Endoclip papilloplasty for a patulous and incompetent biliary papilla

Xue Fan, MM, Xin Li, MM, Hong Chang, MD, Xiue Yan, MD, Yonghui Huang, MD

A 78-year-old woman with choledocholithiasis (Fig. 1) underwent an extensive endoscopic sphincterotomy for large stone extraction. Concerned about the possibility of recurrent cholangitis and subsequent recurrent stone formation, we proceeded with a novel procedure, which we called endoclip papilloplasty: zipper closure of the patulous papilla with endoclips (Figs. 2-3; Video 1, available online at www.VideoGIE.org).

During ERCP, a large periampullary diverticulum and a protruding ampulla were noted. A generous biliary sphincterotomy (>1 cm) was performed to facilitate large stone extraction by use of a lithotripsy basket and a stone extraction balloon. After all stone fragments were cleared from the bile duct, a 7F single-pigtail biliary stent was placed (suspended overlength biliary stent, 7F × 20 cm). Because of a concern about recurrent cholangitis and subsequent recurrent stone formation, endoclip papilloplasty was performed (Fig. 3).

After ERCP, no adverse events occurred. Three weeks later, the stent was removed, and the papilla appeared competent (Fig. 4). To evaluate the sphincter-preserving effect, sphincter of Oddi (SO) manometry was performed, including basal pressure (BP), phasic contraction amplitude (PCA), and common bile duct (CBD) pressure (CBDP). The CBDP, BP, and PCA had recovered to 2 mm Hg, 11 mm Hg, and 27 mm Hg, respectively. Seven months later, the patient’s liver function was normal and the papilla had an improved appearance (Fig. 5). At the same time, the CBD returned to 1.0 cm. There were no stones in the CBD and recurrent cholangitis or papillary stenosis did not occur, indicating that the sphincter pressure and function were preserved.

Biliary sphincterotomy has been a standard therapeutic procedure for bile duct stones since 1973. Because most centers cannot perform lithotripsy, a large endoscopic sphincterotomy (EST) is required for large stones. Risk factors for recurrence of primary bile duct stones are bile duct diameter after cholecystectomy and periampullary diverticulum. The loss of SO function may cause bactobilia and recurrence after EST. To our knowledge, a method that could optimally replace SO function has not been reported. Our team reported several patients who had undergone endoclip papilloplasty first in China. In this patient, all stones were completely removed without any post-ERCP complications.
adverse events. This procedure may preserve the sphincter pressure, maintaining its antireflux function.

Post-EST stenosis after large or generous EST is rarely reported. In this patient, post-EST stenosis was not observed 7 months postoperatively. Because the ampulla was redundant and protruding, the method accelerated healing of the papilla. The outcomes of the procedure are unclear in patients with a flat and small ampulla, and the use of clips for closure may be challenging. Further investigation is warranted to clarify the outcomes.

DISCLOSURE

All authors disclosed no financial relationships relevant to this publication.
Abbreviations: BP, basal pressure; CBD, common bile duct; CBDP, CBD pressure; EST, endoscopic sphincterotomy; PCA, phasic contraction amplitude; SO, sphincter of Oddi.

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Department of Gastroenterology, Peking University International Hospital & Peking University Third Hospital, Beijing, China.

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