IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)
e-ISSN: 2279-0853, p-ISSN: 2279-0861.Volume 14, Issue 8 Ver. VIII (Aug. 2015), PP 92-94
www.iosrjournals.org

Prospective Review Study of 84 Cases of Post-Cholecystectomy Bile Duct Injuries

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Abstract: *This study reports our experience with 84 patients with iatrogenic bile duct injury who underwent biliary reconstruction in our hospital in last 5 yrs. Magnetic Resonance Cholangio-pancreaticography was the optimal pre operative diagnostic procedure to define the stricture. Most patients underwent hepaticojejunostomy with or without stent. Morbidity and mortality rates were 25.33% and 6.14% respectively. The results of operative repair were correlated with number of previous operations, site of stricture, type of operation, presence of fistula, presence of cirrhosis.*
Keywords*: CBD injury; Iatrogenic; Roux-en-y hepaticojejunostomy.*

I. Introduction

In the era of laparoscopic Cholecystectomy the incidence of bile duct injury has increased. Most of the biliary tracts injuries present as biliary stricture, other presentation are like external or internal fistula and biliary peritonitis. The great majority of injuries continue to be iatrogenic [1]. Majority of injuries to bile duct occur secondary to Cholecystectomy, but they may follow gastrectomy, choledocostomy or radical operations upon the pancreas [2]. The incidence of bile duct injury after open Cholecystectomy is 1 in 300 to 500 patients and in laparoscopic Cholecystectomy it is one in 100 to 200 cases [03, 04]. Bile duct injury results from imprecise dissection, local hemorrhage, and inadequate demonstration of anatomical structure [1]. Biliary injuries may be recognized at operation or post operatively as biliary fistula or stricture. It may present as excessive biliary drainage from wound or drain sites in early post operative period. In other patients, local or generalized peritoneal signs became evident, or may present with massive biliary ascitis with no signs of peritonitis. Endoscopic Retrograde Cholangio Pancreaticography & MRCP helped in evaluation of patient with bile duct injuries. Management of bile duct injuries is a complex problem. If the injury is recognized at the time of surgery and there is no loss of duct, it may be managed by insertion of T-tube or by primary end to end tension free anastomosis [02, 05, 06, and 07]. If primary repair is not possible then it is preferable to provide external drainage and definitive procedure is done in later stage [8]. In patient presenting with benign stricture Roux –En – Y hepaticojejunostomy is regarded as the surgery of choice with long term success rate of 70 – 90%. Recurrence of stricture after surgery varies from 10 – 30% [09, 10, and 15].

II. Material And Methods

We studied 84 consecutive patients (64 female & 20 males) treated in a for bile duct injury. Data obtained from retrospective & prospective study of record included patients age & sex, the type of injury, the type of surgery, the subsequent course of each patient with regard to post operative complications and recurrence of stricture.

Hepaticojejunostomy was done in all cases; Surgery was performed by Roof Top incision. Half of the patients underwent single stage hepaticojejunostomy (44 cases). In 38 cases two stage procedures was performed and in 2 case hepaticojejunostomy was performed in three stages.

III. Results

All patients with bile duct injury seen and treated in a Department of general surgery from which Data were included. In all there were 84 patients, 64 females & 20 males (3:1). The maximum numbers of patients were from the age group of 20 years to 40 years (74%). Out of 84 patients of bile duct injury, 74 patients were due to injuries in open Cholecystectomy and 10 because of Laparoscopic Cholecystectomy, reason being that laparoscopic Cholecystectomy is not performed so frequently in the area from where the cases referred to us. Most patients developed symptoms with in 2 weeks. Seventy six percent of patients had pain abdomen and jaundice. Forty five percent of the patients had a classic triad of cholangitis (Pain, fever with chills and jaundice). In 28 patients (33%) a biliary fistula was present , eight cases (10%) of injury were recognized during Cholecystectomy, 42 cases (50%) in immediate or early post operative period and 34 cases (40%) recognized at a time interval (more than 2 weeks). Out of the entire group 64.28% had an elevated serum alkaline phosphatase

and 76.19% had an elevated serum bilirubin level. Type – II (59.5%) and type – III (30.95%) strictures were found in post laparoscopic Cholecystectomy CBS injury cases.

In our patients diagnosis was made by ERCP (42 patients), MRCP (8 patients) and USG (64 patients). Now a day MRCP is an important diagnostic aid for any biliary stricture [13, 14]. Hepaticojejunostomy was performed in all cases. Trans – hepatic stent was placed in 64 cases (76%) & no stent placed in 20 cases (24%). In majority of cases (90%) Roux –en-Y Hepaticojejunostomy was performed with extension to left hepatic duct (Hepp and Couninaud's procedure [8]. Only in 14 cases of hepaticojejunostomy access loop was left. Four patients were treated by making interno – external fistula. In two patients with high stricture separate right and left duct hepaticojejunostomy was performed.

There were six post operative deaths because of septicemic shock. The overall rate of immediate morbidity inherent to the surgical procedure was 23.8% in which 16.6% cases had wound infection and 7.14% patients had pulmonary infection. Patients who had undergone several previous operations had a higher recurrence rate and greater morbidity and mortality. In eighty patients Roux – En – Y hepaticojejunostomy was done & in four cases separate right & left hepaticojejunostomy was done because of high injury. Tran hepatic stent was placed in 64 patients and kept for 4 weeks. There is a lot of controversy about the stent. Some surgeons keep the stent for 6 – 9 months. For follow up of patients the level of alkaline phosphatase & S.blirubin is important [12].

IV. Discussion

High biliary stenosis resulting from post Cholecystectomy CBS injury is a challenge to the surgeon. Patients who have undergone Cholecystectomy and develop jaundice, fever & chills should have an alkaline phosphatase determination since it is the most sensitive test to diagnose obstructive biliary disease [12]. Ultrasonography of the liver and upper biliary tract should be next to look for dilated bile ducts or residual stones in the biliary system [08]. The best way to diagnose a stricture of bile duct and define its exact extent is by MRCP and PTC. Endoscopic retrograde Cholangio – pancreatigraphy is safe but it is less effective than MRCP and it often shows only the duct below the stricture [13, 14]. Although MRCP is a better option but its availability and cost remained the limiting factors for us because most of our patients were from middle and low socioeconomic group. Factors that might lead to a CBD injury during Cholecystectomy are fibrosis in the triangle of Calot, acute cholecystitis, obesity, local hemorrhage, variant anatomy and fat in the porta hepatis [15].

Age and sex of the patient in our series was in accordance with various studies done by other authors LW Way 1972 [16], Genest et al (1986) [12] who thought that this might be due to the fact that biliary problems occur more in the female in this age group and hence the complications of the surgery for the billiary problems often seen females. In present series approximately 90% of the case of post Cholecystectomy bile duct injuries were seen after open procedure that does not mean that open procedures have higher risk of injuring bile duct but this was due to fact that laparoscopic procedures are not being performed in the areas from where the cases were referred. Although open and laparoscopic procedures are technically and conceptually different in approach, they rely on similar operative principles.

We found that raised serum alkaline phosphatase and raised bilirubin levels are main biochemical derangements and very important for both diagnosis and post operative follow up of the patient. Serum alkaline phosphatase is raised in biliary obstruction even before chemical jaundice presents. So it was reported by many authors and also observed by us that biliary stricture causes pathological changes in liver such as fibrosis and scarring around bile ductules and ducts stasis of bile, unilateral atrophy with contralateral hypertrophy of the lobes of liver (Czerniak A et al 1986 [17], Genest et al (1986) [12], Nealon et al (1996) [18] .Most common type of injury we encountered was type II (59.5%), followed by type III (30%), so most injuries were around hilum. In laparoscopic Cholecystectomy injuries are mostly high because of improper judgment of the dissection and in open procedure it is either due to excessive dissection or prior attempt at reconstruction by inexperienced surgeon.

The main principal of repair is that the surgeon must make sure that all scar tissue is resected and the anastomosis is completed to normal bile duct with good mucosa to mucosa approximation and without tension. Patients coming in early post operative period had friable tissue with lot of edema and adhesions and bile staining and patient's general condition is usually poor. Performing staged procedure and calling patients after 4 – 6 weeks for definitive repair seemed a better option. The presence of cirrhosis adversely influenced the healing of an anastomosis. There are many controversies about Tran hepatic stent. We used U stent primarily in difficulty repair, thin walled bile ducts and ducts not greatly dilated. We kept the stent for 4 week. We observed in our experience that stenting:

- Decrease the fibrotic narrowing of the anastomosis during the early healing,
- Enable us to radio graphically study the biliary systems post operatively.
- Provide the ease of suture placement and decreases severity of leak if occurs.

Factors that appear to influence the long term success of repair of bile duct injury are the number of previous operations, the level of strictures, presence of inflammation, and cirrhosis of the liver and duration of Tran hepatic stent remaining in place. Two thirds of recurrences were evident with in 2 years of stricture repair and 90% with in 7 years. Most common post operative complication was wound infection, which was present in 16.6% of our cases. This was probably due to presence of cholecystitis during his previous surgery, poor aseptic precautions taken at the peripheral centers and low economic and educational level of the patient.

Two of our patient who was referred to us from district hospital with leak from hepaticojejunostomy done there, suffered from septicemic shock and died. Two more patients also suffered from septicemic shock and unfortunately died.

In our series hepatico jejunostomy with wide mucosa to mucosa anastomosis with or without stenting remained the best operation with mortality and morbidity rate of 7.14% and 23.8% respectively.

References

[1]. Moosa AR 1990: latrogenic injury to the bile duct. Who, How , Where? Arch Surg. Aug . 125 (8) : 1028 – 30 discussion 1030 – 1.
[2]. Stewart L, Way LW: 1995; Bile duct injury during laparoscopic cholecystectomy: factors that influence the result of treatment. Arch Surg. 130 : 1123 – 1129.
[3]. Bismuth H Post operative strictures of bile duct. Blumgart LH. Surgery of liver and biliary tract. (Edinburgh: Churchil Livingstone 1982,; 209 – 18).
[4]. Kune GA et al 1969: Operative injuries of bile duct. Med J. Aust; 2:233.
[5]. Mathews JB , Blumgart LH. Benign biliary stricture1994. In : Blumgart KH , ed. Surgery of liver and bilary tract. Edinburgh, Scotlant: Chuchill – livingstone : ; 865 – 894.
[6]. Smadja C, Blumgarg KH: 1994, the biliary tract and the anatomy of biliary exposure. In : Blumgarg LH, ed Surgery of liver and biliary tract. Edinburgh, Scotland: Churchill Livingstone ;; 11 – 24.
[7]. Stapleton GN, Hickman R, Terblanche J: 1998. blood supply of right and left heptaic duct. Br J Surg,; 85 : 202 – 207.
[8]. Blumgarg LH et al 1984: Benign bile duct injury following cholecystectomy : Critical factor in management Br. J. Surg; 71 : 836 – 43.
[9]. Bismuch H: Hilar and intrahepatic biliary enteric anastomosis. Surg. Cl. N. America.1994; 74:843 – 63.
[10]. Milles JM et al 1992: Management of bile duct stricture Arch Surg.; 127 : 1077
[11]. Richardson AJ et al 1992 latrogenic injury to extra hepatic biliiary tract. Aust NZ J surg.; 62 : 533 – 9 .
[12]. Genest JF et al. Benigh biliary stricture: an analytical review (1970 to 1984). Surgery 99 (4) : 409-413, 1986 Apr.
[13]. Musella M, Coakley FV Schwartz LH, Blumgart LH Fong Y, Jarnagin WR, and Panicek DM 1998: Complex post cholecystectomy biliary disorder: preliminary experience with evaluation by means of breath hold MR cholangiography.
[14]. Way LW Dunphy JE; 1972.biliary stricture. Am J Surg. 124:287 – 295,
[15]. Asbun HJ et al : bile duct injury during cholecystectomy – mechanism of injury, prevention and management. World . J.Surg.;1993. 17 : 547 – 52
[16]. Andren – Sandberg A, Alinder G, Bengmark S,: Accidental lesions of the common bile duct cholecystectomy : Pre and perioperative factors of importance. Ann Surg.1985 ;201:328 – 332.
[17]. CzerniakA, Soreide O, et al. Liver atrophy complicating benign bile duct stricture in surgical and interventional radiological approaches. Am J Surg; 1986;152: 294.
[18]. Nealon WH, Urrutia F Jun : Long – term follow up after bilipenteric anastomosis for benign bile duct stricture: Ann Surg 1996;223 (6) , 639 – 645,.

Table – 1: Final definitive surgery

Type of procedure		**No. of patients**	**Percentage**	
Roux En Y Hepaticojejunostomy	With access loop	14	21.87%	81.25%
	Without Access Loop	50	59.38%	
	With Hepp and Couinauds Procedure	28	28.12%	
Separate Rt & Lt. Hepaticojejunostomy		4	3.12%	

Table-2: Hepaticojejunostomy : with or without setending

Hepaticojejunostomy	**No. of patients**	**Percentage**
With stent placement	64	76.19%
Without stent placement	20	23.80%