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Original Article

Loop Choledochojejunostomy and Enteroenterostomy compared with Roux-en-y Choledochojejunostomy for Biliary Bypass in cases of Unresectable Pancreatic Head Cancer

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ABSTRACT

Background and Objectives: We compare two surgical procedures for biliary bypass in cases of unresectable pancreatic head cancers which include loop choledocho-jejnostomy (LCJ) which is a type of palliative decompressive anastomotic technique, to Roux-en-y choledochojejunostomy (RCJ).**Patients and Methods**: in this prospective study sixty patients who were undergo surgery for palliative bypass were randomized into two groups: group I was subjected to LCJ (30 patients) and group II to RCJ (30 patients). Pre- and postoperative liver function tests, operative time, operative blood loss, onset of postoperative enteral feeding, length of hospital stay and survival rates were compared in the two groups. **Results:** Effective surgical decompression was observed clinically as well as on comparing of pre- and postoperative liver function tests in both groups. The results were statistically significant in favor of patients in group I when compared to those of group II with respect to operative time 60 min vs. 110 min; *P* =<.0001), operative blood loss 100 mL vs. 180 mL; *P* =.001), postoperative enteral feeding 3 days vs. 5 days; P =<.0001) and length of hospital stay 3 days vs. 5 days; P =<.0001). During follow-up, recurrent jaundice was observed in one patient in group I and one patient in group II, while duodenal obstruction developed in one patient in the group I series. Gastrointestinal hemorrhage occurred in one patient belonging to group II. The difference in mean survival time was not statistically significant. **Conclusion:**Based on this series, LCJ seems to be a better palliative surgical procedure than the RCJ.

Keywords: Pancreatic Adenocarcinoma, Loop Choledochojejunostomy, Roux-en-y Choledochojejunostomy

Introduction:

Pancreatic head cancer is a common cancer. Often due to the late presentation of the disease, patients are subjected to palliative therapy with a view to relieve obstructive jaundice, gastric outlet obstruction and pain.[1],[2],[3] Operative and non operative modalities are currently available to provide reasonable palliation of symptoms.[1]. Appropriate palliative surgical management is indicated in patients found to have unresectable tumors at the time of laparotomy or those whose symptoms are not releive by current non operative palliative techniques.[3]. various surgical bypass procedures are performed for relief of obstructive jaundice. The most frequently used procedures are hepaticojejunostomy, cholecystojejunostomy, choledochojejunostomy and choledochoduodenostomy [4]

. In this study, we compared the outcome of the loopcholedochojejunostomy (LCJ) with the Roux-en-y choledochojejunostomy (RCJ) for palliative decompression in unresectable cases of pancreatic head cancer.It has been questioned whether cure is possible at all in pancreatic cancer patients [4] .Today, there is consensus that surgical resection remains the best single chance these patients have for long-term survival [5] [6]. Still, most patients are only eligible for palliative treatment at the time of diagnosis, and palliation of symptoms remains the major goal[6]

.Obstructive jaundice is present in approximately 90% of patients with pancreatic cancer at the time of diagnosis. Pruritus is the most common symptom and liver dysfunction and hepatic failuresecondary to bile stasis and cholangitisare the most severe consequences. Relief of obstructive jaundice should always be a major therapeutic goal, since it results in a substantial positive impact in the quality of life of these patients[6] [7]Endoscopic stent placement is the preferred procedure since it is associated with lower frequency of complications than percutaneous insertion and it is as successful as the surgical procedure but has a shorter hospital stay.

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Metal prostheses should be preferred for patients with a life expectancy of >3 months since they present fewer complications (occlusion) than plastic endoprostheses[7][8]

Fewer than 5% of patients with pancreatic cancer present with duodenal obstruction, while gastric outlet obstruction may be more common during the course of disease[9]

Neither chemotherapy nor radiotherapy provided palliation in this setting. In some cases, proximal obstruction may be overcome by the use of an expandable metalc stent[10]. The role of prophylactic gastroenterostomy remains controversial. In fact, only 13%15% of patients will require gastroenterostomy during the course of disease; it should not be performed as standard procedure but can be a reasonable choice for individual patients[10][11]. Patients who present with severe pain must receive opioids. Morphine is generally the drug of choice. Usually, the oral route is preferred in routine practice. Parenteral routes of administration should be considered for patients who have impaired swallowing or gastrointestinal obstruction.[12]

Different surgical procedures are available to obtain adequate biliary drainage. External biliary drainage by a T-tube inserted above the site of obstruction has been used in the past, but loss of appetite and electrolyte imbalances are frequent and the technique has been overall abandoned. Internal biliary drainage is generally preferred and can be performed by cholecystojejunostomy, hepatico(choledocho)jejunostomy or choledochoduodenostomy [12][13] It had been showed that choledochojejunostomy, though technically more difficult, has higher success rates to relieve obstructive jaundice and lower rates of recurrent jaundice and cholangitis, compared with cholecystojejunostomy [14][15]. A choledochoduodenostomy is generally not recommended, since it frequently results in recurrent jaundice, due to local tumor growth into the duodenum and the distal common bile duct, encompassing the entrance of the cystic duct.[15]

Patients and Methods:

The patients included in this study had unresectable pancreatic head adenocarcinoma detected preoperatively (included patients with advanced disease where biliary stenting has failed or stents were repeatedly blocked) or intraoperatively by finding of fixed tumors invading the major vessles.

These patients were enrolled in the surgical department at Gastroenterology and Hepatology TeachingHospital and BaghdadTeaching Hospital,MedicalCity Complex,BaghdadIraq, for this study, which extended from January 2007 to January 2010. The diagnosis of the tumor was based on clinical examination and was aided by ultrasonography (US), CT and endoscopic retrograde cholangiopancreatography (ERCP). Radiologically the criteria for determining resectability included the presence or absence of distant metastases and local invasion of the major retroperitoneal vascular structures, especially the portal and superior mesenteric veins and the superior mesenteric artery. Histological proof was obtained by US guided fine needle aspiration cytology (FNA) of the tumor mass.

Surgical technique:

Surgical exploration was performed using upper midline incision. Wide inspection of the whole peritoneal cavity and assessment for features of un resectability for those patients cannot be assessed preoperatively, cholecystectomy was done and the common bile ducts exposed, transfixation sutures were placed between the two structures (Figure 1) A 20-25 mm side to side anastomosis was performed between the CBD and the jejunum by a single layer of interrupted sutures using 3-0 polyglycolic acid. After placing a tube drain in Morison pouch, the abdomen was closed in layers. Bypass was considered a failure if reoperation or other therapeutic intervention was necessitated for managing postoperative complications related to biliary anastomosis or recurrence of jaundice. After leaving the hospital, patients were followed by direct contact.

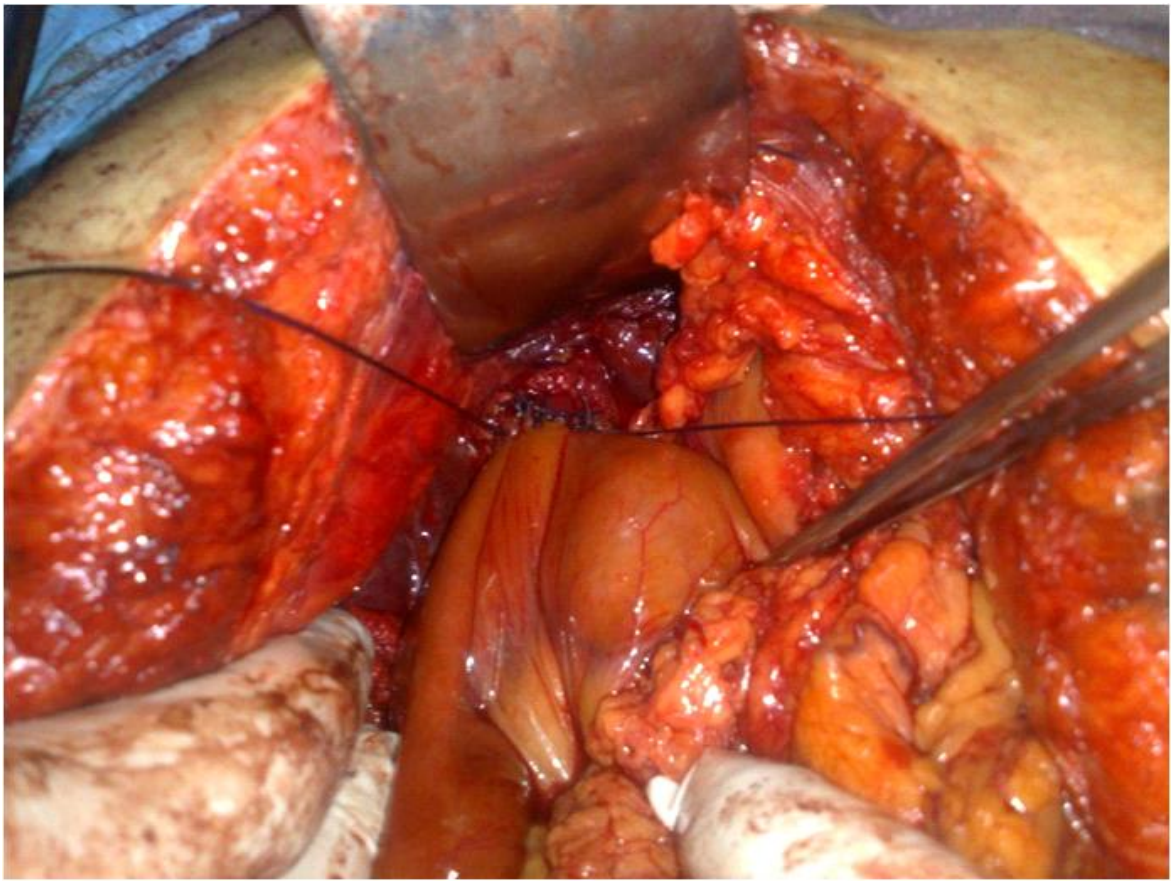

Figure 1 anastamosis between the common bile duct and jejunum

Results:

Each group had 30 patients with the mean patient age in group I being 64.1 years (range, 56-72 years) and group II 61 years (range, 50-72 years). There were 16 females and 14 males in group I, 17 males and 13 females in group II. The chief complaints of patients in either group were itching, jaundice and pain. Preoperatively, Ultrasound and CT scan were useful in detecting advanced lesions in 21 patients of group I and 24 patients of group II. In the other patients, irresectability was ascertained intraoperatively. All patients were subjected to preoperative pathological diagnosis by FNA. A significant decline in serum bilirubin, liver enzymes and jaundice was observed in all the patients postoperatively, with remarkable clinical improvement. On comparison of the operative details, the mean operative time and mean intraoperative blood loss was significantly less in group I ($P<.05$). The length of postoperative enteral feeding and duration of hospital stay was also found significantly less in group I ($P<.05$).

Five patients in each group had minor postoperative complications (group I, two wound infection,two left basal atelectasis and one with minor anastomotic bile leak; group II, two wound infection, Three minor anastomotic bile leak) that were managed conservatively. There were no cases of operative mortality or major anastomotic leak in either group. During follow-up, recurrent jaundice was observed in one patient in group I and one patient in group II, while duodenal obstruction developed in one patient in the group I series. Gastrointestinal hemorrhage occurred in one patient belonging to group II. The overall survival time was the same in both groups' .Two patients in group II and one patient in group I had to be readmitted due to local extension of the tumor causing recurrent jaundice. One patient in group II developed severe gastrointestinal bleeding caused by erosive gastritis and was managed conservatively. Duodena obstruction occurred in one patient in group I, necessitating an endoscopic stenting.

	Group I (LCJ)	Group II (RCJ)	*P* value
Number of cases	30	30	
Operative times - Min	60	110	*P* =<.0001
Operative blood loss-Ml	100	180	*P* =.001
Onset of enteral feeding, day	3	5	*P* =<.0001
Days of hospitalization	3	5	*P* =<.0001

Main outcomes of Loop Choledochojejunostomy compared with Roux-en-y Choledochojejunostomy

Discussion

Patients with pancreatic head cancer are mostly unresectable at the time of diagnosis. Often they need some procedure for relieving the biliary obstruction. Aided by modern radiological modalities, identification of patients with advanced disease forms a subset of patients who may be served better by endoscopic stenting.

[15] [16]The aim of any operation undertaken for palliation in patients with unresectable pancreatic Head cancer is to use the simplest procedure with the lowest incidence of immediate complications, such as anastomotic leak and recurrent biliary obstruction requiring reoperation. The accepted decompressive surgical options for treating the malignant distal biliary obstruction are Loop Choledochojejunostomy.[16] A review of the literature reveals conflicting opinions on the operation of choice in such patients.[17] that the operation is simple, quick and capable of relieving jaundice with minimal blood loss.

Advanced pancreatic head adenocarcinoma patients have shorter mean survival time, so prophylactic gastrojejunostomy seems unnecessary as most of them do not survive long enough to develop late gastric outlet obstruction and where they do,one can resort to endoscopic duodenal stenting.[18] [19] Minimal surgical dissection and manipulation seem to be the important factors involved in early return of bowel sounds.[20] [21] it has been hypothesized that abdominal surgery initiates a scenario of inflammatory events that results in common clinical phenomenon of post surgical ileus.[21]

Thus, surgical manipulation and the extent of dissection seem to correlate well with the return of bowel sounds. Patients who undergo LCD are subjected to minimal surgical dissection and manipulation and as such experience early return of bowel sounds leading to early return to oral feeding and hence early discharge from the hospital. These visible advantages may lure surgeons to perform LCD in patients lined for a palliative bypass.[21][22]

Less operative time, minimal blood loss, early enteral feeding and shorter hospital stay makes the LCD procedure look attractive.

Conclusion:

Based on this series, LCJ seems to be a better palliative surgical procedure than the RCJ.

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