

Combined radiologic and endoscopic treatment (using the “rendezvous technique”) of a biliary fistula following left hepatectomy

Dear Dr Garcia-Olmo,

Please find enclosed a revised version of our article entitled “**Combined radiologic and endoscopic treatment (using the “rendezvous technique”) of a biliary fistula following left hepatectomy**” for further consideration for publication in the *World Journal of Gastroenterology*.

In line with your comments and those of the reviewers, we have significantly modified the manuscript.

Our specific, point-by-point responses are given below. We hope that this new version is suitable for publication.

Yours sincerely,

Professor J-M. Regimbeau

Department of Digestive Surgery, Amiens University Hospital,

Place Victor Pauchet, F-80054 Amiens Cedex 01, France

Tel.: +33 322 668 301

Fax: +33 322 668 680

E-mail: regimbeau.jean-marc@chu-amiens.fr

Combined radiologic and endoscopic treatment (using the “rendezvous technique”) of a biliary fistula following left hepatectomy

Point-by-point reply

We thank the reviewers for their comments and have revised the article accordingly.

REVIEWERS' COMMENTS:

REVIEWER 71753

Comment 1: The introduction of the manuscript is a copy of the Abstract.

Answer: We agree with the reviewer’s comment. Accordingly, we have rewritten the abstract, as follows: “Despite the ongoing decrease in the frequency of complications after hepatectomy, biliary fistulas still occur and are associated with high morbidity and mortality rates. Here, we report on an unusual technique for managing biliary fistula following left hepatectomy in a patient in whom the right posterior segmental duct joined the left hepatic duct. The biliary fistula was treated with a combined radiologic and endoscopic procedure based on the “rendezvous technique”. The clinical outcome was good, and reoperation was not required.”

Comment 2: The author did not show where the position of the tumor in the duodenum was and what kind of resection was performed (Duodenal segment resection and anastomosis?).

Answer: In line with the reviewer’s comment, we have clarified Figure 2 (specifying the position of the gastrinoma) by adding some symbols.

Concerning the tumor resection, we did not resect the duodenum because the gastrinoma was located on the superior duodenal flexure, next to the pancreatic head. After performing a Kocher maneuver, we chose to perform a duodenotomy and then resect the gastrinoma (by mucosectomy). The duodenotomy was then closed in two steps (using 3/0 monofilament, non-absorbable suture) via two half running sutures in the mucosal and then serosal planes.

We have revised the text as follows: “

Before performing laparotomic surgery, an upper endoscopy enabled us to locate the gastrinoma. The surgical procedure started with a Kocher maneuver, in order to mobilize the first and second parts of the duodenum. Next, a duodenotomy on the superior duodenal flexure gave us access to the duodenal gastrinoma, which was then resected. The

duodenotomy was then closed in two steps (using 3/0 monofilament, non-absorbable suture) via two half running sutures in the mucosal and then serosal planes. Lymphadenectomy was performed after closure of the duodenotomy.”

Comment 3: How the drainage of the biliary fistula was performed through an old drainage orifice?

Answer: We used the old drainage orifice to place an external drain for the biliary fluid. This drain also enabled irrigation of the surgical site. We have revised the text as follows: “The patient’s post-operative condition suggested the presence of a biliary fistula, which was diagnosed on post-operative day 10 and drained by inserting an external drain through an old drainage orifice; this also enabled irrigation of the biliary fistula.”

Comment 4: The incidence of biliary fistulas after hepatectomy in the introduction and discussion has two different percentage rates.

Answer: We apologize for this mistake in our initial manuscript and have corrected the text as follows: “With an incidence of between 3% and 10%, biliary fistulas are common complications of hepatectomy^[4-8]. The risk of biliary fistula is greater still in patients with an anatomic variation. In our patient, the RPSD joined the LHD; this corresponds to D1 in the Couinaud classification, and is present in 6 to 16.8% of individuals^[2, 9, 10].”

Comment 5: Why trisegmentectomy was not an option after the per-operative discovery of the anatomic variation? It could be oncologically safer and avoid this costly biliary complication.

Answer: We thank the reviewer for this important comment. We agree that performing a trisegmentectomy may have decreased the risk of post-operative biliary fistula. However, in view of the intra-operative findings, we did not expect to find a biliary fistula. Furthermore, a trisegmentectomy would have required a more extensive liver resection, whereas we sought to preserve the hepatic parenchyma as much as possible. In terms of the oncological safety, our resection of the metastasis was complete (according to a histological assessment). Had there been any doubts during surgery, extended resection would have been performed (rather than a simple left hepatectomy).

Comment 6: There are grammar and syntax errors in the manuscript

Answer: In line with the reviewer’s comment, we have corrected a number of typos. The manuscript has also been reread by a native English speaker. We believe that any remaining language issues will be minor questions of personal preference and style (rather than grammar, idiom or clarity).

REVIEWER 68443

Comment 1: In this manuscript, authors reported a case of combined radiologic and endoscopic procedure to treat biliary fistula in a patient with anatomical variation of intrahepatic bile duct after hepatectomy. Although the manuscript is interesting, there are some concerns that need to be addressed. How to reconstruct the gastro-intestinal continuity after resection of the duodenal gastrinoma?

Answer: We did not resect the duodenum because the gastrinoma was located on the superior duodenal flexure, next to the pancreatic head. After performing a Kocher maneuver, we chose to perform a duodenotomy and then resect the gastrinoma (by mucosectomy). The duodenotomy was then closed in two steps (using 3/0 monofilament, non-absorbable suture) via two half running sutures in the mucosal and then serosal planes.

We have revised the text as follows: “

Before performing laparotomic surgery, an upper endoscopy enabled us to locate the gastrinoma. The surgical procedure started with a Kocher maneuver, in order to mobilize the first and second parts of the duodenum. Next, a duodenotomy on the superior duodenal flexure gave us access to the duodenal gastrinoma, which was then resected. The duodenotomy was then closed in two steps (using 3/0 monofilament, non-absorbable suture) via two half running sutures in the mucosal and then serosal planes. Lymphadenectomy was performed after closure of the duodenotomy.”

Comment 2: The contexts of abstract and introduction are similar.

Answer: We agree with the reviewer’s comment. Accordingly, we have rewritten the abstract, as follows: “Despite the ongoing decrease in the frequency of complications after hepatectomy, biliary fistulas still occur and are associated with high morbidity and mortality rates. Here, we report on an unusual technique for managing biliary fistula following left hepatectomy in a patient in whom the right posterior segmental duct joined the left hepatic duct. The biliary fistula was treated with a combined radiologic and endoscopic procedure based on the “rendezvous technique”. The clinical outcome was good, and reoperation was not required.”

Comment 3: Many typo and grammar errors.

Answer: In line with the reviewer’s comment, we have corrected a number of typos. The manuscript has also been reread by a native English speaker. We believe that any remaining language issues will be minor questions of personal preference and style (rather than grammar, idiom or clarity).

REVIEWER 2549799

Comment 1: Thank you for submitting this article for review. This is a well written, concise and elegant description of a new technique for management of complications. The intra-operative images are of excellent quality. I have a couple of comments. I think additional detail with respect to operative technique would be illuminating.

Answer: We thank the reviewer for this comment. Accordingly, we have added further details of the surgical technique, as follows:

“Before performing laparotomic surgery, an upper endoscopy enabled us to locate the gastrinoma. The surgical procedure started with a Kocher maneuver, in order to mobilize the first and second parts of the duodenum. Next, a duodenotomy on the superior duodenal flexure gave us access to the duodenal gastrinoma, which was then resected. The duodenotomy was then closed in two steps (using 3/0 monofilament, non-absorbable suture) via two half running sutures in the mucosal and then serosal planes. Lymphadenectomy was performed after closure of the duodenotomy.

Prior to the left hepatectomy, intra-operative cholangiography evidenced dilatation of the right posterior segmental duct (RPSD) and the LHD and revealed confluence between these two ducts (**Figure 3**). Careful dissection enabled us to isolate the RPSD and its junction with the LHD. After bile duct isolation, various clamping maneuvers were performed (with intra-operative cholangiography), in order to check that the anterior and posterior sections of the right hepatic duct were intact (**Figure 4**). Left hepatectomy was performed with conservation of the RPSD, by clamping the LHD above the confluence. To check for leakage after left hepatectomy, we performed a methylene blue test. The left hepatectomy was performed without reconstructing the biliary ducts (which would have required hepaticojejunal anastomosis of the RPSD, for example).”

Comment 2: I would like to know where the ducts were taken at the time of surgery and more detail as to why hepatico jejunostomy was not performed.

Answer: We thank the reviewer for this comment. During surgery, the dilated RPSD prompted us to consider a hepaticojejunostomy. However, the results of our dissection and the intra-operative cholangiography led us to consider that surgery could be performed without reconstruction. In retrospect, we think that the biliary fistula resulted from thermal damage to the hepatic duct during dissection (since there was no leakage in the methylene blue test and no particular signs of leakage on the intra-operative cholangiography, after completion of the left hepatectomy). We have revised the text as follows:

“The intra-operative discovery of this anatomic variation left us with two possible solutions: (i) left hepatectomy with maintenance of the RPSD, and (ii) hepaticojejunal anastomosis and

resection of the confluence between the RPSD and the LHD. We chose not to perform hepaticojejunal anastomosis on the RPSD because of (i) its difficulty in the present case and (ii) the satisfactory results of an intra-operative methylene blue test and intra-operative cholangiography (as recommended ^[2]). We observed complete opacification of the RPSD after a clamping maneuver and thus the absence of biliary stenosis or fistula ^[11]. The occurrence of a late biliary fistula (type D, according to Nagano's classification ^[12]) in the RPSD was probably due to necrosis caused during coagulation, since there was no leakage in the methylene blue test and no particular signs of leakage on the intra-operative cholangiography after completion of the left hepatectomy. In retrospect, this should have prompted us to perform hepaticojejunal anastomosis."

Comment 3: I also think that expert readers would be interested in more detail with regards to the "rendezvous" procedure.

Answer: In line with the reviewer's comment, we have added further details to the revised manuscript, as follows: "After a multidisciplinary team meeting (involving the surgeons, an endoscopist and a radiologist), we selected a combined radiologic and endoscopic treatment using the "rendezvous technique". Firstly, the excluded RPSD was drained with an 8.5 French percutaneous catheter (Cook Ireland Ltd, Limerick, Ireland). Next, drainage allowed us to subsequently catheterize the main hepatic duct (via a transhepatic approach and create a new prosthetic duct (using a percutaneous catheter). An 8 cm biliary fully covered self-expanding metal stent (Zilver®, Cook Ireland Ltd) was inserted, in order to decrease pressure on the biliary duct. In order to avoid migration, a 14 cm duodenal covered stent (Hanarostent®, Life Partners Europe, Bagnolet, France) was positioned next to the biliary stent's distal portion. Next, a 12 cm, 8.5 French plastic Cotton-Leung biliary stent (Cook Ireland Ltd) was placed into the covered self-expanding metal stent through the duodenal stent (in order to avoid migration of the latter) and located next to the inlet of the external drain."

Comment 4: Finally there are a few minor grammatical errors which should be addressed. Very nice article.

Answer: We thank the reviewer for this comment. In line with the reviewer's comment, we have corrected a number of typos. The manuscript has also been reread by a native English speaker. We believe that any remaining language issues will be minor questions of personal preference and style (rather than grammar, idiom or clarity).

REVIEWER 69130

Comment 1: The manuscript by Gracient A et al. titled ‘Combined radiologic and endoscopic treatment (using the “rendezvous technique”) of a biliary fistula following left hepatectomy’ is a case report where they report their experience with a patient who underwent partial hepatectomy for gastrinoma metastasis to his liver. The patient had an anatomical variation- the right posterior segmental duct (RPSD) joined the left hepatic duct (LHD). The authors report on the use of a combined radiologic and endoscopic procedure (based on the “rendezvous technique”), to treat biliary fistula following left hepatectomy, in this patient. This is a well written manuscript. The language use, grammar, is by and large good.

Answer: We thank the reviewer for this comment. We have sought to improve the manuscript and hope that it is now suitable for publication.

Comment 2: In page 4, line 5 under subtitle ‘case’ the sentence may need some revision.

Answer: We agree with the reviewer’s comment. We have revised the sentence, as follows: “A 66-year-old man was referred to our institution for duodenal gastrinoma revealed by Zollinger Ellison syndrome.”

Comment 3: A question we have in mind. Whether the authors used intra-operatively, some dye like the blue dye (methylene blue) to see if there is any leak in the bile duct. If they used what was the result? This manuscript would be useful for surgeons, general surgeons, interventional radiologists and gastroenterologists who have an interest in surgical procedures. We recommend this manuscript for the favour of publication in W.J.G. Murali Appukkuttan, Sanal MG

Answer: We thank the reviewer for this important comment and apologize for this omission in the initial submission. We performed cholangiography during the left hepatectomy and also performed a methylene blue test after the hepatectomy, in order to check for the absence of leakage. In line with the reviewer’s comment, we have revised the text as follows: “After bile duct isolation, various clamping maneuvers were performed (with intra-operative cholangiography), in order to check that the anterior and posterior sections of the right hepatic duct were intact (**Figure 4**). Left hepatectomy was performed with conservation of the RPSD, by clamping the LHD above the confluence. To check for leakage after left hepatectomy, we performed a methylene blue test.”