

REVIEW

Alternative Techniques for Hepp-Couinaud Roux-Y Hepatico-Jejunostomy

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ABSTRACT

To propose alternative techniques in performing Roux-Y Hepatico-Jejunostomy (RYHJ) during treatment of biliary tree diseases. We have retrospectively evaluated PUBMED articles to analyze various modified techniques in RYHJ to research an easy technique to log into biliary tree. Modified RYHJ is a safe, feasible and simple technique to permit an alternative method of anastomosis re-exploration.

KEYWORDS: Roux-Y Hepatico-Jejunostomy (RYHJ), Techniques, Bile Duct Injury (BDI), Malignant Strictures, Benign Strictures, Multiple Gallstones, Liver Transplantation.

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INTRODUCTION

There are several indications for performing Roux-en-Y Hepatico-Jejunostomy (RYHJ) such as, bile duct injury, malignant strictures, benign strictures, multiple gallstones and liver transplantation [1]. After performing RYHJ, many patients can develop complications of hepatico-jejunosomies such as anastomotic stenosis which are difficult to treat. Stenosis causes recurrent cholangitis, chronic cholestasis, recurrent intra-hepatic stones formation which are the major causes of progressive liver dysfunction after RYHJ. Recurrence of stenosis amount about 25% of cases. Of these, two-thirds of recurrences occur within two years and 90% within five years [2,3] and are associated to high morbidity and mortality with complication rates of up to 43% [4]. To treat these complications, can be performed less invasive treatment such as radiological or endoscopic interventions which can be done repeatedly. These options have great value and they allow to dilatate stenosis, to put stent, to perform balloon dilatation, resolving cholestasis, cholangitis and preventing liver dysfunction [5,6]. At the same time, these less invasive management are often difficult to perform, are time-consuming for the patient and have high failure rate. In this context, we evaluated various alternative optional techniques to made more easy RYHJ re-exploration. These techniques include: RYHJ exploration through the T-tube tract [7] or through an access loop placed as a stoma [8] or sub-fascial limbs which is accessed by puncture under fluoroscopic guidance [9] or Roux-en-Y limb of the Hepatico-Jejuno-Gastric anastomosis (RYHJGA) or Hepatico-Jejuno-Duodenal

Access (HJDA) loop [10,11,12]. The objective of this work is to describe optional techniques during the accomplishment of a “Roux-en-Y” hepaticojejunosomy.

MATERIALS AND METHODS

We have retrospectively evaluated PUBMED articles. Studies was evaluated from 1990 to 2020. Only very few studies analyzed a “modified RYHJ”. Two independent research DC and SL performed the review. Research inclusion criteria were “modified Roux-Y Hepatico-Jejunostomy (RYHJ), techniques, bile duct injury, malignant strictures, benign strictures, multiple gallstones and liver transplantation”. The object of this retrospective study is to analyze various techniques in Roux-Y Hepatico-Jejunostomy as an easy re-exploration procedures of the biliary-enteric anastomosis.

CURRENT STATUS OF KNOWLEDGE

de Moricz et al [13], proposed modified RYHJ with Trans-Gastric Endoscopic Access (TGEA) to biliary-enteric anastomosis. Their surgical technique consisted in performing a side to side RYHJ carried through a transmesocolic tunnel leaving 10 cm of jejunum far from bilio-enteric anastomosis. The distal part of jejunum has been anastomosed with the anterior wall of the stomach in the small curvature making easy a TGEA. Saing et al [14] advocated the use of a special RYHJ. They performed a Cutaneous Stoma RYHJ. They performed a classical HJ and then they used the limb to form a jejunal cutaneous side stoma. The study demonstrated an easy Trans-Stoma

Exploration (TSE) of biliary anastomosis with safe possibility to re-treat lithiasis, strictures, biliary cysts and atresia mostly in pediatric patients. Johnson et al [15], described the Roux limb modified. The limb was left long, such that the end can be brought out as an intestinal terminal stoma or left closed but secured subcutaneously and marked with metal clips for later percutaneous access. Fan et al. [16] reported 41 patient treated thanks a cutaneous stoma after RYHJ. Baiomy et al. [17], in a prospective study including 23 patients for biliary injuries during cholecystectomy, biliary stricture postcholecystectomy or post-hepaticojejunostomy anastomotic stricture, demonstrated that side-to-side jejuno-duodenal anastomosis may be a very useful technique because it provides good endoscopic access to hepatico-jejunostomy and therefore the intrahepatic ducts. Alternative methods seem to be a duodeno-jejunostomy or jejunal interposition between duodenum and biliary tree to assess it with endoscopy or a trans-cutaneous T-Tube associated to the jejunal limb [18,19]. Jameel et al.[20] showed that a modified biliary reconstruction in the form of hepaticojejunoduodenal access loop (HJDA) in 26 patients underwent surgical management for hepatolithiasis, made it possible to perform endoscopic access to the intrahepatic bile ducts through the HJDA with a mean time taken to access the HJ of only 3.5 minutes (2-7 minutes) without complications or mortality pertinent to construction of the HJDA.

CONCLUSION

Alternative RYHJ is a good method to resolve many complications rate such as cholangitis, stricture, leakage or recurrent hepato-lithiasis but not all optional have not related complications. For example, although RYHJ with cutaneous stoma permitted endoscopic access to removal of residual stones or to dilate strictures, it needs a stoma-care to avoid side-effects of bile discharge and skin excoriation. Moreover, studies demonstrated poor tolerance by patients. For this reason, it often needs early closure of stoma in many patients. The following closure of the stoma could cause significant side effects such as intestinal leakage, intestinal fistulas, incisional hernia or infection of the wound [16]. The technique of sub-fascial placement of the access loop using puncture by fluoroscopic guidance didn't find much acceptance because of not being effective [9,21]. For what concern the use of the anastomosis of the end of the Roux loop to stomach named Gastric access loop, it was first described by Sitaram et al. [11], starting from the first descriptions, many patients have failed the endoscopic access because of closure of the jejuno-gastric anastomosis due to the exposure of the jejunum to acid environment causing peptic stricture [11,22]. Stiegmann et al. [10] first described duodenal access loop in seven patients with

anastomosis of end of Roux loop to the first part of duodenum. This technique can mimic the Vater ampulla and can be an easy access to the H-J. Ramesh et al. [19] described their experience with the use of interposition of proximal jejunum segment interposed between duodenum and hilar duct but the study described many problems in endoscopic access due to redundancy of the jejunal segment. Jameel et al. [20] showed that Hepatico-Jejuno-Duodenal-Anastomosis (HJDA) is a very valuable procedure facilitated access to the biliary tree in patients treated for hepato-lithiasis. It could be accomplished with easy and no added complications related to the procedure. Patients with biliary diseases are most ordinarily treated with Roux-en-Y Hepatico-Jejunostomy (RYHJ) for reconstruction of the biliary tract. In such patients, stricture at the hepatico-jejunostomy develops from 2% to 25%. For this reason, surgeon considered the simplest and least invasive option such as interventional radiology or endoscopic management. For the features of the H-J limb, the use of these procedure showed extreme difficulty following time-consuming for the patient and high failure rate for radiologist or endoscopist [4,23-27]. Modified RYHJ with the cutaneous lateral stoma or with terminal cutaneous stoma or with t-Tube or with subcutaneous limb or with the use of side to side entero-gastostomy or duodenal access through side to side jejuno-duodenostomy, are safe, feasible and simple techniques to permit an alternative method of anastomosis re-exploration [21,28,29,30]. We think that alternative options are safe also during RYHJ during Whipple procedures or in all surgical operations where the risk of anastomotic H-J leakage is very high. The propose is to explore these alternative techniques to make safe post-operative time of the patient.

CONFLICT OF INTEREST

Conflicts of interest: none declared.

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Human rights statement: All procedures and experiments met the ethical standards.

COMPETING INTERESTS

The authors declare no competing interests.

AUTHORS' CONTRIBUTIONS

All the authors have read and agreed to the final manuscript.

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