with the biliary fistula temporarily [10].However, this study has been done to determine the incidence and management of post cholecystectomy biliary fistula.

2. MATERIALS AND METHODS

This retrospective study was conducted at general surgery department of Liaquat University of Medical and health Sciences. Study duration was one year from March 2017 to February 2018. All the patients those underwent Laparoscopic cholecystectomy or open cholecystectomies, age more than15 years and either of gender were included. All the patients of chronic liver disease and diabetes were excluded. Patients those not agree to participate in the study were also excluded. All the surgeries were carried out by experienced surgeons having experience more than 5 years. All the patients were evaluated for developed biliary fistula after cholecystectomy. These patients underwent biliary fistula management conservative and surgical both and their outcome was recorded. After operation most of patients were followed up to 6 months. The data was collected in a proforma and results derived from them. Data was analysed by using SPSS version 20. Categorical data was presented as frequency and percentage. Numerical data was presented as mean and standard deviation. Chi-square test was applied and p-value <0.05 was considered as significant.

3. RESULTS

Out of 318 patients, 280 patients underwent laparoscopic cholecystectomy and 38 patients underwent open cholecystectomy. Mean age of the patients was 41.34$\pm$8.23 years. Females were most common 233(73.3%) and males were 95(29.7%), because of the fact that gallstone is much more common in females Table 1.

Out of all post-cholecystectomy biliary fistula was seen in 10(3.14%) patients and out of these, 8 were those who underwent laparoscopic cholecystectomies out of 280 and two were those who underwent open cholecystectomies out of 38 cases. Fig.1.

Incidence of post-cholecystectomy biliary fistula was insignificantly associated with types of

cholecystectomies (p=0.425), while it was highly prevalent among females (p=0.001) Table 2.

Biliary fistulae were observed among 8 cases, after laparoscopic cholecystectomies and on in 2 cases of open cholecystectomies. It was seen in 2 cases on 1st post-operative day, in 4 cases on 2nd post-operative day, in one case on 3rd post-operative day and in one case on 4th post-operative day. Out of these 10 patients of biliary fistula, 7 were managed conservatively, 2 cases were referred for ERCP after failure of conservative management and one patient was re-explored. Table 4.

4. DISCUSSION

Biliary fistula is the big careful interest in surgery due to its complex causes, the its complications assortment, and the significant issues associated with its surgical treatment. In present study, mean age of the patients was 41.34+8.23 years. Females were most common 233 (73.3%) and males were 95(29.7%), because of the fact that gallstone is much more common in females. Similarly Khan MI et al [11] reported that average age was 39.21±11.98years, most of the cases were aged between 30-40 years with female to male ratio as 2.84:1. In study conducted by Iqbal P et al [12] it was observed that 91% patients were females and remaining 9% were males with the ratio of female to male as 10.2:1, and there was range of age as minimum 25 years and maximum 65 years with the average age as 39.21±6.20 years. Another study conducted by El-Kabeer MM et al [13] reported that the age range of the cases was from 14 to 65 years and out of all females were in majority as 780 and males were 220. In a study of Mufti et al [14] the mean age was recorded to be 40.30 years, and majority (31.66%) of patients were in the 30-40 years age group. However, in a study of Lee KW et al [15] in acute cholecystitis the mean age was 43.7 years with a female to male ratio was 4.5:1. 38 In another study of 281 cases of LC there were 140 men and 141 women with a mean age of 56.9 years (range 23-89 years). In study of Munwar Jamil et al [16], females were 90.29% and males were 9.7%, while in study of Muhammad Munir Memon et al [17] females were 85% and males were 15%, females to male ratio was 5.6:1, age ranged 17-68 years, mean age 40 years.

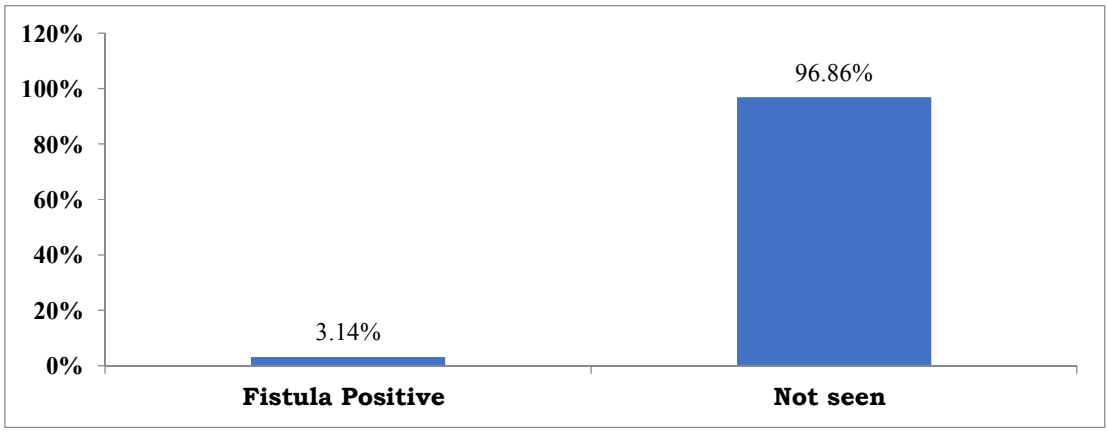

Fig 1. Frequency of post cholecystectomy biliary fistula n=318

Table 1. Age and gender of the patients n=318

Variables		Statistics
Age	Mean	41.34 years
	Standard deviation	8.23 years
	Minimum	33 years
	Maximum	70 years
Gender	Male	95(29.7%)
	Female	233(73.3%)
	Total	**318(100.0%)**

Table 2. Post-cholecystectomy biliary fistula according to types of cholecystectomies n=318

Post cholecystectomy biliary fistula	Laparoscopic cholecystectomy	Open cholecystectomy	p-value
Yes	08	02	
No	272	36	0.425
Total	280	38	

Table 3. Post-cholecystectomy biliary fistula according to gender and surgical procedures n=318

Variables	Post-cholecystectomy biliary fistula		p-value
	Yes	No	
Gender			
Male	01	94	0.001
Female	09	224	
Total	10		
Type of cholecystectomy			
Laparoscopic cholecystectomy	08	272	0.425
Open cholecystectomy	2	36	
Total	10	108	

Table 4. Treatment of post-cholecystectomy biliary fistula n=10

Treatment	Frequency	Percentage
Conservative treatment	07	70.0%
Re-explore	01	10.0%
Referred to ERCP	02	20.0%
Total	10	100.0%

In this study, incidence of biliary fistula was seen in 10(3.14%) patients which was insignificantly associated with the types of cholecystectomies (p=0.425), and was significantly high among females (p=0.001). similarly, Sultan AM et al [3] also reported that the major bile duct injury was more commonly detected after open cholecystectomy (*P*<0.001). Adamsen et al [18] incorporating 7654 patients undergoing LC, the incidence of bile leak was 2.1%. Muqim et al [19] reports the bile leak incidence in 3.9% patients in his study on 351 patients. Regardless of the way that laparoscopic cholecystectomy (LC) is the best quality level treatment for suggestive gallbladder disease, open cholecystectomy (OC) is a definitive surgical approach after laparoscopic course failure [3]. For the primary fistulas the cholecystectomy with choledocoplasty is the most common treatment, while for the minor iatrogenic bile duct injury the bile duct drainage or endoscopic stenting is the choice of treatment [20]. The causes of post cholecystectomy biliary fistulae which were detected during and after operation were congenital anomalies, inappropriate traction of cystic duct and failure to identify anatomy. In this study 2 patients who were operated laparoscopically had no drains placed for them so they developed biliary leak from the wound; in one patient on 3rd post-operative day and in another patient on 4th post-operative day. In 2 post patients operated by open cholecystectomy, drain did not work possibly due to kinking but on 2nd post-operative day after mobilization of drain, biliary leakage was observed and amount of drain was 800 cc per day.

In this study, out of all 10 cases of biliary leakage, 70% were treated by conservative treatment and one patient was re-explored, while 20% patients were referred for ERCP after failure of conservative management. On other hand El-Kabeer MM et al [13] also reported that the conservative management was done among 80% of the cases and out of them 70% cases observed with spontaneously resolved during two days. However, in the agreement of our findings the Chen et al [21] also reported that 82.5% cases of biliary leak were managed via non-surgical management.Another study conducted

by Hii MW et al [22] reported that biliary fistulae were present in 36 cases, and the resolution was observed in 7 cases prior to ERCP and among remaining 29 cases the ERCP with stent insertion was observed successful, and the median duration of the resolution was 4 days after successful ERCP, while in 2 cases ERCP was done due to mild pancreatic complications. Another study conducted by Sultan MA et al [3] reported that the ERCP is the choice of treatment for minor bile duct injuries, furthermore the ERCP diagnosed the main injuries of the bile duct among 38.6% of the cases in open cholecystectomy group and 7.9% in laparoscopic cholecystectomy group. In fifteen cases the endoscopic management was not possible due cannulation failure in three cases and in 12 cases due to CBD complete ligation [3]. Another study conducted by Singh V et al [23] reported conservative treatment in 9 patients, percutaneous catheter drainage of intra-abdominal collections in 10 patients, biliary drainage in 6 patients and surgical intervention was done in 9 patients.

5. CONCLUSION

In the conclusion of this study the post cholecystectomy biliary fistula was observed to be 3.14% and mostly patients were manged via conservative treatment. Frequency of post cholecystectomy biliary fistula was insignificantly linked to the types of cholecystectomies and was significantly linked to the female gender.

CONSENT

As per international standard or university standard, patients' written consent has been collected and preserved by the author(s).

ETHICAL APPROVAL

As per international standard or university standard written ethical approval has been collected and preserved by the author(s).

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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