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Dr. Ya-Juan Ma  
Science Editor, Editorial Office  
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Dear Dr. Ma

Thank you very much for your review of our manuscript. We greatly appreciate your comments and those of the reviewers, which have helped us to make improvements in our manuscript. We have re-written some parts of the manuscript following your suggestion, and addressed the issues raised by the reviewers. Detailed responses to these comments are given below (all page and line numbers are for the revised version. We underlined all of the changes in the revised manuscript.

**Reviewer #1:**

**1. Comment:**

How about change the title to be "Peripheral portal vein-oriented non-dilated intrahepatic bile duct puncture for percutaneous transheptic drainage in patients with biliary obstruction “?

**Response:**

As the title should be no more than 10-12 words, we have changed the title, as follows:

(Title page) **“Peripheral portal vein-oriented non-dilated bile duct puncture for percutaneous transhepatic biliary drainage”** (12 words)

**Reviewer #2:**

**1. Comment:**

(Page 4. Material and methods section) I suggest including the clinical characteristics of the patients in a Table (s).

**Response:**

(Table 1) According to the reviewer’s suggestion, we have added Table 1 (Baseline characteristics of the patients) in Patients and Methods section.

**2. Comment:**

(Page 4. Material and Methods section) I suggest summarizing the description of the technique. Its present form is too long.

**Response:**

(Page 6, line 27 –page 8 line 4) We have deleted some part of the description and summarized the technique of the PTBD in patients with non-dilated bile duct, as follows:

PTBD procedures were performed under local anesthesia with mild sedation. The most appropriate BD for targeted puncture was the B6 peripheral branch for the right-sided approach (Figs. 1, 2) or B3 for the left-sided approach, because the distance between skin and puncture site of the BD was short and running course of the target BD was mostly straight from the hepatic hilus to the peripheral puncture site.

Under ultrasonographic guidance, the non-dilated peripheral branch of B6 or B3 was punctured with a 21-G needle (PTCD Two Step Drainage Set; Cook, Tokyo, Japan) along the running course of the BD or accompanying PV in the case when the targeted BD was not well visualized, and the puncture needle was advanced slightly beyond the accompanying PV. After removal of the

inner stylet, the needle tip was moved slightly backward while injecting a very small amount of contrast agent (0.5-1.0mL) to obtain a BD image (Fig. 1B), because the back flow of bile could not be obtained in most cases with the non-dilated BD. Once a BD image was obtained, contrast agent was quickly injected to acquire a clear image of the hilar BD. A 0.018-inch guide-wire (GW) was then advanced carefully into the BD while controlling the needle tip (Fig. 1C). During this process, the insertion angle between the puncture needle and running course of the BD is very important (Figure 3). The angle should be less than 30°, otherwise, insertion of the assembly set catheter (PTCD Two Step Drainage Set; Cook) into the BD over the thin, 0.018-inch GW may become quite difficult.

After the thin GW was inserted and locked at a secure position in the BD, the 21-G puncture needle was removed. The assembly set (PTCD Two Step Drainage Set; Cook), consisting of a metallic cannula and inner sheath and outer sheath catheters, was slowly inserted over the thin GW, and advanced into the targeted BD. The metallic cannula and inner sheath catheter were then removed, leaving the outer sheath catheter behind in the BD. Cholangiography was performed to confirm this catheter had been correctly placed into the BD. A 0.035-inch hydrophilic GW (Radifocus, Terumo, Tokyo, Japan) was then inserted to a secure position in the biliary system. A 7-Fr catheter with a distal curve (Seeking catheter; Hanako Medical, Saitama, Japan) was then inserted along the GW and the BD stricture or anastomotic stricture was crossed using the GW. A final 8-Fr drainage tube (Straight; Hanako Medical) with side halls was advanced to the appropriate position for internal-external drainage (Figure 1D). After an interval of several days, dilation of the stricture site was performed with a balloon catheter and plastic dilator (Cook). The drainage catheter was exchanged in size up to 14-18 Fr, and kept for 3-6 months after the first PTBD placement to avoid re-stricture. However, in this study, PTBD procedures were considered as successful when the PTBD catheter was successfully inserted into the BD.

### **3. Comment:**

(Page 7, line 9) It is important to define amount of contrast agent in mL

**Response:**

According to your suggestion, we added the amount of contrast agent, as follows,

(Page 7, line 9) while injecting a small amount of contrast agent (0.5-1.0 mL) to obtain a BD image.

**4. Comment:**

(Results section) I suggest using a Table to describe the main results

**Response:**

According to the reviewer's suggestion, we added Table 2 (Outcome of percutaneous transhepatic biliary drainage (PTBD) in patients with non-dilated bile duct) to describe the main results.

**5. Comment:**

(Discussion section) I suggest including advantages and disadvantages of this technique and also complications. Finally who could be do this procedure or technique.

**Response:**

According to the reviewer's suggestion, we added the following sentences in the Discussion section.

(Page 10, line 2 - 8) Accordingly, the most advantageous point of this technique is the safe procedure, as the puncture site is very peripheral and major complications such as portal thrombosis or bilioarterial fistula are unlikely to occur. On the other hand, this procedure may be technically demanding. Therefore, it is better for a biliary physician, surgeon or radiologist who is familiar with the biliary anatomy and has mastered ordinary PTBD techniques

to perform this procedure.

**5. Comment:**

(Figures) In the present form the manuscript has too many figures. I suggest to delete some of them

**Response:**

We deleted Figure 1C and E, and Figure 3 (A-B).

All suggestions given by the reviewers were addressed and the paper should now meet your requirements. Again, thank you for giving us the opportunity to revise this manuscript and we hope that it is now acceptable for publication in "World Journal of Gastroenterology".

Yours Sincerely,

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