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Original Research Article

Outcome of loop cholecystojejunostomy as a palliative procedure in unresectable distal malignant biliary obstruction

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ABSTRACT

Background: Up to 70-80% of patients with malignant biliary obstruction seek medical attention only at unresectable stage. Though R0 resection is the therapeutic modality, surgical palliation has a definite role for securing biliary bypass. Hepatico (choledocho) jejunostomy and cholecystojejunostomy are the procedures of choice. As loop CCJ is technically simple to perform as well as having less operating time and blood loss;anappealing choice. Aim of the current study was to assess the outcome of loop CCJ as a palliative procedure in unresectable distal malignant biliary obstruction.
Methods: 25 patients who underwent loop CCJ for radiologically and histopathologically proven unresectable distal malignant biliary obstruction in GMC, Thiruvananthapuram, were studied for a period from 1st January 2015 to 31st December 2016. Each patient was followed up for 6 months post operatively for the occurrence of cholangitis, relief from pruritus, number of hospitalization, duration of hospital stay, postoperative 30 day mortality and life span. Pre and postoperative serum bilirubin were studied using paired t test. Palliative surgery outcome score was calculated to assess the outcome.
Results: Serum bilirubin levels were significantly reduced postoperatively. Mean pre and post-operative total bilirubin values were 15.10±1.65 (mg/dl) and 4.30±3.04 (mg/dl) respectively with $p<0.001$. 80% had relief of pruritus and 96% were free of cholangitis 76% had a PSOS more than 0.7.
Conclusions: Loop CCJ has acceptable outcome as a palliative option for surgical bypass to relieve jaundice, pruritus in patients with unresectable distal malignant biliary obstruction with a good PSOS. This procedure is technically simpler and having fewer incidences of post-operative cholangitis, pruritus, post-operative hospital stays as well as 30 day mortality.

Keywords: Distal malignant biliary obstruction, Loop cholecystojejunostomy, Palliative surgery outcome score

INTRODUCTION

Malignant distal biliary obstruction most commonly arises from either pancreatic cancer or cholangio-carcinoma. Up to 80% of ductal adenocarcinomas of the head of the pancreas are not resectable at presentation.[1] As 70-90% of patients with carcinomas of the head of the pancreas and ampullaryregion have obstructive jaundice at presentation with pruritis and/or cholangitis. Relieving the biliary stasis is the mainstay of palliation.

Some centres advocate biliary bypass surgery and some others, endoscopic biliary endoprosthesis. The advantage of biliary stents is that their positioning is minimally

invasive, the limiting factor being the recurrence of jaundice secondary to stent migration or accretion. Tumour progression and duodenal invasion may render repeated stenting impossible. Surgical bypass can be performed with equivalent morbidity and mortality rates as biliary stenting in selected patients, but with a significantly lower risk of readmission. Hence, better palliation can possibly be achieved in patients who are able to tolerate biliary bypass surgery.

Surgical biliary bypass incorporates either a hepaticojejunostomy (choledochojejunostomy), cholecystojejunostomy or choledochoduodenostomy with or without a concomitant gastrojejunostomy.[2-6] The different biliary bypass surgical procedures have been advocated but bilio-enteric anastomosis in the form of Hepaticojejunostomy or choledochojejunostomy are considered as procedures of choice.[2]

The standard practice in this Institution has been to perform loop cholecystojejunostomy along with routine gastrojejunostomy as the procedure is technically simple and consumes less operating time and carries less amount of blood loss, but wanes in case of low insertion of cystic duct, tumour infiltrating cystic duct etc.[7]

Palliative surgery is the term used for all surgical procedures applied with the primary intention of improving quality of life (QOL) by relieving symptoms caused by an advanced disease.[8] The palliative surgery outcome score (PSOS) is a prospective measure of the impact of palliative surgery, using the absence of a postoperative complication requiring hospitalization, as part of a measurement for QOL following palliative surgery. It is calculated by using the following equation: (number of symptom-free, non-hospitalized days)/ number of postoperative days of life (up to 180 days). A PSOS value of 0.7 was identified by patients and families who had good to excellent palliation as an acceptable outcome score.

Aim

Aim of current investigation was to assess the outcome of loop CCJ as a palliative procedure in unresectable distal malignant biliary obstruction.

METHODS

Study design, setting, duration and population

Current study was a descriptive study conducted at department of general surgery and department of surgical gastroenterology, government medical college hospital, Thiruvananthapuram, from 1 January 2015 to 31 December 2016. All Patients who underwent loop cholecystojejunostomy for radiologically or histopathologically proven unresectable distal malignant biliary obstruction in general surgery and surgical gastroenterology, Government medical college Thiruvananthapuram were included in the study after taking an informed written consent.

Sample size and sampling technique

Total 25 patients were included in the study. Non probability based sampling technique was utilized. All consecutive patients who were eligible according to the inclusion criteria were taken in the study.

Exclusion criteria

Exclusion criteria for the current study were; patients who were not willing to give consent and who lost to follow up.

Study variables

Pre and postoperative total bilirubin, pre and postoperative direct bilirubin, occurrence of post procedure cholangitis, persistent pruritus, number of postoperative hospitalization, duration of hospital stay in days, thirty day mortality, bystander satisfaction, palliative surgery outcome score.

Data collection and analysis

Data were collected from hospital records and from patients prospectively using a semi structured questionnaire based interview. Data was entered in MS excel and analysed using SPSS. Continuous variables expressed with mean with standard deviation and median with IQR on the basis of distribution. Categorical variables expressed as proportion. Paired t test used to assess the statistical significance of association as outcome is continuous variable.

RESULTS

A total of 25 patients who was diagnosed to have unresectable distal malignant biliary obstruction and underwent loop cholecystojejunostomy in Government medical college Thiruvananthapuram (satisfying the inclusion criteria) from 1st January 2015 to 31st December 2016 were studied. The study group includes 17 males and 8 females who were in the age group of 39 to 75 years (median 59). The patients were followed up for 6 months post procedure and the outcome was assessed in terms of pre and post procedure bilirubin values, disappearance of pruritis, incidence of cholangitis, number of postsurgical hospitalisation, duration of hospital stay, life span, thirty day mortality, bystander satisfaction and palliative surgery outcome score (PSOS).

The minimum age was 39 and maximum was 75 with median age of 58 years. The majority i.e., 40% were between 51 and 60 years. Out of 25 patients 68% (17) were males and 32% (8) were females. 96% of patients postoperatively were not reported cholangitis. Only 4%

had incidence of cholangitis post operatively. 80% of cases reported relief from the distressing symptom, pruritis post operatively. Only five patients i.e., 20% had persisting pruritis. Five patients died within six months (20%). Rest eighty percentage survived for more than six months. Only one death reported within thirty days of postoperative period. 64% of the study group reported the procedure satisfactory and the rest were not. 76% of the study population had PSOS as good (more than 0.7). Average baseline bilirubin (direct) was 9.92±6.24 (mg/dl) and average bilirubin (direct) at postoperative period was 2.69±2.38 (mg/dl). The observed difference was statistically significant. Direct bilirubin level was significantly reduced after surgery.

Table 1: Mean, median and interquartile range of study variables.

Parameters	N	Mean	SD	Minimum	Maximum	Median	Q1	Q3
Age (in years)	25	59.0	9.4	39	75	58	53.5	67.5
Total bilirubin	25	15.1	7.6	4.2	29.2	14	9.95	18.8
Direct bilirubin	25	9.9	6.2	3.1	25	8.2	5.5	13.8
Post op TB	25	4.3	3.0	0.3	10.1	3.1	1.9	7.1
Post op DB	25	2.7	2.4	0.1	8.4	1.8	0.85	3.8
Duration of hospital stay in days	25	33.4	18.1	9	70	27	20	50
Palliative surgery outcome score	25	0.8	0.2	0	0.94	0.85	0.7	0.895
Number of hospitalization	25	2.1	1.5	1	6	2	1	2.5

Table 2: Age distribution in years.

Age (years)	N	(%)
≤40	1	4.0
41-50	4	16.0
51-60	10	40.0
61-70	8	32.0
≥71	2	8.0
Total	25	100.0

Table 3: Final diagnosis causing distal malignant biliary obstruction.

Final diagnosis	N	(%)
Carcinoma head of pancreas	12	48.0
Periampullary carcinoma	9	36.0
Distal cholangio carcinoma	4	16.0
Total	25	100.0

Table 4: Incidence of cholangitis post operatively.

Cholangitis	N	(%)
Absent	24	96.0
Present	1	4.0
Total	25	100.0

Table 5: Patients who were relieved of pruritis.

Pruritis	N	(%)
Absent	20	80.0
Present	5	20.0
Total	25	100.0

DISCUSSION

The major burden of malignant distal biliary obstruction is contributed by carcinoma head of pancreas, periampullary carcinoma, distal cholangiocarcinoma etc. A good number of patients will seek medical attention only at unresectable stage. There is an on going search for a suitable palliative alternative. PTBD would transiently palliate hepato-billiary obstruction, but would not alleviate gastric outlet obstruction. PTBD has the disadvantage of repeatedly infected/blocked drain tubes and external drainage of bile with attendant nutritional derangement. Duodenal stent option is limited by the distorted anatomy and would not resolve the biliary obstruction.

Table 6: Bystander satisfaction.

Satisfaction	N	(%)
Not satisfied	9	36.0
Satisfied	16	64.0
Total	25	100.0

Table 7: Palliative surgery outcome score (PSOS).

PSOS	N	(%)
Good	19	76.0
Poor	6	24.0
Total	25	100.0

Endoscopic biliary stenting is associated with fewer short and long term complications& is better accepted by patients. But the main problem is stent occlusion, recurrent jaundice or sepsis due to ascending cholangitis. It demands stent replacement every 4-5 months. Ideally, patients with unresectable distal malignant biliary obstruction would require a choledocho (hepatico) jejunostomy and a gastrojejunostomy through a

Roux-en-Y reconstructive bypass. Cholecysto-jejunostomy (CCJ) or choledochojejunostomy are the procedure of choice for surgical bypass now. Because it is technically simpler to perform, it is preferable to opt for CCJ if the Gall bladder is free and the cystic duct enters the CBD at least 2-3 cm away from the tumour. Roux-en-Y CCJ is theoretically better than loop CCJ because it prevents the reflux of intestinal contents into the biliary tree and thus secondary cholangitis. However, the survival of most of the patients is less than 8-9 months & hence may not be a significant issue. Hence, this procedure constitutes a safe and effective last-resort in the hepato-billiary armamentarium.

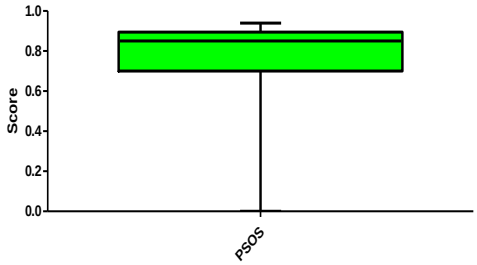

Figure 1: Box plot depicting PSOS value with median of 0.83, which is categorized as good (>0.7).

Table 8: Direct bilirubin (mg/dl) pre and postoperative values.

Parameters	N	Direct bilirubin (mg/dl)		P value
		Mean	SD	
Baseline	25	9.92	6.24	<0.001
Postoperative	25	2.69	2.38	

Jaundice is relieved usually but the bilirubin levels may not reach normal values. This is because of the irreversible hepatic damage due to high bilirubin and the long standing obstruction. Our study group includes 17 males and 8 females who were in the age group of 39 to 75 years (median 59) the majority i.e., 40% were between 51 and 60 years. In present study out of 25 patients 68% (17) were males and 32% (8) were females. Among 25 cases, 48% was carcinoma head of pancreas; 9% was periampullary carcinoma; 45 were distal cholangio-carcinoma.

According to Watanapa et al surgical biliary bypass can be done by cholecystojejunostomy, choledochoduod-enostomy, choledochojejunostomy or hepaticojejuno-stomy.[9] Operative morbidity and mortality are similar for both cholecystojejunostomy and hepaticojejunostomy, but the success rate in alleviating jaundice is higher for hepaticojejunostomy than for cholecystojejunostomy (97% vs. 87%).[1,10,11] In this study, 80% had relief of pruritus and 76% had PSOS more than 0.7.

Deschamps et al reported 10%, thirty day mortality rate whereas there was only one (4%) mortality in our study.[12] According to Sarfeh et al and Lillemoe et al the incidence of recurrent jaundice and cholangitis is 8% for cholecystojejunostomy and 0% for hepaticojejunostomy because of late obstruction of the cystic duct with tumour.[9] In current study, 96% of patients postoperatively did not have cholangitis. Only 4% had incidence of cholangitis post operatively.

In present study, average preoperative and postoperative serum bilirubin (T) was 15.10±7.65 (mg/dl) and 4.30±3.04 (mg/dl) respectively. The observed reduction was statistically significant. Total bilirubin level was significantly reduced after surgery. Similar results have been showed in Singh et al study and in Rosemurgy et al study.[10,11]

Limitations

Limitations of current study are; its retrospective nature, the relatively limited number of patients, and the absence of a comparison group. However, the study does show that cholecystojejunostomy can be performed for biliary decompression with high success rates, low morbidity and mortality and good palliative outcome.

CONCLUSION

Loop CCJ has acceptable outcome as a palliative option for surgical bypass to relieve jaundice, pruritus in patients with unresectable distal malignant biliary obstruction with a good PSOS. This procedure is technically simpler and having fewer incidences of post-operative cholangitis, pruritus, post-operative hospital stays as well as 30 day mortality.

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