CASE REPORT

Peripheral hepatojejunostomy: a last resort palliative solution in Greece during the economic crisis

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SUMMARY

The geographical distribution of Greece and the growing proportion of uninsured patients make imperative the need for effective and efficient palliative solutions regarding obstructive jaundice due to hepatic malignancy, while repeated endoscopic interventions and all associated materials are either not accessible to the whole population or not even available on a daily basis due to the economic crisis and the difficulties on the hospital supply. On this basis, palliative hepatojejunostomy, introduced more than 50 years ago, could be revisited in the Greek reality in very selected cases and under these special circumstances. We report on two patients with locally advanced hilar cholangiocarcinoma and intrahepatic cholangiocarcinoma, respectively, who were treated with a combination of double hepaticojejunostomy with peripheral hepatojejunostomy or peripheral hepatojejunostomy alone, respectively. Both patients experienced an adequate decompression of the biliary tract over more than a year. Palliative hepatojejunostomy could be an ultimate solution for selected patients and circumstances in Greece during the economic crisis.

BACKGROUND

Interventional procedures are the first-line treatment for patients with obstructive jaundice due to locally advanced, but potential resectable malignant tumours of the liver. These methods represent nowadays the standard of care and should be applied in such cases as a definitive solution or a bridge to surgery. A number of disadvantages, including the frequent need for reintervention because of displacement of stents or external drains, stent infections, tumour compression of the stent, impaired patient comfort from transcutaneous tubes and high total cost per patient have already been reported.^{1–3} However, the experience gained during the past decades and the low rates of intervention associated morbidity and mortality led to the establishment of the interventional procedures in place of surgery. In Greece, the lack of disposability of endoscopic biliary drainage or percutaneous transhepatic biliary drainage (PTBD) uses in the non-university cities impose the transport of such patients to tertiary hepatobiliary centres in the mainland for the initial treatment and for every follow-up intervention. In addition, the economic crisis and the existing and periodically unmanageable difficulties on hospital supply with adequate

material for these interventions causes an increase of emergency referrals to surgical departments. On this basis, palliative hepatojejunostomy, introduced more than 50 years ago, could be reapplied in very selected patients and under special circumstances in the Greek reality. Objective of this report is to re-evaluate the concept of surgical decompression of the biliary tree by peripheral hepatojejunostomy for palliative treatment of jaundice in patients with locally advanced or irresectable malignant tumours of the liver hilum.

CASE PRESENTATION**First case**

A 54-year-old uninsured and unemployed male patient was admitted to our department with painless obstructive jaundice and pruritus. Imaging examinations (abdominal ultrasound and abdominal and thoracic CT scan) revealed the existence of hilar bile duct carcinoma without evidence for metastatic disease. From his laboratory tests, only cholestatic parameters were elevated (total bilirubin value 12.9 mg/dL, gamma-glutamyl transferase 640 U/L and alkaline phosphatase 450 U/L), whereas coagulation factors were within normal range. Since in our hospital we have no possibility for MRI and at the time of patient's admission no consumables for endoscopic or percutaneous interventional treatment of jaundice were available or could be ordered, the patient was referred to surgery. Despite the high bilirubin rates and the known associated risk of postoperative morbidity/mortality in the case of combined liver resection, a palliative rather resection of the tumour and the extrahepatic bile ducts without combined hemihepatectomy was scheduled. During exploratory laparotomy, we proceeded to retrograde cholecystectomy and resection of the tumour en-block with the extrahepatic bile ducts. Histological analysis of frozen section showed marginal infiltration (microscopically positive margins-R1) of endopancreatic, right and left hepatic ducts. We performed double 'mucosa-to-mucosa' hepaticojejunal anastomosis, with a Roux-en-Y limb to the right and left hepatic duct, and a peripheral 'non-mucosal' hepatojejunostomy to the hepatic parenchyma of segments II and III (figure 1). We proceeded to the additional performance of peripheral hepatojejunostomy, fearing a rapid obstruction of the hilar anastomosis due to remaining tumour cells. Postoperative recovery was rapid, and cholestasis parameters

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Figure 1 Double 'mucosa-to-mucosa' hepaticojunal anastomosis, with a Roux-en-Y limb to the right and left hepatic duct, and a peripheral 'non-mucosal' hepatojejunostomy to the hepatic parenchyma of segments II and III.

returned to normal, since the obstructing tumour was macroscopically completely removed. The patient was discharged on the 12th postoperative day in good general condition. One year after surgery, clinical evidence of local recurrence was documented. Since then, the patient was receiving palliative chemotherapy. A percutaneous decompression of the biliary tree has been undertaken. The patient died 25 months after surgery due to haemorrhagic stroke by aneurysm bleeding.

Second case

A 78-year-old female patient, living on a small island, was transferred to our institution after several years of medical care at district hospitals. Laboratory and radiological investigations through the recent 5 years revealed a lesion in the right lobe of the liver, which was considered as cavernous haemangioma. This hepatic lesion exhibited a rapid increase in size (12 cm in diameter) during the last year that caused obstructive jaundice (total bilirubin value 9.7 mg/dL) combined with subcostal pain, and the patient was referred to our centre. Because of the intrahepatic location of the large hepatic mass and the infiltration of the hilar bifurcation, at a time period with immense lack on corresponding material, the obstruction was evaluated as not manageable by both radiologists and gastroenterologists. The patient was led to surgery with palliative intent. During exploratory laparotomy, we discovered moderate amount of ascitic fluid, liver fibrosis and steatosis, and a large tumour of the right lobe that invaded the right portal vein. Intraoperative frozen section evaluation revealed histological characteristics favouring a diagnosis of intrahepatic cholangiocarcinoma. Peripheral hepatojejunostomy with a Roux-en-Y loop after parenchymal resection of segments II and III was performed (figure 2). The patient's postoperative recovery was uneventful and her laboratory tests were within normal limits. She was discharged on the 13th postoperative day. The patient denied receiving any palliative chemotherapy. She is

Figure 2 Peripheral hepatojejunostomy to the hepatic parenchyma of segments II and III.

currently alive and in acceptable general condition 25 months after surgery, suffering on peritoneal carcinomatosis, for which she receives regular paracentesis by the local physician in the small island. No hospital readmission occurred.

DISCUSSION

Malignant biliary obstruction at the level of the liver hilum is mainly the result of hilar cholangiocarcinoma, gallbladder carcinomas or centrally located intrahepatic cholangiocarcinomas. Because of the mechanical cholestasis caused by tumour compression of the central bile ducts, these patients have severe jaundice and associated symptoms such as pruritus, recurrent cholangitis and malaise. Surgical resection of the tumour should be attempted whenever possible because it represents the only potentially curative approach and the most effective way to relieve cholestasis.^{4,5} If removal of the tumour is not feasible, however, adequate and persistent decompression of the biliary system is the most important therapeutic aim of palliative treatment. The palliative treatment of choice should be safe and efficient. In Greece with an increased rate of unemployment, and a high percentage of population living far away from a tertiary referral HPB centre, this treatment should also be comfortable for the patient and cost-effective, with minimal need for hospital readmissions. In most cases of irresectable tumours of the liver hilum, palliative biliary decompression is achieved by interventional methods such as endoscopic placement of bile duct stents or external diversion of the bile using a percutaneous transhepatic approach.^{6,7}

In our article, we report our experience with peripheral hepatojejunostomy for decompression of the biliary system as an ultimate solution under special circumstances of economic crisis in two patients with locally advanced malignant tumours. Laparotomy has been performed in an attempt for rather palliative surgery while preoperative radiological assessment and of course endoscopic or interventional treatment of jaundice was infeasible due to lack of endoscopic biliary stents at the time being. Hepatojejunostomy in these cases was considered a definitive palliation. This technique does not use 'mucosa-to-mucosa'

anastomosis, but rather a jejunal anastomosis to a peripheral cut surface of the liver, exposing dilated bile ducts (figures 1 and 2). This approach is principally based on the procedure reported by Longmire and Sanford,⁸ although the localisation of the parenchymal resection is slightly different.

Peripheral hepatojejunostomy was considered a potentially successful method for four reasons: first, it could lead to a major decompression of the biliary tree via dilated peripheral bile ducts; second, it stays far away from the tumour-infiltrated hilum, so that it should remain open even with growth of the tumour; third, internal enteric drainage without the risk of stent occlusion or displacement is associated with good patient comfort and fourth, it could keep the total procedural and

non-procedural cost at a far more low level than that of repeated non-surgical interventions. Compared with interventional procedures, however, surgery carries an increased risk of morbidity and mortality. Therefore, this approach should be considered in carefully selected patients with malignant tumours of the liver hilum, under special financial circumstances of material poverty.

Contributors GCS and ES collected the data and wrote the paper; ES and NM performed the data analysis; GCS and GK designed the paper; NM and GK performed the drafting of the article, NM and GK revised critically the paper. All authors have substantial contribution to the study design, the acquisition and analysis of data, the revision of the paper and have approved the final version of it.

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Learning points

- ▶ Although the reported two cases do not permit any clear statement about the value of hepatojejunostomy for this indication, the decompression of the biliary tract over more than a year in both of the patients may serve as a model for demonstrating the persistent effect of the procedure.
- ▶ To the best of our knowledge, the first case encompassing a combination of double hepatojejunostomy with peripheral hepatojejunostomy represents the longest patient survival (25 months) after such a palliative operation for Klatskin tumours.
- ▶ Surgical decompression of the bile ducts under certain conditions seems to be an ultimate; thus, adequate solution for very selected patients during the economic crisis in Greece.

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