

COMPARISON OF OUTCOME IN ROUX-Y HEPATICOJEJUNOSTOMY WITH AND WITHOUT TRANSANASTMOTIC TUBE DRAINAGE IN TERTIARY CARE HOSPITAL

Javed Shakir,¹ Yasser Bilal²

Abstract

Aim: To compare the incidence of post operative bile leakage in Roux-Y hepaticojejunostomy with and without transanastmotic Tube drainage placement.

Background: A biliary-enteric anastomosis (Roux-en-Y hepaticojejunostomy) is usually needed after complex injuries and for benign biliary pathologies. Placement of transanastmotic Tube drainage is a matter of debate and to our knowledge there is no study that compares the results regarding biliary leakage in Roux-Y hepaticojejunostomy with and without transanastmotic Tube drainage.

Design: Randomized controlled Trial.

Setting: Tertiary care center, Fatima Memorial Hospital Lahore.

Methods: All the adult patients who were either admitted through OPD or referred to our hospital from September 2009 to September 2013 for Roux-Y hepaticojejunostomy for acute or elective reconstruction of the biliary tract. The patients were randomized into 2 groups: group A those who underwent Roux-en-Y he-

Registrar Department of Surgery

Fatima Memorial Hospital, Shadman, Lahore

paticojejunostomy with transanastmotic Tube drainage and group B without transanastmotic Tube drainage.

Main Outcome Measures: Anastomosis leakage, hospital stay.

Results: Total 50 patients including high and complex biliary injuries (Bismuth type III, IV; Strasberg D, E) choledochal cyst and biliary strictures. Twenty five cases had reconstruction with the placement of transanastmotic Tube drainage and 25 cases without transanastmotic Tube drainage. No operative mortality was observed. The postoperative outcomes of both groups were compared and significant differences observed. Good results were observed in more than 90% of the patients with biliary drainage. Biliary leakage more frequent in patients having no external biliary drainage (24% vs. 4%).

Conclusions: Good results are obtained with a Roux-en-Y hepaticojejunostomy with transanastmotic Tube drainage. We recommend that all patients who undergo Roux-en-Y hepaticojejunostomy should have Transanastmotic Tube drainage.

Shakir J.¹

Associate Professor, Department of Surgery
Fatima Memorial Hospital, Shadman, Lahore

Bilal Y.²

Introduction

Hepaticojejunostomy is an uncommon procedure performed by general surgeons. Before the advent of this procedure, end to end biliary intestinal anastomosis and

end to end biliary anastomosis was in practice. These procedure fade out with passage of time because of increase incidence of cholangitis, leakage and stricture formation.¹ Now a days, Roux-y hepaticojejunostomy is the procedure of choice for iatrogenic biliary injuries, benign strictures and choledochal cysts.⁵ As a principle, good anastomosis should be tension free and must have good blood supply. Currently, most frequently hepaticojejunostomy is performed for iatrogenic injuries to CBD and biliary strictures which occurs as late complication of cholecystectomy and more often laparoscopic cholecystectomy.^{2,3} There are some less common indications for Roux-Y hepaticojejunostomy such as biliary fibrosis, biliary strictures of previous biliary-enteric anastomosis, choledochal cyst, liver transplantation and part of other procedure in case of hepatobiliary and pancreatic malignancies⁴. Postoperative leakage is the worrisome complication which may result in reoperation and increases the morbidity and hospital mortality.

In reported literature, Lower incidence of leakage has been reported in liver transplant with Tube drainage by lowering the ductal pressure^{4,6,7} in relation to choledochal cystostomy in liver transplant. In previous studies, the systemic factors such as serum albumin level, preoperative biliary drainage, co-morbid condition and age were compared.^{8,9} However, to place a transanastmotic Tube drainage is beneficial in preventing postoperative leakage is matter of debate. But there is no study which primarily compared the hepaticojejunostomy with and without use of transanastmotic tube drainage for iatrogenic biliary injuries, stricture, choledochal cyst.

In our study, we compared the Roux-en-Y hepaticojejunostomy with and without transanastmotic Tube drainage for these pathologies. The rationale behind this is that in early postoperative period there is localized ileus due to manipulation of the jejunum loop while performing anastomosis and oedema of duct which result in increase ductal pressure and bile stasis. The placement of transanastmotic Tube drainage reduces this pressure and prevents biliary stasis by external diversion which in turn reduces leakage.

Aim: To compare the incidence of post operative bile leakage in Roux-Y hepaticojejunostomy with and without transanastmotic Tube drainage placement.

Objective: To compare the incidence of bile leakage in immediate post operative period of day 0 – 7 days in

patients with Roux-y hepaticojejunostomy with and without transanastmotic Tube placement.

Bile Leakage: It is taken as presence of bile in sub hepatic drain from postoperative day 0 – 7.

Materials and Methods

Study was approved by hospital ethics review committee. An informed consent was taken before procedure from each participant in a language Understood by patient.

We conducted this double blinded randomized controlled trial in four years from september2009 to September 2013 in the department of surgery Fatima Memorial Hospital (FMH) Lahore, Pakistan which is tertiary care hospital.

Inclusion Criteria

Adult patients (18 – 75 years) who consented for study, evaluated clinically and confirmed by MRCP having following pathologies were included:

1. Common bile duct stricture,
2. Type 1 choledochal cysts,
3. Iatrogenic bile duct injuries (complex bismuth type i, iii),
4. Redo surgery for biliary enteric anastomosis stricture.

The exclusion criteria were:

1. Cholangiocarcinoma.
2. Carcinoma Gall bladder infiltrating the CBD.
3. Ca Head of Pancreas.
4. Minor bile duct injury which managed conservatively which was confirmed on CT scan and MRCP respectively.
5. Who not consented for the study.

Patients, who fulfilled the inclusion criteria, were randomized by drawing lottery slips by a staff nurse. We wrote the fifty slips sealed labeled A for Tube drainage and B without Tube drainage, then given to the staff nurse unrelated to study to choose randomly just before the Roux_y hepaticojejunostomy. In Roux-en-Y hepaticojejunostomy, jejunum Roux loop of about 50cm drawn up to liver and anastomosed with common hepatic duct. Then Y loop created by doing end to side enteroenterostomy which prevent reflux of intestinal contents into biliary tree and cholangitis. Anastomosis was performed with careful apposition of the biliary epithelium with the intestinal mucosa, using nonre-active interrupted absorbable sutures vicrly # 4/0. External Tube drainage using a latex Tube of appropriate

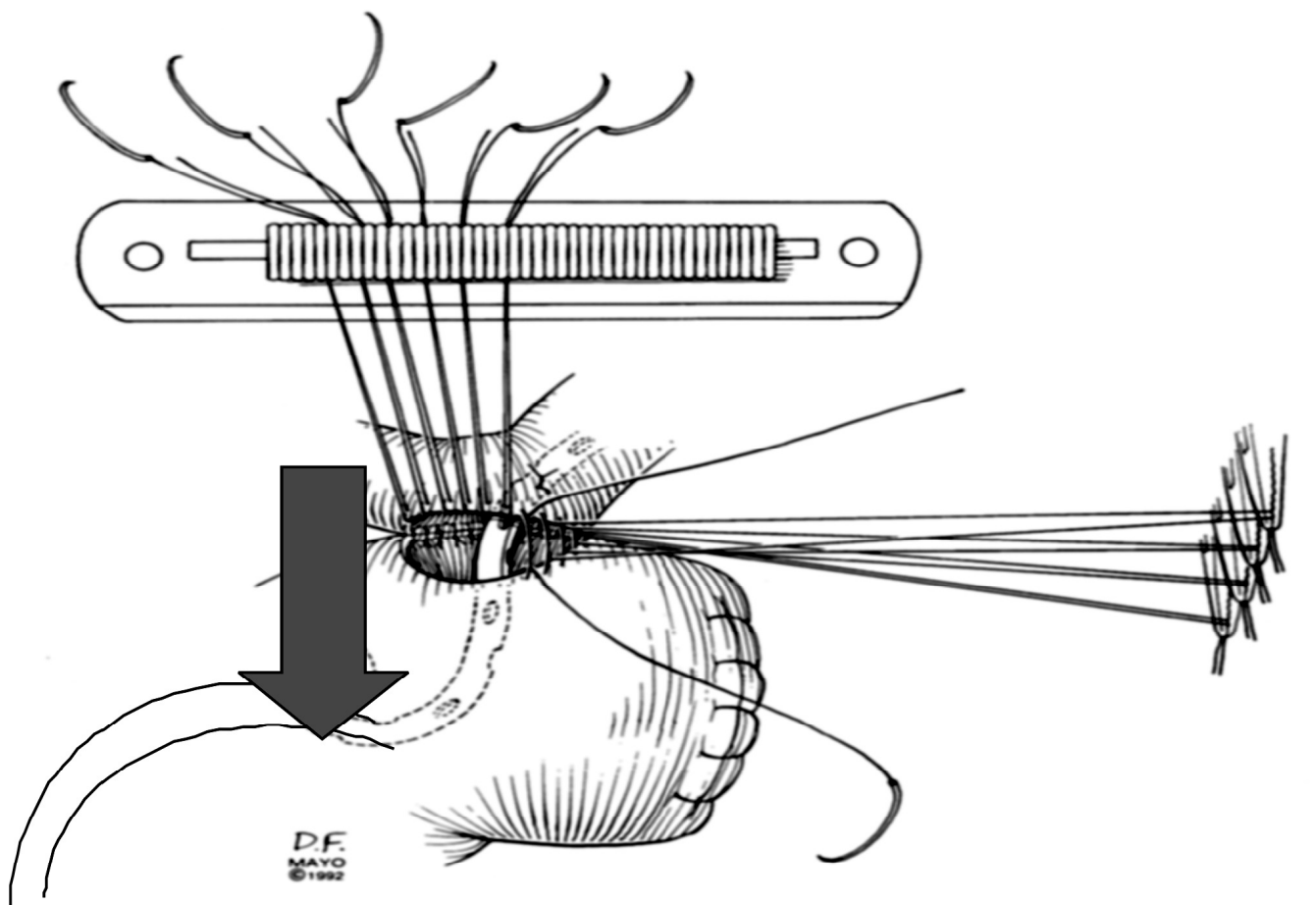
size, with insertion of its short branches into either Common hepatic or in case of ductojejunostomy in right and left hepatic duct and conducting of its long branch through jejunal loop to the abdominal wall outside. Drainage Tube was secured with catgut # 3/0 at exit from jejunal loop and jejunal loop anchor with Ant. Abdominal with vicryl #2/0 .Sub hepatic drain was placed to detect the postoperative leakage and observed daily for the presence of bile .Postoperative bile leakage defined as presence of bile in Sub hepatic drain more than 50ml in postoperative days. In tube drain group if no leakage occurred, tube was clamped on 6th Postoperative day, sub hepatic drain was removed .Transanastmotic Tube was removed after performing cholangiogram on 10th day.

Standard Roux-Y hepaticojejunostomy was performed by the Consultant surgeon under general Anesthesia. Outcome variable biliary leakage was recorded by the presence of bile in sub hepatic drain within 7 days of Roux-y hepaticojejunostomy. Despite exhaustive literature search; there is no study available which primarily compared the transanastmotic Tube drainage in

hepaticojejunostomy in terms of biliary leakage. The Sample Size of 50 with 25 in each group was randomized. Confounder being controlled by data stratification and matching elements. Descriptive analysis was performed by calculating proportions for categorical variables i.e. sex, biliary leakage, tube drainage and means (with standard deviations) for continuous variables i.e. age and postoperative hospitals stay. Outcome variable biliary leakage in both groups was compared by Chi-square test. P-value of less than .05 was considered statistically significant .SSP 20 used for data analysis.

Results

A total of 50 adult patients underwent a Roux-en-Y hepaticojejunostomy for a benign pathology were randomized in two groups A and B. Out of these 50 patients, 35 (70%) were women and 15 (30%) were men as Shown Fig. 1.



Data pertaining to patient sociodemographic profile, primary diagnosis, operative procedure, and clinical outcome variable were recorded on proforma. The primary outcome of billiard leakage was noted.

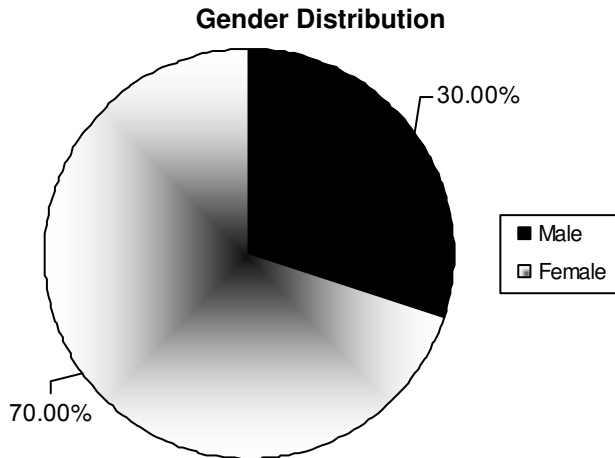


Fig. 1: The mean age of the patient was 36 ± 5 years.

The primary diagnosis in most cases 32 (64%) was iatrogenic CBD injury, 8 (16%) patients had a CBD Stones, 1 (2%) had primary CBD stricture, 1 (2%) had post lap. cholecystectomy CBD stricture, 1 (2%) had biliary stricture resulting in obstruction due to previous Hepaticojejunostomy, and 7 (14%) patients each had a type 1 choledochal cyst as Shown in Fig. 2.

The standard surgical procedure, Roux-en-y Hepaticojejunostomy performed in all the cases.

8 (16%) patients underwent a pre-operative biliary decompression procedure. Transanastmotic Tube drainage placed and brought to abdominal wall in 25 (50%) cases and procedure performed in 25(50%) patients was without tube drainage. No stent was used in

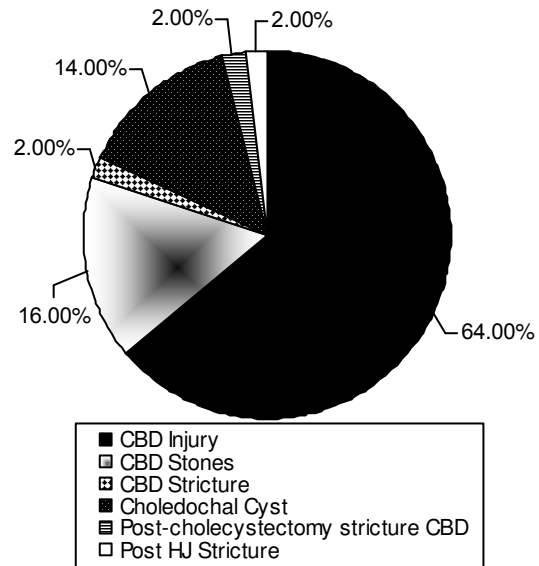


Fig. 2: Frequency of Diagnosis.

any patient. Intra-operative bile culture was sent in all cases and a positive bacterial growth was documented.

Postoperative bile leakage was observed in about 7 cases. In group A with transanastmotic Tube drainage, leakage was observed in 1 (4%) case. In Group B without transanastmotic Tube drainage leakage was observed in 6 (24%) cases. Leakage in Both groups were compared by Chi-square test which resulted significant differences with P-value of < .05 .None of the patient with leakage in Tube drainage group required re-exploration and leakage settles spontaneously over

Table 1:

	LEAKAGE ASSESEMENT				Total No.	Percentage
	GROUP A (with Tube Drainage)		GROUP B (without Tube Drainage)			
	No.	Percentage	No.	Percentage		
No. of patients	25	50	25	50	50	100
No leakage	24	96	19	76	43	86
Leakage	1	4	6	24	7	14

Table 1.1: Hospital Stay.

Category	Postoperative Hospital Stay (Days)
Group A	7
Group B	13

period of 10 days. In those without tube Bile leak settled 14 to 22 day.

However, two patients with leakage in without Tube drainage required re-exploration due to development of biliary peritonitis. In those patients in

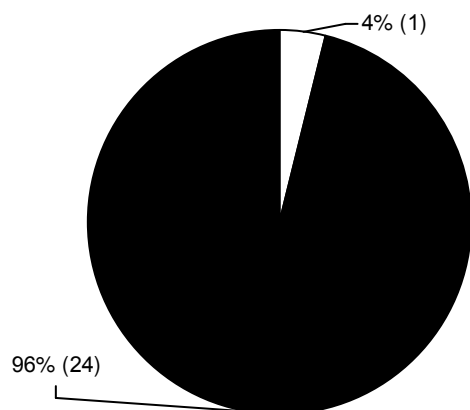


Fig. 3: Group A Tube Drainage.

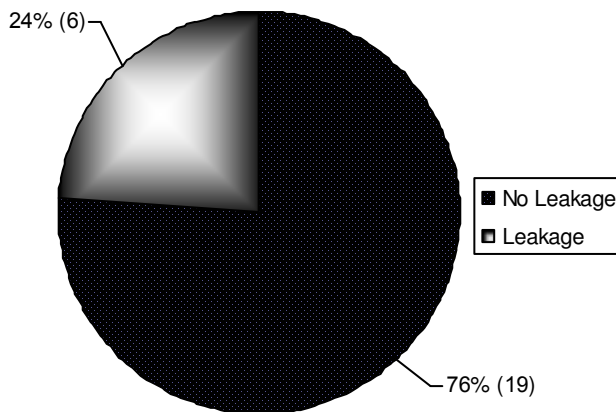


Fig. 4: Group B (No Tube Drainage).

Table 2: Chi-Square Tests.

	Value	df	Asymp. Sig. (2 – Sided)	Exact Sig. (2 – Sided)	Exact Sig. (1 – Sided)
Pearson Chi-Square	4.153	1	.042		
Continuity Correction	2.658	1	.103		
Likelihood Ratio	4.545	1	.033		
Fisher's Exact Test				.098	.049
N of Valid Cases	50				

which leakage have been observed with Tube drainage, cholangiogram was done on 10th day. If NO leakage was present then tube was removed at 2 weeks. The mean hospital stay in patient with Tube drainage was 7 ± 4 days as compared to without Tube drainage was 12 ± 10 days.

Discussion

Hepaticojejunostomy is commonly a procedure performed by hepatobiliary surgeons.

In developing countries like Pakistan where no hepatobiliary units have been established, Hepaticojejunostomy is still the domain of General Surgeon. In Hepaticojejunostomy leakage is worrisome complication and one of the major causes of morbidity. Besides systemic and local factors affecting leakage in hepaticojejunostomy, there is a role of transanastmotic Tube drainage in preventing leakage as confirmed by our study. In this study, leakage among Tube drainage group was 4% as compared to without Tube drainage

group which was 24%. In previous study in liver transplant patients in which Roux-Y hepaticojejunostomy performed by using straight Tube drainage for stent purpose leakage observe was 37%.¹⁰ Using the transhepatic Stent has been there for several years which help in preventing the leakage by lower the intra-ductal pressure and cholestasis but associated with stent related complications. Another study reported that there is difference in postoperative leakage in patient having hepaticojejunostomy with (5%) and without (15%) transhepatic transanastmotic stenting¹⁸. However, in this study stent kept for minimum of three months which resulted in other stent related complications including hemorrhage, infection and stricture¹⁸. The largest and most recent of these studies by Sick lick et al,¹¹ using biliary stent in 172 hepaticojejunostomy leakage was 4.6%. Our study results leakage was 4 % in Tube drainage group and 24% in those without Tube drainage. As in previous study, Low albumin has been reported independent factor for postoperative in-hospital complications.^{12,13} In our

study, Serum albumin levels of the two patients of group B in which leakage occurs was 2.8 g/l which was corrected by albumin infusion preoperatively and postoperatively. Another study of biliary enteric anastomosis reported leakage was about 10%.¹² As a developing country laparoscopy is still new era and open cholecystectomies are performed in peripheries by inexperienced surgeons resulting in higher number of patient of iatrogenic biliary injuries and strictures in our study. All the patients in our study were operated by one consultant surgeon. There was no mortality among both groups. The use of Tube drainage in our study was to prevent the leakage by lowering the intraductal pressure and draining the bile externally in past the temporary stenting of the anastomosis had been used but remained controversial. Those who favor said that it probably lowers the stricture formation and leakage.^{15,16} Others have equivalent results without stenting.^{14,17} This study demonstrated that transjejunal transanastomotic Tube drainage should be placed in Hepaticojejunostomy to prevent the early postoperative leakage in hepaticojejunostomy. However, whether it affects the formation of stricture is matter of further follow-up till dated we do not have any patient of study who came with symptoms suggesting stricture formation. As developing country no hepatobiliary centers are established due to financial constraints despite that rate of biliary leakage are comparable to Haptobiliary centers studies and even better than some centers.

Conclusion

Hepaticojejunostomy with Transanastomotic Tube drainage prevent postoperative biliary leakage which in turn decreases morbidity and hospital stay .In developing country where no specialized hepatobiliary unit and hepaticojejunostomy is domain of general surgeons. The routine use of Transanastomotic Tube drainage should be done which is easy to use, effective and less expensive method, which also has the ability to assess the biliary tree postoperatively by cholangiography.

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