ORIGINAL ARTICLE

A modified dual-knife fistulotomy for achieving challenging biliary cannulation in type 3 papilla

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Cannulating protruding or pendulous type 3 papilla presents a higher level of difficulty in ERCP.[1] The dual knife, commonly used in endoscopic submucosal dissection procedures, has been shown in previous reports to be an effective and safe approach for precutting papillotomy.[2] We report the case of a 46-year-old female patient who underwent an ERCP procedure for the treatment of choledocholithiasis. During ERCP, the duodenoscope successfully identified the major papilla, which was of type 3. Multiple attempts at cannulating the bile duct were unsuccessful, resulting in 2 unintentional entries into the pancreatic duct. Consequently, a pancreatic stent was placed.

The challenges of the precutting technique lie in (1) the incision made using a long and slender needle knife tends to be deep, which presents challenges in locating the depth of the bile duct; (2) accurately assessing the projection of the bile duct and locating the bile duct orifice; and (3) ensuring the stability of the endoscope to achieve precise precut incision.

To overcome this issue, we developed a modified dual-knife fistulotomy method (Video 1, available online at www.videogie.org) using a 1.5-mm cutting knife–equipped dual knife (Fig. 1).

Step 1: Position the papilla slightly below and to the right of the center of the visual field, with the dome of the papilla placed at the center of the view, while maintaining an appropriate distance. This arrangement allows the projection of the bile duct from the 4 o'clock to the 10 o'clock position (Fig. 2).

Step 2: Position the knob-shaped tip of the dual knife slightly above and to the right of the dome of the papilla to create an incision. Insert the knob-shaped tip into the incision and perform a controlled cutting motion from top to bottom while releasing the forceps elevator, ensuring the preservation of the papilla's opening. By releasing the forceps elevator, we achieve a stable and enhanced visual field while using the dual knife for a precisely controlled downward incision (Fig. 3).

Step 3: Gradually dissect the submucosal layer along the initial incision until the biliary mucosa becomes visible. We can use the endoscopic submucosal dissection technique with the dual knife to dissect the layers systematically and precisely from the mucosal to the submucosal layer. This approach enhances the visualization and exposure of the bile duct, aiding in its accurate identification and assessment (Fig. 4).

Step 4: Assess the axis direction of the intramural segment of the common bile duct based on the papilla's opening and morphology, then proceed with an incision (Fig. 5).

The procedure was successful and was followed by biliary cannulation, using a balloon trawl and an extraction basket for common bile duct stone removal. The entire dual-knife fistulotomy procedure took 3.5 minutes, and there were no adverse events after the procedure.

We suggest this method as a useful technique for achieving biliary system access in cases in which standard cannulation of a type 3 papilla is unsuccessful. Although the procedure demonstrates potential as a versatile technique, its

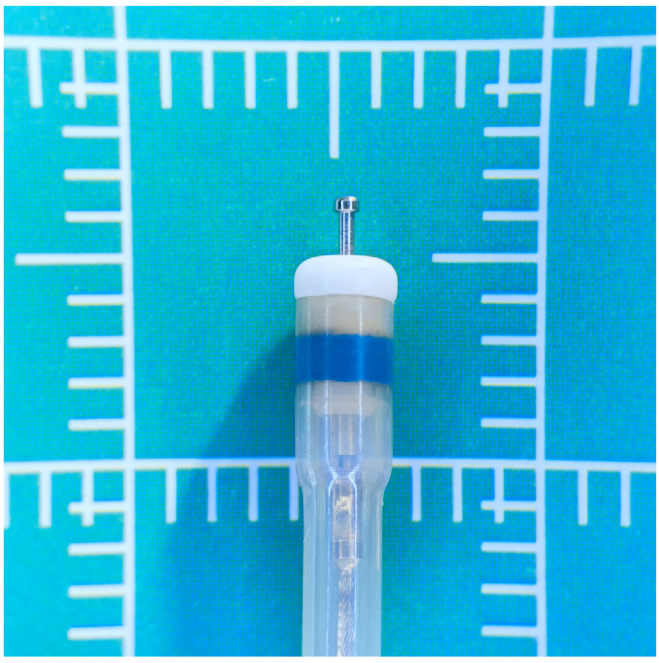

Figure 1. The dual knife, equipped with a 1.5-mm cutting blade (KD-650 Q; Olympus, Tokyo, Japan).

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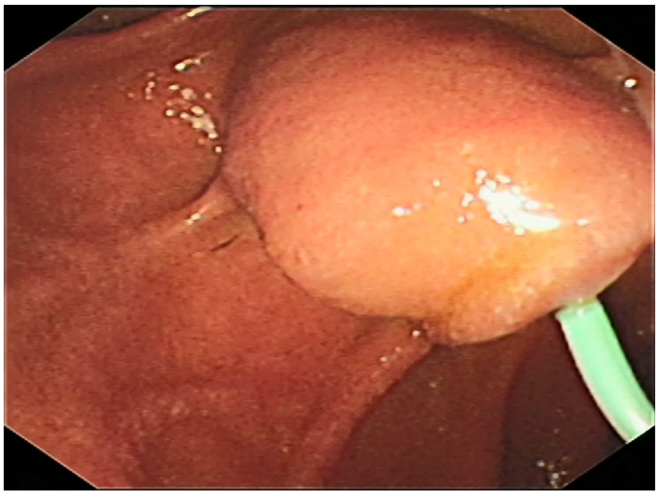

Figure 2. Step 1: Position the papilla to allow the projection of the bile duct from the 4 o'clock to the 10 o'clock position.

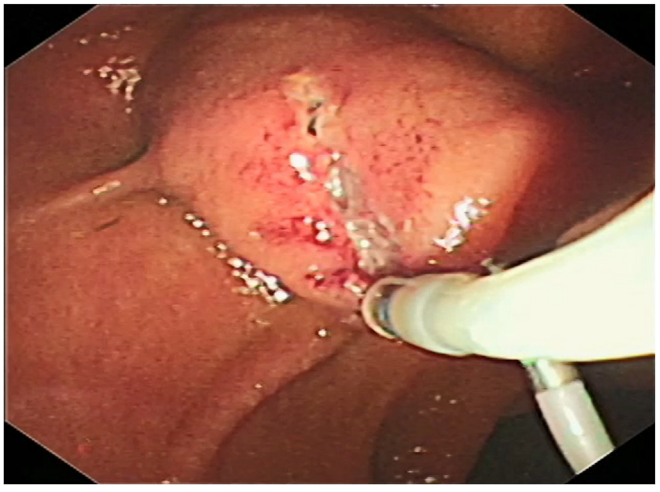

Figure 3. Step 2: Perform a controlled cutting motion from top to bottom, ensuring the preservation of the papilla's opening.

feasibility must be confirmed through further multicenter analyses.

DISCLOSURE

The authors disclosed no financial relationships relevant to this publication.

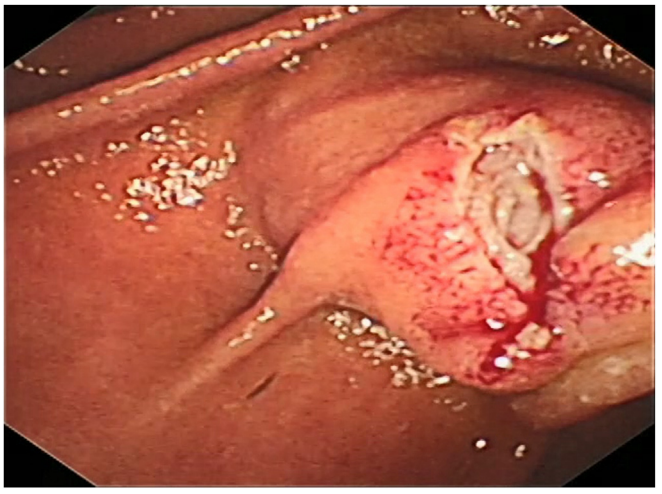

Figure 4. Step 3: Gradually dissect the submucosal layer along the initial incision until the biliary mucosa becomes visible.

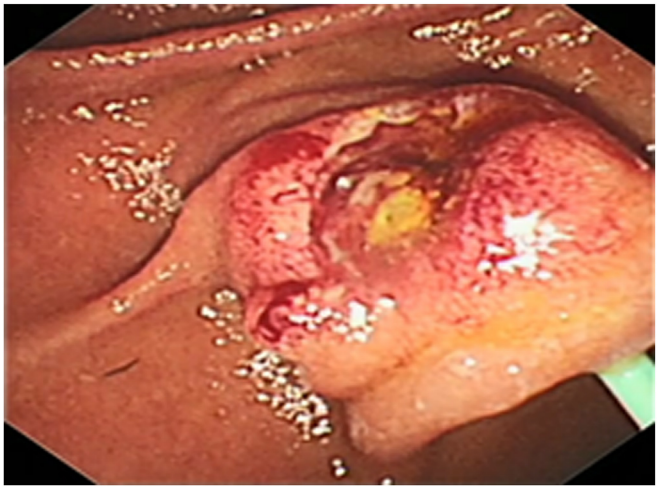

Figure 5. Step 4: Assess the axis direction of the intramural segment of the common bile duct based on the papilla's opening and morphology, then proceed with a dissection.

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