



Biliary reconstruction and duodenal repair with a single Roux-en-Y jejunal loop

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Biliary reconstruction and duodenal repair with a single Roux-en-Y jejunal loop

Abstract

A simple surgical technique, which permits biliary reconstruction and repair of a duodenal injury with a single Roux-en-Y jejunal loop, is described. Its simplicity and effectiveness are encouraging.

Introduction

There are particular circumstances, where a procedure of biliary reconstruction and repair of a duodenal injury become necessary at the same time. In our experience, it happened when dismantling a previous chledocho-duodenostomy, in three cases, and in one case of iatrogenic injury to the duodenum and common bile duct during an attempt of laparoscopic cholecystectomy (Illustration 1). In these cases, direct repair of the duodenal wound, corresponding to grade II- III of the Duodenum Organ Injury Scale of the American Association for the Surgery of Trauma (1), could be difficult and unsafe, with a real danger of post-operative fistula or stenosis. For this, we have successfully experienced a surgical procedure, which permits a classical biliary reconstruction and a safe duodenal repair, using a single Roux-en-Y jejunal loop.

Surgical Technique

A midline upper laparotomy or a right sub-costal incision provides an excellent access. Adhesions between the viscera and the anterior abdominal wall are divided; section of the falciform ligament permits to separate both lobes of the liver from the undersurface of the diaphragm. The right flexure of the colon is mobilized. An extended Kocher's manoeuvre permits to expose the second portion of the duodenum. The common bile duct, usually enlarged in case of previous diversion, is dissected in the hepatic pedicle. A cholecystectomy, if not yet performed, is associated. An intra-operative cholangiography can be useful to study the entire biliary tree and to detect any stone or debris, eventually present.

Contemporarily, the anatomy of the duodenal wound is clearly appreciated. Its edges are carefully debrided, and so the laceration arrives to have a more regular longitudinal - elliptical shape. Care is taken not to damage the arterial blood supply to the duodenum(2), and to avoid the use of the electrocautery in proximity of the papilla of Vater, which prudentially, can be visually controlled.

At this moment a malfunctioning choledocho-duodenostomy can be dismantled, dividing the common bile just above. Copious lavages with saline of the upper biliary tract can remove stones and debris. The reconstructive phase initiates with the preparation of a Roux-en-Y jejunal loop, long 90 cm, starting 20-30 cm from the ligament of Treitz. It is brought retrocolically in the sub-hepatic space, through an avascular window in the mesocolon, approached to the hepatic pedicle, turning its antimesenteric surface towards the duodenal wall, and aligned to the second duodenum; its upper blind end usually takes place under the right lobe of the liver. The common bile duct can be transected again to reach a suitable and well vascularised stump.

A hepatico- jejunostomy is constructed in a termino-lateral fashion, with interrupted absorbable stitches (3). A temporary trans-anastomotic external biliary drainage with a Kehr's T tube can be useful.

The same Roux-en-Y jejunal loop, 40 cm distal from the first anastomosis, is easily brought in contact with the duodenal wall, and a side-to-side duodeno-jejunal longitudinal anastomosis, including the previous duodenal laceration, is constructed, with one layer of single extramucosal resorbable stitches.

The intestinal continuity is restored by a jejuno-jejunal anastomosis, 40 cm distally (Illustration 2).

Every pyloric exclusion is avoided. A naso-gastric aspiration tube is placed. A feeding jejunostomy can be useful to provide a post-operative enteral nutrition.

Discussion and Conclusion

In our experience, limited to 4 cases in 5 years (2000-2005), no technical difficulties were encountered intra-operatively. In particular, the common bile duct was always enlarged, permitting an easy derivation; nevertheless, in case of its small

calibre, a jejuno-biliary derivation? is not? contraindicated, especially if constructed with the protection of a trans?anastomotic Voelker?s drainage (4).

The post-operative was always uneventful and the X-ray controls at middle- or long- term demonstrated a persisting double portal of exit from the duodenum: the native, prevalent, and the other, newly constructed, always permeable. No clinical signs of cholangitis, dumping, "sump", or blind-loop syndrome, were observed.

The peculiarity of our technique consists in avoiding unsafe procedures: primary repair of the duodenum or its resection. In this way, post-operative complications such as fistula or stenosis can be prevented. The distance of 40 cm between the single anastomosis, biliary, duodenal and enteric, is essential to prevent any reflux.

Other corresponding techniques, just proposed, (jejunal patch, jejunal loop interposed between the common bile duct and the duodenum, pyloric diversion through a simple gastro-enterostomy or gastric antrectomy, sub-total duodenectomy, pancreatico-duodenectomy, etc.) (5-10), appear technically more difficult, more prone to surgical complications and to digestive metabolic adverse? consequences (alkaline gastritis, dumping syndrome, malabsorption etc.). Some of them keep a particular indication in repairing traumatic injuries involving both pancreas and duodenum (11-13).

Our technique of a single jejunal loop for two diversions, essentially represents another useful extension of the classical Roux-en-Y procedure, just experienced in constructing? multiple digestive anastomosis (14,15). On the other hand, it? is based on the principle that a duodeno-jejunal anastomosis is better than a direct repair, as experienced after a partial resection of the second part of the duodenum (16).

References

1. Moore E.E., Cogbill T.H., Malangoni M.A. et al. Organ injury scaling, II: pancreas, duodenum, small bowel, colon, and rectum. *J. Trauma* 1990;11:1427-1429.
2. Kimura W., Nagai H. Study of surgical anatomy for duodenum-preserving resection of the head of the pancreas. *Ann. Surg.* 1995;221:359-363.
3. Sutherland F., Dixon E. Extramucosal hepatico-jejuno-stomy. *Am. J. Surg.* 2005;189:667-669.
4. Compagnon P., Lakehal M., Boudjema K. Anse mont?e en Y sur voie biliare fine. *Ann. Chir.* 2003

;128 :581-586

5. Jurkovich G. Duodenal injury? in Mc Intyre R., Van Stiegman G., Eiseman B. editors *Surgical Decision Making?* 5th ed. Philadelphia, Elsevier, 2004; pg 512-513.
6. Asensio J.A., Feliciano D., Britt L., Kerstein M. Management of duodenal injuries. *Curr. Probl. Surg.* 1993;11:1021-1100.
7. Bozkurt B., Ozdemir B.A., Kocer B. et al. Operative approach in traumatic injuries of the duodenum. *Acta Chir. Belg.* 2006;106:405-408.
8. Velmahas G.C., Constantinou C., Kasotakis G. Safety of repair of severe duodenal injuries. *World J. Surg.* 2008;32:7-12.
9. Testini M., Piccinni G., Lissidini G. et al. Management of descending duodenal injuries ?secondary to laparoscopic cholecystectomy. *Dig. Surg.* 2008;25:12-15.
10. Spangaro M., Principe A., Caneloro et al. Anastomoses bilio-digestives par h?patico-j?juno-duod?noplastie. A propos d?une s?rie personelle de 4? cas. *Ann. Chir.* 1985;39:371-376.
11. Asensio J.A., Demetriades D., Berne J.D. et al. A unified approach to the surgical exposure of pancreatic and duodenal injuries. *Am. J. Surg.* 1997; 174:54-60.
12. Rickard M.J., Brohi K., Bautz P. Pancreatic and duodenal injuries: keep it simple. *ANZ J. Surg.* 2005;75:581-586.
13. Jurkovich G.J. Duodenum and pancreas? in Moore E.E., Feliciano D.V., Mattox K. editors; *Trauma* 5th New York Mc Graw-Hill 2004 pg 71-79.
14. Manenti A., Speranza M., Buttazzi A. Triple ?derivation, biliare, gastrique et du Wirsung sur anse j?junale unique. *Lyon Chir* 1985;81:213-214.
15. Manenti A. Unresectable pancreatic head cancer. Double palliative by-pass with a single Roux-en-Y jejunal loop. *WebmedCentral SURGICAL TECHNIQUE* 2011 ;2(7) :WMC002029.
16. Asakawa M., Sakamoto Y., Kajiwara T. et al. Simple segmental resection of the second ?portion of the duodenum for treatment of gastrointestinal stromal tumors. *Langenbecks Arch. Surg.* 2008;393:605-609.

Illustrations

Illustration 1

Operative schema of injuries to the common bile duct, just transected, and to the second duodenum.

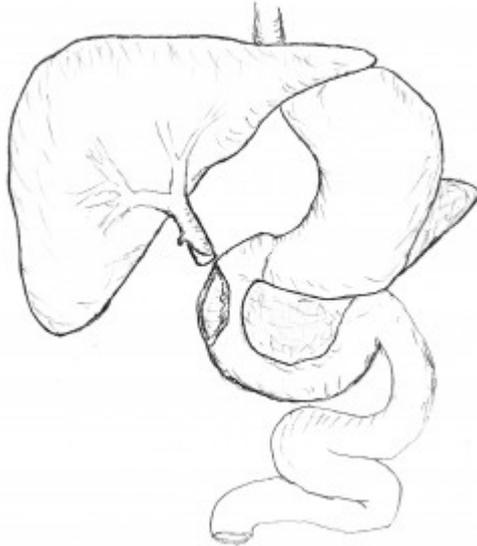


Illustration 2

Operative schema of the biliary diversion, duodenal repair on the same Roux-en-Y jejunal loop and of the entero-entero anastomosis.



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