Original Research Article

DOI: http://dx.doi.org/10.18203/2349-2902.isj20170856

Access loop Roux-en-Y Hepaticojejunostomy: revisited - a study of twenty two cases over 15 years (2001-2015)

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Received: 22 December 2016 Accepted: 20 January 2017

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ABSTRACT

Background: Access-loop Roux-en-Y hepaticojejunostomy (HJ), an interesting and an unique surgical technique described in the past seems to have resurfaced amidst commendation and condemnation.

Methods: The technique involves the incorporation of a cutaneous access stoma in the Roux-en-Y loop of jejunum used for the anastomosis. This stoma provides permanent access to the bilio-enteric anastomosis and thus to the hepatobiliary tree for non-operative management of chronic and recurrent biliary tract problems. Here we are presenting our experience in 22 cases managed by us with "access-loop Roux-en-Y hepaticojejunostomy (HJ)" over a period of 15 years (2001 to 2016).

Results: 22 cases were managed successfully. The maximum follow-up was for 05 years with no recurrence or stricture only 01 patient had a small Incisional hernia.

Conclusions: The objective of this work is to, describe an optional technique (although less known and practiced) during the accomplishment of a "roux-en-Y" hepaticojejunostomy that, allows future endoscopic and interventional radiology access to the bilio-enteric anastomosis.

Keywords: Access Loop, Biliary strictures, Biliary access, Hepaticojejunostomy, Roux-en-Y

INTRODUCTION

Access-Loop Roux-en-Y hepaticojejunostomy (ALHJ), an interesting and a unique surgical technique described in the past, but seems to have resurfaced now amidst commendation and condemnation. The technique involves the incorporation of a subcutaneous access stoma in the long limb of Roux-en-Y loop of jejunum used for the anastomosis. This stoma provides permanent access to the bilioenteric anastomosis and thus to the hepatobiliary tree for non-operative management of chronic and recurrent biliary tract problems. The most commonly encountered problem is a strictured hepaticocan be jejunostomy, radiologically which endoscopically approached and subjected to calibrated hydrostatic dilatation.

The access-loop HJ is a controversial burning issue in the realms of GI surgeons of the world. Some say it is a useless surgical exercise and strongly believe that no interventional radiologist can enter the access loop by whatever means available. While others strongly vouch and advocate, the 'establishment of access loop' in all cases of difficult HJ. In our opinion the access loop acts as a "Parachute" to a patient with "restrictured HJ". In return it exacts a small penalty, in form of mildly extended operating time, an unsightly abdominal scar and in a few, an associated un-complicated incisional hernia. In the hands of a competent interventional radiologist or an endoscopist, an access loop certainly obviates a messy and a hazardous re-operation and in a few, a taxing, albeit lifesaving, liver transplantation.

There are several indications for performing the conventional "Roux-en-Y" hepaticojejunostomy (HJ) such as, bile duct injury, malignant strictures, benign strictures, multiple gallstones and liver transplantation.¹ Such a HJ in future may develop complications most commonly as postoperative bile duct stricture, sometimes chronic cholestasis and rarely intra hepatic bile stones (hepaticolithiasis). The outcome of such with 'strictured hepatico-jejunostomy' patients (Strictured HJ), if not treated in time may lead to 'endprogressively deteriorating conditions, starting with recurrent acute cholangitis, hepatic fibrosis and in more advanced cases secondary biliary cirrhosis, liver failure and death.^{2,3}

In such strictured HJ, the therapeutic options are very few and difficult to choose from, such as reoperation of the biliary tract (a messy job with ever present threat of restricturing of HJ later on), or endoscopic procedures (i.e. through per oral route) or interventional radiology (i.e. by trans-hepatic access to the biliary tract).⁴⁻⁷ The latter two options (endoscopic and interventional radiology.) are not only difficult but impossible to perform in presence of numerous surgical anastomoses that is an integral part of a standard Roux-en-Y hepatico-jejunostomy.

In case of a 'strictured' access-loop Roux-en-Y hepaticojejunostomy, one can address, the strictured bilioenteric anastomosis once and repeatedly if needed, by interventional radiological procedures or endoscopically through the subcutaneously attached 'Access loop' i.e. the long limb of jejunum of the access-loop Roux-en-Y hepaticojejunostomy. 4.5

The objective of this work is to, describe an optional technique (although less known and practiced) during the accomplishment of a "Roux-en-Y" hepaticojejunostomy that, allows future endoscopic and interventional radiology access to the bilio-enteric anastomosis.

Here we are presenting our experience in 22 cases managed by us with "access-Loop Roux-en-Y hepaticojejunostomy (HJ)" over a period of 15 years (2001 to 2016).

Case presentation

54 years old lady was diagnosed as an indexed case of Symptomatic 'GSD' with no known co-morbidities, and planned for a routine laparoscopic/ open cholecystectomy under endo-tracheal GA. During the surgery an accidental common hepatic duct (CHD) injury was suspected. Another surgeon, who was called in, under took end-to-end "Hot anastomosis" of severed ends of CHD over T-Tube. The post-op period, was rough, with slow recovery over 02-03 weeks. In the succeeding post-op months, the patient had features of obstructive Jaundice with cholangitis. She was managed as an inpatient with Broad Spectrum I/V antibiotics. Liver function test (LFT); USG and MRCP revealed an early biliary stricture. Patient

recovered and discharged with advice to follow-up in GI surgery OPD. This was followed by 10 to 12 such episodes of obstructive jaundice and cholangitis. She was diagnosed as laparoscopic biliary trauma (operated), leading to biliary stricture, causing recurrent obstructive jaundice and cholangitis. A corrective surgery was planned and access loop, Roux-en-Y hepaticojejunostomy was undertaken.

Per-op findings

Revealed dense peri-portal adhesion, with a very tight stricture at the confluence (Bismuth Type-III) and a left duct cholangio-duodenal fistula. Extensive adhesiolysis done, Hilar plate lowered, bilio-enteric fistula excised (specimen sent for HPE) and mildly dilated right and left ducts were dissected free. "Strictured biliary confluence" was excised with a long beveling-cut, extending from right duct, too far into left duct, to achieve as "wide-a ductal aperture" (more than 03 cm) as possible, for a hopeful life-long stricture free bilio-enteric anastomosis. In any HJ, there is 30% shrinkage of anastamostic ring over 01 year, hence bigger the HJ anastamosis lesser is the chance of strictured HJ. The duodenal end of cholangio-duodenal fistula was repaired in two layers with "live-omental-patch"-omentopexy. Next 15 cm distal to DJ (duodenum-Jejunal junction) the jejunum was staple-divided with linear cutter, to produce the two limbs of Roux-en-Y.

METHODS

The Reconstruction "Access Loop Roux-en-Y Hepaticojejunostomy (ALHJ)". The distal end of jejunum (the long limb of Roux-en-Y), taken retro-colic, as access loop. Fifteen centimeters "down-stream" to this access loop, a 03 cm wide, single layer, HJ was created between the "wide ductal aperture" and the jejunum (the bilioenteric anastomosis), using 3/0 vicryl suture.

The end of the access loop (the entire length of Access Loop up to HJ) "street-lighted" with size 300 liga clips, applied on the anti mesenteric margin, at a regular interval of 01 cm) and is brought into the subcutaneous plane and anchored with 2/0 vicryl. The skin over this end of access loop is marked with christian Cross (†). The proximal cut end of the jejunum (the shorter limb of Roux-en-Y), anastomosed (side-to-side) with the long jejunal limb, 45 cm "down-stream" to HJ. Sub-hepatic area drained with 32 F tube drain and mass closure of abdomen done with 01/0 PDS Loop. Post-op was uneventful.

RESULTS

22 cases have been presented here with a maximum follow-up for 07 years. It has showed excellent results with no recurrence or stricture, apart from 04 cases which had Access loop site Incisional hernia.

Anticipated future complication

In future, if HJ strictures develops, an interventional radiologist would be able to visualize in a plain X-Ray abdomen, the Liga clip "street-lighting" the access loop, from the "Christian-Cross-mark (†)" on the skin up to HJ. He can then have an access to the "strictured HJ", by entering the "gastrograffin-flush-illuminated-Accessloop", over a guide-wire, introduced through the "christian cross (†)" mark on the skin. He can then hydrostatically dilate the "strictured hepaticojejunostomy". This can be repeated six monthly or yearly and if necessary, periodically life-long.

Follow-Up

In first year post-Op, a quarterly (03- monthly) follow up with LFT, USG abdomen and MRCP; second year, a 06 monthly follow-up, next once-a-year for 05 years and then after whenever the patient is symptomatic (i.e. has pain abdomen, vomiting, jaundice and high fever with chills and rigors).

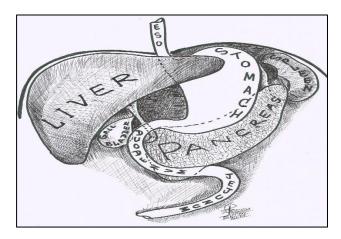


Figure 1: Normal hepato-biliary anatomy showing CBD (common bile duct) and CHD (common hepatic duct).

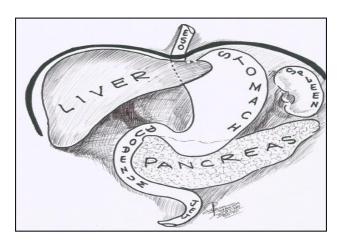


Figure 2: Surgical pathology of extensive adhesion in Morrison's Pouch and in Porta Hepatis.

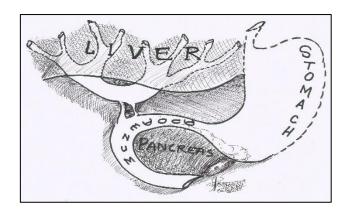


Figure 3: Surgical pathology-after extensive adhesionolysis, strictured CHD, dilated right and left hepatic ducts and cholangio-duodenal fistula (CDF) seen.

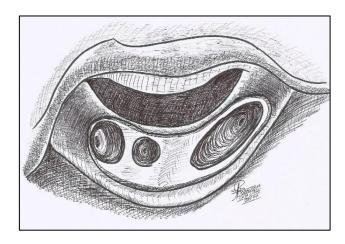


Figure 4: Surgical pathology- Hilar plate brought down. Dilated Biliary confluence laid open, after excising the strictured CHD and cholangio-duodenal fistula (CDF, seen here dilated right and left hepatic ducts from segment V and VIII in the centre.

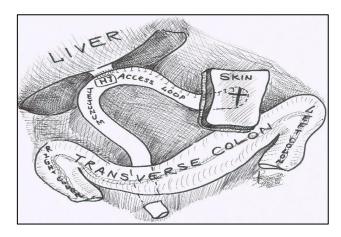


Figure 5: The Reconstruction-"access loop Roux-en-Y hepaticojejunostomy (HJ)" showing "Street-Lighted" with radio-opaque 300 Liga clips, ending in the subcutaneous plane, site marked by Christian cross (†)".

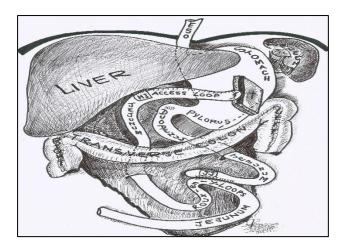


Figure 6: The reconstruction- "Bird's Eye view" of completed "access loop Roux-en-Y hepaticojejunostomy (HJ)".



Figure 7: First post-Op view of the patient.

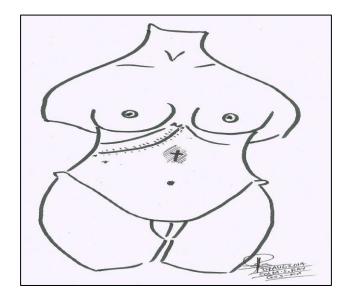


Figure 8: One year post-Op view. A small uncomplicated Incisional Hernia at the "Christian cross (†)" mark, that is "left-alone"!

DISCUSSION

Access-loop Roux-en-Y Hepaticojejunostomy (ALHJ), is done for various indications, be it benign or malignant. But for whatever reason, the aim of access loop is to entry into the regain system endoscopically/fluoroscopically, for further intervention, be it in near or distant future. Oskar Sprengel - published the first report of a choledochoenterostomy in 1891. Techniques were redefined in 1990, including principles of anastomosis without tension and mucosa-to-mucosa contact. The different types are: HJ with access loop limb ending subcutaneously as blind jejunal limb, tagged to the inner surface of anterior wall, or brought out as cutaneous stoma as mucus fistula (MF) ready for immediate access. In some brought out as stoma, with ttube stenting/cannulating the anastomotic site (HJ) or in some even bilio-entero-gastrostomy (BEG) type of Access can be made, where strictured HJ can be approached endoscopically through the stomach.

Patients who develop complications hepaticojejunostomies such as anastomotic stenosis are difficult to treat. The recurrent bouts of cholangitis due to chronic cholestasis and intrahepatic stones are the main cause of progressive loss of liver function. In these cases the performance of a new bilio-enteric anastomosis is the only pragmatic therapeutic option left. In cases with high bilio-enteric anastomotic strictures, re-operation entails complication rates of up to 43%, with attendant high morbidity and mortality. Recurrence of stenosis is common in about 25% of cases and will require further intervention. Two-thirds of recurrences occur within two years and 90% within five years.^{8,9}

Less invasive treatment options that can be performed repeatedly are of great value and desired by one and all, in the complications of "Roux-en-Y" hepatojejunostomies. Currently among these options interventional radiology and endoscopic therapies have been used more frequently. Through these you can unclog and wash the bile, dilate stenosis and pass transanastomotic stents to treat and prevent cholestasis, cholangitis and further hepatic dysfunction. ^{10,11}

In case of strictured HJ (without the access loop) the trans-hepatic approach for dilatation of the stricture is the only option left. Here there are complications related to liver puncture (as bleeding and hemoperitoneum) and the permanence of trans-hepatic external catheters, which have poor patient compliance and they become the gateway of deadly intra-hepatic infection!

In strictured "access-loop Roux-en-Y Hepaticojejunostomy (HJ)", the access to the strictured HJ is a less complicated direct approach. In some cases it has been observed that the travel of endoscope through the long jejunal limb ("Access-Loop limb of Roux-en-Y) to hepaticojejunostomy (HJ) is hampered. To overcome such problems, innovative endoscopic techniques such as

double balloon endoscopy, fixing the jejunal loop of the hepaticojejunostomies in the abdominal wall, invasive laparoscopic video-assisted endoscopic procedures are described. The best approach is selected on a case by case basis.

CONCLUSION

In this context we propose that "Access-Loop Roux-en-Y Hepaticojejunostomy (ALHJ)" is an alternative approach for accessing a strictured hepaticojejunostomy, which can be performed by interventional radiological techniques or by an endoscopy. This simple technique is relatively safe, easy and quick as compared with re-operation for strictured Hepaticojejunostomy (HJ). A re-operation is messy, patient taxing, time consuming, has a high rate of recurrence of condition and in some cases may need Liver transplant! This simple technique of ALHJ, has added advantages of absence of ostomies and external catheters. It permits repeated endoscopic/ interventional radiological procedures to access the anastomotic problems, through the access of the Roux-en-Y Hepaticojejunostomy (HJ).

Funding: No funding sources Conflict of interest: None declared

Ethical approval: The study was approved by the

institutional ethics committee

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Cite this article as: Ray MS, Deepak BS. Access loop Roux-en-Y Hepaticojejunostomy: revisited - a study of twenty two cases over 15 years (2001-2015). Int Surg J 2017;4:1028-32.