ORIGINAL ARTICLE

COMPARISON OF BILIARY STENTING AND SURGICAL BYPASS IN PALLIATIVE MANAGEMENT OF IRRESECTABLE PERIAMPULLARY CARCINOMA

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Background: Some 20–40% of the periampullary carcinoma is irresectable at the time of diagnosis. Biliary stenting and surgical bypass are commonly used palliative procedure. There is no consensus favouring one procedure over the other. This study compares the both procedures. **Methods:** This Randomized Controlled Trial included 47 patients who presented with diagnosis of obstructive jaundice due to periampullary carcinoma to the Department of Surgery, Federal General Hospital, Islamabad from July 2012 to December 2014. **Results:** Out of total 47 patients 27 (57.44%) were males and 20 (42.55%) were females. Group-A included 25 (53.19%) patients while group-B included 22 (46.81%) patients. The mean age in both groups was 62.34 years (SD=±5.01). All patients died during the study. The mean survival time for the stent patients was 7.5 months while the mean survival time for surgical bypass patients was 8.3 months. The jaundice was relived in all surgical (22, 100%) of the patients as compared to (18, 72%) of the patients in stent group. **Conclusion:** We concluded that surgical bypass as a primary procedure in selected patients provided better jaundice relieve as compared to biliary stenting.

Keywords: Periampullary Carcinoma; Biliary Stent; Malignant Jaundice

Citation: Shah SF, Hameed S, Aurakzai JK, Raza A, Chaudhry MA, Shah SH, Shah SZ. Comparison of biliary stenting and surgical bypass in palliative management of irresectable periampullary carcinoma. J Ayub Med Coll Abbottabad 2018;30(1):30–3.

INTRODUCTION

Obstructive jaundice due to malignancy is more common than benign causes. In literature, the malignant causes of obstructed jaundice are reported in 54–65% of patients and the benign causes of the obstructed jaundice is reported around 38–45% of patients presenting with obstructive jaundice.[1]

Periampullary carcinoma is the commonest cause of the malignant obstructive jaundice and it includes carcinoma head of pancreas, duodenal and distal cholangiocarcinoma. 60–80% of the periampullary carcinomas are resectable and 20–40% are irresectable at the time of diagnosis.[2] In terms of palliation, differentiation between carcinomas of the pancreatic head, distal biliary, and duodenal carcinoma is often impossible. For treatment point of view these tumours are considered same as they share the same embryological origin, all are adenocarcinomas and have the same symptoms when they reach advanced stage.[3]

The best palliation in this situation is to relieve the jaundice immediately. There are various methods available to relieve jaundice. These methods are endoscopic biliary stenting, surgical biliary compression and radiologically guided percutaneous transhepatic biliary drainage or transhepatic stent placement for advanced tumour when endoscopic or surgical bypass is not possible.[4]

Endoscopic stenting is minimal invasive and tolerated well by the patients but it is associated with recurrent jaundice due to stent blockade, migration, infection and perforation.[5] Stent has to be replaced time to time and stent replacement becomes difficult or impossible due to tutor extension into duodenum. Surgical bypass is done as a primary palliative procedure or when endoscopic stenting fails or repeat stenting is difficult. But surgical bypass with gastric drainage provides prevention of obstruction from the tumour encroachment into the duodenum.[6] Studies have pointed out towards the initial low morbidity of the endoscopic biliary stenting but recurrent jaundice makes multiple admissions.[7] In comparison patients who had surgical bypass procedure had low percentage of the patients with recurrence of jaundice.[8]

The aim of our study was to compare effectiveness, morbidity and mortality of palliative biliary drainage procedures such as surgical biliary bypass or endoscopic stenting for advanced periampullary carcinoma and to determine which procedure was associated with better patient outcome.

MATERIAL AND METHODS

This Randomized Controlled Trial included 47 patients who presented with diagnosis of obstructive jaundice due to periampullary carcinoma to the Department of Surgery, Federal General Hospital, Islamabad from July 2012 to December 2014.

Detailed history, thorough clinical examination and relevant investigations were performed. Well understood informed consent was obtained from all patients about inclusion into study. Prior approval of hospital ethical committee was taken. All adult patients of both genders who presented with diagnosis of obstructive jaundice due to periampullary duodenal carcinoma were included while patients with proximal cholangiocarcinoma, benign aetiology and patients who had stenting and then needed surgical bypass later on were excluded from the study. Further categorization of the periampullary carcinoma in tabulated manner in the result was not made.

These patients were randomized on computer generated table of random numbers into group A (patients with endoscopic stenting) and Group B (patients with surgical bypass, Roux-en-Y hepaticojejunostomy with gastrojejunostomy). The relevant data was collected on a well-structured proforma. Data collected in post-operative period until patients were discharged. They were followed up till end of the study or their death. Post procedure patients were assessed for stent related complications, surgical complications, readmissions, duration of hospital stay, repetition of the procedure, survival and mortality. Variables such as cost effectiveness and procedure time were not studied.

Data was compiled and analysed using SPSS version 17. Mean was calculated for age, length of hospital stays and survival time. Standard deviation was calculated for age. To make a comparison for complications, duration of hospital stays, mean survival time paired and effectiveness of the procedure in relieving jaundice student t test was used. A *p*-value less than 0.05 considered significant.

RESULTS

A total of 47 patients were included in the study. Males (27, 57.44%) were slightly more than female (20, 42.55%). Group-A included 25 (53.19%) patients while group-B included 22 (46.81%) patients. In Group-A, 13 (27.65%) were males and 12 (25.53%) were females while in Group-B, 14 (29.78%) patients were males and 8 (17.02%) were females (Graph-1). The mean age in both groups was 62.34 years and mean age in Group-A was 61.59 years and mean age in Group-B was 63.09 years (SD=±5.01) and the age range was 58–85 years (Graph-2). The mean survival time for the stent patients was 7.5 months while the mean survival time for surgical bypass patients was 8.3 months (*p*=.0.2) The detail comparison of the both procedures is shown in table-1. There was no mortality in within 30 days of the procedure in any of the group. There was no major complication such as bile duct or vascular injury, intra-abdominal abscess, deep vein thrombosis or visceral perforation requiring re-exploration.

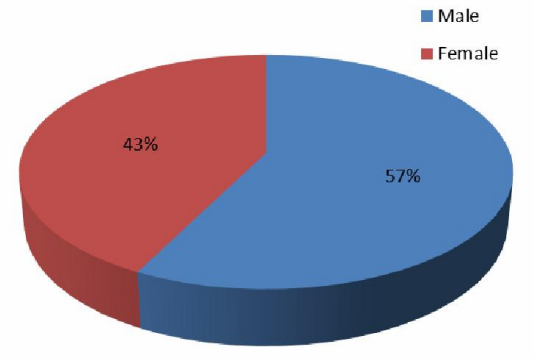

Figure-1: Gender distribution

Table-1: Patient Characteristic and Post Procedure Comparison (n=47)

	Group-A (n=25)	Group-B (n=22)	
Mean age (62.34) in years	61.59	63.09	SD=±5.01
Cholangitis	6 (12.7%)	2 (4.27%)	0.15
Pancreatitis	2 (4.27%)	0	0.2
Vomiting	5 (10.63%)	3 (6.38%)	0.25
Chest Infection	3 (6.38%)	5 (10.63)	0.15
Persistent jaundice	5 (10.63%)	0	0.1
Stent not be passed	3 (6.38%)	-	
Recurrent Jaundice	7 (14.89%)	0	0.15
Wound Infection	-	5 (10.63%)	
Revision/repeat procedure	7	0	0.01
Readmissions	19	11	0.001
Mean Hospital Stay (Days)	13	15	0.25
Mean Survival of the patients in months	7.5	8.3	0.2
Relieve of Jaundice	18 (72%)	22 (100%)	0.01
Mortality	0	0	

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DISCUSSION

The effects of the obstructive jaundice are biliary infection, deranged liver functions especially bleeding profile and hepatorenal syndrome.[9] Appropriate antibiotics, rehydration, correction of the bleeding profile and relieve of the jaundice are the key management steps for the obstructive jaundice.[10] The aim of treatment for unresectable perampullary tumour is palliative drainage of the bile.[3,4] There are various procedures are available but commonly either endoscopic stenting or surgical bypass is used. There is no consensus to prefer one procedure over other.

In our study, there was male (57.44%) predominance as compared to female (42.55%) and male to female ratio was 1.35:1. The mean age for both groups was 62.34 years and the age range was 58–85 years. Hatzaras reported similar predominance in male (58 %) than females (42%) and a mean age of 64.63 years.[11] Bhatti reported even higher percentage of men (66.6%) than women (33.33%) and a higher male to female ratio 2:1.[12] In our study 53.19% patients had endoscopic stenting while 46.81% patients had surgical bypass. In 6.38% patients stent could not be passed and in 10.63% patients jaundice was not relieved by the endoscopic stent. Maire reported that biliary stent could not be passed in 9 % of the patients in his study.[13] Recurrent jaundice due to obstruction of the biliary stent was observed in 14.89% of our patients at six months duration. Gargouri *et al* reported blockage of biliary stent in 10.6% of the patients at mean time of 5.5 months.[14] In comparison to this patient who had surgical by pass remained jaundice free till their death. Singh reported that in surgical bypass patients remained jaundice free till their death.[15] Glazer in his study mentioned that recurrent biliary obstruction was 9 times higher in stent patients and 3.1% of surgical bypass patients had recurrent obstruction requiring intervention as compared with 28.7% of stent patients.[16] Other complications such as cholangitis was observed in 12.7% vs 4.27% patients, vomiting in 10.63% vs 6.38%, Chest infection in 6.3% vs 10.63, pancreatitis 4.27% vs nil in stent vs surgical bypass patients respectively. Wound infection in 4.27% was present in surgical bypass patients only. Zhang *et al* reported pancreatitis in 8.8%, cholangitis in 4.4%, recurrent jaundice in 6.6 % of the patients with biliary stenting.[17] The mean hospital stay was 13 days for stent patients and 15 days for surgical by pass patients There was no 30-day mortality in our study. All patients died during the study period time.

Initially stent placement seemed easy, associated with less complication, less duration at hospital and stable solution for relieve of jaundice in periampullary carcinoma as compared to surgical by bass. But our study showed that the result for stenting and surgical by pass are same. Rather surgical by pass provided better relieve of jaundice as compared to stenting. This means the surgical bypass provided much stable and permanent relieve of the jaundice as compared to biliary stenting. The mean survival time for stent group was 7.5 months as compared to 8.3 months for surgical bypass patients. The mean survival time appeared longer in surgical bypass patients but could not reach statistical significance.

Many studies have compared both procedures and argued for the benefits of the both procedures. Stark argued that widespread availability of endoscopic biliary stents had shifted the paradigm of treatment away from traditional surgical management and stent had demonstrated high rates of therapeutic success, low rates of morbidity, and decreased cost.[18] Maire also favoured biliary stenting as compared to surgical bypass stating a clear advantage in terms of quality of life and cost.[19] But Wehrmann in his study reported that stent had increased short term quality of life the patients with malignant jaundice.[20] Whereas Raty argued that the gastric emptying problems and unsuccessful stenting was associated with 67% higher risk of complications in patients who needed palliative treatment for jaundice.[21] The reason for such complications could be the delayed gastric emptying. This leaded Gurusamy to conclude that routing gastric bypass is indicated with biliary bypass.[22] Andtbacka stent should primarily be used in patients with anticipated short survival duration and surgical palliation for biliary obstruction should be primarily considered in patients who fail endoscopic biliary decompression or who develop clinical evidence of gastroduodenal obstruction or have longer survival chances.[23] Grönroos studied advantage of biliary stenting in too elderly patients and merits its advantages in patients who are not fit for general anestehisa.[24]

Glazer in his study recommended that if expected survival is to be under 4 months therapeutic endoscopic stent should be placed and if patients are expected to live at least 6 months surgical biliary bypass with a concomitant gastric emptying procedure should be done.[14]

CONCLUSION

From our study, we conclude that surgical bypass as a primary procedure in selected patients provided better jaundice relieve as compared to biliary stenting. In patients with average expected life survival less than 6 months biliary stent should be passed while in patients where average expected life survival is more than six months surgical biliary by pass should be done.

AUTHORS' CONTRIBUTION

SFS, JKA: conceived, designed and did statistical analysis and editing of manuscript. SH, AR: Data collection. MAC, Shah SH, SSZ: Final review.

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Received: 2 December, 2015	*Revised: 29 October, 2017*	*Accepted: 30 November, 2017*

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