

World Journal of *Gastroenterology*

World J Gastroenterol 2020 October 7; 26(37): 5534-5744



OPINION REVIEW

- 5534** Review of inflammatory bowel disease and COVID-19
Sultan K, Mone A, Durbin L, Khurwaja S, Swaminath A

REVIEW

- 5543** Hepatitis E virus: Epidemiology, diagnosis, clinical manifestations, and treatment
Aslan AT, Balaban HY
- 5561** Transjugular intrahepatic portosystemic shunt in cirrhosis: An exhaustive critical update
Rajesh S, George T, Philips CA, Ahamed R, Kumbar S, Mohan N, Mohanan M, Augustine P

MINIREVIEWS

- 5597** Calcifying fibrous tumor of the gastrointestinal tract: A clinicopathologic review and update
Turbiville D, Zhang X
- 5606** Artificial intelligence technologies for the detection of colorectal lesions: The future is now
Attardo S, Chandrasekar VT, Spadaccini M, Maselli R, Patel HK, Desai M, Capogreco A, Badalamenti M, Galtieri PA, Pellegatta G, Fugazza A, Carrara S, Anderloni A, Occhipinti P, Hassan C, Sharma P, Repici A
- 5617** Application of artificial intelligence in the diagnosis and treatment of hepatocellular carcinoma: A review
Jiménez Pérez M, Grande RG

ORIGINAL ARTICLE

Basic Study

- 5629** Antioxidant activity and hepatoprotective effect of 10 medicinal herbs on CCl₄-induced liver injury in mice
Meng X, Tang GY, Liu PH, Zhao CJ, Liu Q, Li HB

Case Control Study

- 5646** Short- and long-term outcomes associated with enhanced recovery after surgery protocol vs conventional management in patients undergoing laparoscopic gastrectomy
Tian YL, Cao SG, Liu XD, Li ZQ, Liu G, Zhang XQ, Sun YQ, Zhou X, Wang DS, Zhou YB

Retrospective Cohort Study

- 5661** Periodontitis combined with smoking increases risk of the ulcerative colitis: A national cohort study
Kang EA, Chun J, Kim JH, Han K, Soh H, Park S, Hong SW, Moon JM, Lee J, Lee HJ, Park JB, Im JP, Kim JS

Retrospective Study

- 5673** Preliminary experience of hybrid endoscopic submucosal dissection by duodenoscope for recurrent laterally spreading papillary lesions

Wang ZK, Liu F, Wang Y, Wang XD, Tang P, Li W

- 5682** *Helicobacter pylori* infection with atrophic gastritis: An independent risk factor for colorectal adenomas

Chen QF, Zhou XD, Fang DH, Zhang EG, Lin CJ, Feng XZ, Wang N, Wu JS, Wang D, Lin WH

Clinical Trials Study

- 5693** Endoscopic ultrasound-fine needle biopsies of pancreatic lesions: Prospective study of histology quality using Franseen needle

Stathopoulos P, Pehl A, Breitling LP, Bauer C, Grote T, Gress TM, Denkert C, Denzer UW

Prospective Study

- 5705** Risk prediction rule for advanced neoplasia on screening colonoscopy for average-risk individuals

Sharara AI, El Mokahal A, Harb AH, Khalaf N, Sarkis FS, M El-Halabi M, Mansour NM, Malli A, Habib R

EVIDENCE-BASED MEDICINE

- 5718** Endoscopic retrograde cholangiopancreatography in the treatment of pancreaticopleural fistula in children

Zhang J, Gao LC, Guo S, Mei TL, Zhou J, Wang GL, Yu FH, Fang YL, Xu BP

CASE REPORT

- 5731** Abernethy syndrome in Slovenian children: Five case reports and review of literature

Peček J, Fister P, Homan M

ABOUT COVER

Editorial Board of *World Journal of Gastroenterology*, Dr. Angelo Zambam de Mattos is a Professor of Medicine – Gastroenterology at the Federal University of Health Sciences of Porto Alegre (UFCSPA), where he is also a permanent faculty member of the Graduate Program in Medicine: Hepatology (the only Brazilian graduate program specialized specifically in Hepatology). His research focuses on cirrhosis and its complications, culminating in > 50 academic papers. He also carries out clinical work at Irmandade Santa Casa de Misericórdia of Porto Alegre, one of the largest hospital complexes in southern Brazil. Prof. Mattos received his Medical degree in 2005, Master's degree in 2012 and PhD in 2015, all from UFCSPA. He is a member of the Brazilian Federation of Gastroenterology, Brazilian Association of Hepatology, and Brazilian Association of Digestive Endoscopy, and he is past president of the Gastroenterology Association of Rio Grande do Sul, Brazil (2017-2018). (L-Editor: Filipodia)

AIMS AND SCOPE

The primary aim of *World Journal of Gastroenterology* (WJG, *World J Gastroenterol*) is to provide scholars and readers from various fields of gastroenterology and hepatology with a platform to publish high-quality basic and clinical research articles and communicate their research findings online. WJG mainly publishes articles reporting research results and findings obtained in the field of gastroenterology and hepatology and covering a wide range of topics including gastroenterology, hepatology, gastrointestinal endoscopy, gastrointestinal surgery, gastrointestinal oncology, and pediatric gastroenterology.

INDEXING/ABSTRACTING

The WJG is now indexed in Current Contents®/Clinical Medicine, Science Citation Index Expanded (also known as SciSearch®), Journal Citation Reports®, Index Medicus, MEDLINE, PubMed, PubMed Central, and Scopus. The 2020 edition of Journal Citation Report® cites the 2019 impact factor (IF) for WJG as 3.665; IF without journal self cites: 3.534; 5-year IF: 4.048; Ranking: 35 among 88 journals in gastroenterology and hepatology; and Quartile category: Q2.

RESPONSIBLE EDITORS FOR THIS ISSUE

Production Editor: Yu-Jie Ma; Production Department Director: Xiang Li; Editorial Office Director: Ze-Mao Gong.

NAME OF JOURNAL

World Journal of Gastroenterology

ISSN

ISSN 1007-9327 (print) ISSN 2219-2840 (online)

LAUNCH DATE

October 1, 1995

FREQUENCY

Weekly

EDITORS-IN-CHIEF

Andrzej S Tarnawski, Subrata Ghosh

EDITORIAL BOARD MEMBERS

<http://www.wjgnet.com/1007-9327/editorialboard.htm>

PUBLICATION DATE

October 7, 2020

COPYRIGHT

© 2020 Baishideng Publishing Group Inc

INSTRUCTIONS TO AUTHORS

<https://www.wjgnet.com/bpg/gerinfo/204>

GUIDELINES FOR ETHICS DOCUMENTS

<https://www.wjgnet.com/bpg/GerInfo/287>

GUIDELINES FOR NON-NATIVE SPEAKERS OF ENGLISH

<https://www.wjgnet.com/bpg/gerinfo/240>

PUBLICATION ETHICS

<https://www.wjgnet.com/bpg/GerInfo/288>

PUBLICATION MISCONDUCT

<https://www.wjgnet.com/bpg/gerinfo/208>

ARTICLE PROCESSING CHARGE

<https://www.wjgnet.com/bpg/gerinfo/242>

STEPS FOR SUBMITTING MANUSCRIPTS

<https://www.wjgnet.com/bpg/GerInfo/239>

ONLINE SUBMISSION

<https://www.f6publishing.com>



Retrospective Study

Preliminary experience of hybrid endoscopic submucosal dissection by duodenoscope for recurrent laterally spreading papillary lesions

Zi-Kai Wang, Fang Liu, Yun Wang, Xiang-Dong Wang, Ping Tang, Wen Li

ORCID number: Zi-Kai Wang 0000-0002-6293-7179; Fang Liu 0000-0002-2013-9881; Yun Wang 0000-0003-0512-5307; Xiang-Dong Wang 0000-0002-7445-9274; Ping Tang 0000-0002-7401-1330; Wen Li 0000-0003-3963-6850.

Author contributions: Wang ZK and Liu F contributed equally to this manuscript; Li W and Wang ZK completed study conception and design, endoscopic operation; Wang ZK and Liu F wrote and edited the manuscript; Wang Y finished pathological analysis; Wang ZK, Liu F, Wang XD, and Tang P completed endoscopic operation, data analysis and interpretation.

Institutional review board statement: The study was reviewed and approved by the Ethics Committee of the PLA General Hospital, No. s2019-274-01.

Informed consent statement: All study participants, or their legal guardian, provided informed written consent.

Conflict-of-interest statement: All authors declare no conflicts-of-interest related to this article.

Data sharing statement: No additional data are available.

Zi-Kai Wang, Fang Liu, Xiang-Dong Wang, Ping Tang, Wen Li, Department of Gastroenterology and Hepatology, The First Medical Center, Chinese PLA General Hospital, Beijing 100853, China

Yun Wang, Department of Pathology, The First Medical Center, Chinese PLA General Hospital, Beijing 100853, Beijing, China

Corresponding author: Wen Li, MD, PhD, Chief Doctor, Department of Gastroenterology and Hepatology, The First Medical Center, Chinese PLA General Hospital, No. 28 Fuxing Road, Haidian District, Beijing 100853, China. liwen2000@yahoo.com

Abstract

BACKGROUND

The management strategies for recurrent ampullary adenoma after endoscopic papillectomy are still controversial. Patients with the recurrent papillary lesions need to receive repetitive endoscopic interventions due to the limitations of conventional endoscopic techniques.

AIM

To assess the feasibility, efficacy, and safety of hybrid endoscopic submucosal dissection (ESD) by duodenoscope for recurrent, laterally spreading papillary lesions.

METHODS

We enrolled two patients with recurrent, laterally spreading, duodenal papillary adenomas with no intraductal extension confirmed by follow-up between March 2017 and September 2018. After marking the resection borders of the lesion using a dual knife, a submucosal cushion was created by injecting a mixture of saline solution, methylene blue, and adrenaline. A total circumferential incision and submucosal excision was performed by dual knife combined with insulated-tip diathermic knife, and then the lesion was ligated and resected using an electric snare. Endoscopic hemostasis was applied during the endoscopic procedures. Moreover, the endoscopic retrograde cholangiopancreatography (ERCP) procedures, including selective cannulation and stent implantation of biliary and pancreatic ducts, were performed. Additionally, we performed endoclip closure for mucosal defect after ESD.

RESULTS

Open-Access: This article is an open-access article that was selected by an in-house editor and fully peer-reviewed by external reviewers. It is distributed in accordance with the Creative Commons Attribution NonCommercial (CC BY-NC 4.0) license, which permits others to distribute, remix, adapt, build upon this work non-commercially, and license their derivative works on different terms, provided the original work is properly cited and the use is non-commercial. See: <http://creativecommons.org/licenses/by-nc/4.0/>

Manuscript source: Unsolicited manuscript

Received: June 15, 2020

Peer-review started: June 15, 2020

First decision: July 25, 2020

Revised: August 8, 2020

Accepted: September 12, 2020

Article in press: September 12, 2020

Published online: October 7, 2020

P-Reviewer: Kishida Y, Weiss H

S-Editor: Gao CC

L-Editor: Filipodia

P-Editor: Li JH



Hybrid ESD using a duodenoscope and biliary and pancreatic stent placement were performed successfully in two patients. The endoscopic size of recurrent papillary lesions was no more than 2 cm. Generally, the average total procedure time was 95.5 min, and the procedure time of ESD and ERCP was 38.5 min and 15.5 min, respectively. No serious complications occurred during the intraoperative and postoperative periods. The histopathological examination revealed tubulovillous adenoma negative for neoplastic extension at the cut margin in both patients. The duodenoscopic follow-up and histopathology of biopsy specimens at 3 mo after ESD showed no residual or recurrent lesions in ampullary areas in both cases. Both cases have been followed up with no recurrence to June 2020.

CONCLUSION

Hybrid ESD by duodenoscope is technically challenging, and may be curative for recurrent, laterally spreading papillary adenomas < 2 cm. It should be performed cautiously in selected patients by experienced endoscopists.

Key Words: Endoscopic submucosal dissection; Ampullary adenoma; Recurrent; Laterally spreading; Papillary lesions

©The Author(s) 2020. Published by Baishideng Publishing Group Inc. All rights reserved.

Core Tip: The management strategies for recurrent ampullary adenomas after endoscopic papillectomy are still controversial. Our preliminary experience showed that hybrid endoscopic submucosal dissection by duodenoscope could be feasible for recurrent, laterally spreading ampullary adenomas. Follow-up after hybrid endoscopic submucosal dissection showed no residual or recurrent lesions in ampullary areas. However, it should be performed with caution by experienced endoscopists in selected patients, and the effectiveness should be verified by large-scale studies.

Citation: Wang ZK, Liu F, Wang Y, Wang XD, Tang P, Li W. Preliminary experience of hybrid endoscopic submucosal dissection by duodenoscope for recurrent laterally spreading papillary lesions. *World J Gastroenterol* 2020; 26(37): 5673-5681

URL: <https://www.wjgnet.com/1007-9327/full/v26/i37/5673.htm>

DOI: <https://dx.doi.org/10.3748/wjg.v26.i37.5673>

INTRODUCTION

The clinical practice or consensus for endoscopic management of duodenal papillary lesions is not fully established^[1]. Several endoscopic resection techniques such as snare polypectomy, endoscopic mucosal resection (EMR) and argon plasma coagulation (APC) ablation are available for papillary lesions^[1-3]. Endoscopic resection of the laterally spreading ampullary lesions is difficult technically and usually involves surgery. Moreover, the management strategies for recurrent duodenal papillary adenomas after endoscopic papillectomy are still controversial^[2]. Patients with recurrent papillary adenomas need to receive repetitive endoscopic interventions due to the limitations of conventional endoscopic techniques, such as incomplete resection. At present, endoscopic submucosal dissection (ESD) has become common and has gradually replaced most surgical procedures for management of early gastrointestinal neoplasms^[4], which could provide a higher *en bloc* resection rate than conventional endoscopic resection techniques. Until now, ESD has rarely been used for the treatment of duodenal papillary lesions by duodenoscope due to the complex anatomy of the duodenal papilla and technical difficulties.

In this paper, we report our preliminary experience of hybrid ESD by duodenoscope combined with biliary and pancreatic stent placement for the treatment of recurrent, laterally spreading, duodenal papillary lesions.

MATERIALS AND METHODS

Patient selection and evaluation

Ten patients with recurrent duodenal papillary adenomatous lesions after endoscopic snare papillectomy were admitted to the Department of Gastroenterology and Hepatology, The First Medical Center of Chinese PLA General Hospital between March 2017 and September 2018. We excluded patients who received endoscopic management using an electric snare or APC ablation for small, locally recurrent adenomas < 1 cm without intraductal growth, and those who underwent pancreatoduodenectomy and/or chemoradiotherapy due to cancerization and ductal infiltration. Finally, we enrolled two patients with recurrent, laterally spreading papillary adenomas confirmed by duodenoscopic and biopsy examination. The patients had undergone hybrid ESD by duodenoscope and subsequent endoscopic retrograde cholangiopancreatography (ERCP). The clinical symptoms and physical and laboratory examination were evaluated. Computed tomography (CT), magnetic resonance imaging, magnetic resonance cholangiopancreatography and abdominal ultrasound were performed preoperatively, and the imaging examinations confirmed no infiltration of tumor into biliary and pancreatic ducts. Moreover, these two patients refused surgical management and gave informed consent.

Materials and equipment

Hybrid ESD was performed using a standard duodenoscope (TJF240 or TJF260V; Olympus, Tokyo, Japan). The equipment included a dual knife (KD-650L; Olympus), insulated-tip diathermic (IT) knife II (KD-611L; Olympus), injection needle (NM-200L-0525), hemostatic forceps (FD-410LR; Olympus), electric snare (Cook Medical, Bloomington, IL, United States), endoclips (Olympus), SureClips (Micro-Tech, Nanjing, China), intraductal ultrasound (IDUS) (UM-DG20-31R; Olympus), cannulating sphincterotome (Dreamtome RX, Boston, MA, United States), bile duct stent (10 Fr in diameter, 3-8 cm in length; Cook Medical), pancreatic duct stent (5-7 Fr in diameter, 7-8 cm in length; Cook Medical), and a high-frequency electrosurgical generator (VIO 200D; ERBE, Tübingen, Germany). An endoscopic CO₂ insufflator (UCR; Olympus) was used during the endoscopic procedures. Saline solution with diluted methylene blue, sodium hyaluronate and adrenaline was used for submucosal injection, and 1:10000 diluted epinephrine submucosal injection was used for hemostasis.

Operative procedures

All endoscopic procedures were performed by an experienced endoscopist who had > 20 years' experience in advanced endoscopic techniques and had performed > 2000 ESD and ERCP procedures. Patients were placed in the prone position and underwent intravenous anesthesia. Before ESD, the duodenal papillary lesions were evaluated by white light and narrow band imaging. Hybrid ESD with snaring was performed using a standard duodenoscope. After marking the resection borders of the lesion using a dual knife, a submucosal cushion was created by injecting a mixture of saline solution, methylene blue and adrenaline. A total circumferential incision and submucosal excision were performed by Dual knife combined with IT knife, and the lesion was ligated and resected using an electric snare. The electric coagulation, injection of saline solution with epinephrine and endoclips placement were applied for hemostasis during the endoscopic procedures. After hybrid ESD, ERCP, including selective cannulation of biliary and pancreatic ducts, and IDUS were performed to identify whether there was tumor ductal infiltration. Moreover, stent implantation of the biliary and pancreatic ducts was performed to prevent postoperative complications. Endoclip closure for mucosal defect after hybrid ESD was performed. During the postoperative period, intravenous proton pump inhibitors, somatostatin and antibiotics were given to prevent infection and post-ERCP pancreatitis. Meanwhile, diet was gradually restored if no complications occurred after postoperative fasting for 2-3 d.

Evaluation data

The primary outcome measures included clinical symptoms; physical and laboratory examination; imaging characteristics, especially endoscopic and histopathological characteristics; detailed procedure-related outcome data, including the time of hybrid ESD and ERCP; *en bloc* resection; procedure-related complications; and hospital stay. Endoscopic and histopathological follow-up was performed to assess the presence of duodenal papillary lesions after hybrid ESD procedures.

RESULTS

This study included two patients with recurrent, laterally spreading, duodenal papillary adenomas. The previous characteristics of recurrent cases are listed in Table 1, and the duodenoscopic follow-up confirmed recurrent adenomas located in the therapeutic scar tissues. The main characteristics of all patients are shown in Table 2. Preoperative imaging confirmed no infiltration of tumor into biliary and pancreatic ducts, and the endoscopic findings showed a clear border with no evidence of malignancy, such as ulceration and spontaneous bleeding.

Hybrid ESD combined with ERCP was performed successfully using duodenoscope. The detailed endoscopic procedures are shown in Figures 1 and 2. The average total procedure time was 95.5 min, and the procedure time of hybrid ESD and ERCP was 38.5 min and 15.5 min, respectively. After submucosal injection, the surrounding mucosa of the lesion was lifted, except the central scar tissues. When the circumferential incision was completed, the IT knife was used to dissect the fibrotic area for prevention of perforation. The lesion was ligated and resected *en bloc* using a polypectomy snare. After hybrid ESD, ERCP and IDUS procedures were performed. Selective cannulation, angiography, and IDUS revealed a clear layer of the biliary and pancreatic ducts and no intraductal growth of the lesions in these two patients. Meanwhile, cholangiopancreatography and IDUS revealed common bile duct stones with obvious dilated biliary and pancreatic ducts in case 1, but the stones were not extracted simultaneously, considering the increasing risk of complications. Subsequently, the biliary and pancreatic stents were placed successfully in both cases (Figures 1 and 2, and Table 2). Furthermore, endoscopic clips were deployed for closure of mucosal defects. In both cases, no serious complications occurred during the intraoperative and postoperative periods. Postoperative laboratory tests showed normal routine blood and biochemical examinations, except for transient hyperamylasemia in case 2. Histopathological examination revealed tubulovillous adenoma negative for neoplastic extension at the horizontal and vertical margins in both cases (Figures 1 and 2).

Duodenoscopic and histopathological follow-up was undertaken at 3 mo after hybrid ESD. Endoscopic examination showed no residual or recurrent lesions in ampullary areas in both cases. ERCP showed dilated common bile duct and pancreatic ducts, and the common bile duct stones were extracted successfully in case 1, and the biliary stent was removed in case 2 (Figures 1 and 2). Histopathology of biopsy specimens showed chronic and acute inflammation of small intestinal mucosa with no adenomatous tissues in both cases (Figures 1 and 2). Both cases have been followed up with no recurrence up to June 2020.

DISCUSSION

Duodenal papillary neoplasms are uncommon and occur sporadically with a prevalence of 0.1%-0.2%^[5]. The majority of papillary adenomas undergo the adenoma-carcinoma sequence, and complete removal is mandatory for curative therapy due to the malignant potential^[6]. Traditionally, recommended surgical management has included pancreaticoduodenectomy and local surgical excision for complete removal of duodenal papillary tumors^[7], but surgery often results in extensive resection with significant morbidity and mortality^[1]. This is considered overtreatment for some benign duodenal papillary lesions or early noninvasive tumors of the papilla without intraductal growth. Endoscopic papillectomy by snare polypectomy or EMR has the advantages of being less invasiveness, which represents an alternative to surgical resection^[1]. At present, it is not definitive which size or endoscopic morphology of ampullary lesions should not be treated by endoscopic resection^[2]. Most studies have not recommended endoscopic resection for the duodenal papillary lesions ≥ 3 -4 cm or those with extrapapillary extension^[8]. Endoscopic snare polypectomy or EMR for ampullary lesions often requires repetitive interventions due to incomplete resection, residual lesion and tumor recurrence. The recurrent rate of ampullary adenomas after endoscopic papillectomy is 7%-33%^[9-12]. Our team reported that 13 of 110 patients who underwent endoscopic papillectomy experienced recurrence during a mean follow-up period of 16.3 mo, and the predictive factors related to recurrence were complete resection and final pathological findings^[13]. Although 75% of recurrences can be cleared endoscopically^[12], surgery is usually the last choice. In our experience, there is still the possibility of multiple recurrence after endoscopic snare polypectomy or APC ablation for recurrent

Table 1 Previous characteristics of patients with recurrent laterally spreading duodenal papillary lesions

Case	Pathological characteristics of initial resected specimen	<i>En bloc</i> resection	Complete resection	The first recurrent time (mo)	Time of follow-up (mo)	Previous endoscopic managements
Case 1	Tubulovillous adenoma with local HIN	Yes	Yes	31	96	Endoscopic snare papillectomy, and multiple APC ablation for adenoma recurrence and three ERCP procedures for biliary stones and acute cholangitis
Case 2	Tubulovillous adenoma with local LIN	Yes	Yes	15	15	Endoscopic snare papillectomy

HIN: High-grade intraepithelial neoplasia; LIN: Low-grade intraepithelial neoplasia; APC: Argon plasma coagulation; ERCP: Endoscopic retrograde cholangiopancreatography.

Table 2 Main characteristics of patients in this study

Characteristics	Case 1	Case 2
Age (yr) /sex	54/male	54/female
Clinical symptoms	Negative	Negative
Physical and laboratory examinations	Normal	Normal
Recent endoscopic characteristics	Laterally spreading adenomatous lesion with a diameter of 1.5 cm on the resected scar	A red and protuberant laterally spreading lesion with a diameter of 1 cm on the resected scar
Total procedure time (min)	107	84
Hybrid ESD procedure time (min)	57	30
Bleeding and wound control time (min)	24	22
ERCP procedure time (min)	16	15
ERCP characteristics	No intraductal growth of lesion, but biliary stones with dilated biliary and pancreatic ducts; bile duct stent (10 Fr in diameter, 8 cm in length) and pancreatic stent (7 Fr in diameter, 8 cm in length) placement	No intraductal growth of lesion and no dilatation of biliary and pancreatic ducts; biliary stent (10 Fr in diameter, 3 cm in length) and pancreatic stent (5 Fr in diameter, 7 cm in length) placement
IDUS characteristics	Clear layer of the biliary and pancreatic ducts without intraductal extension; bile duct stones with dilated biliary and pancreatic ducts	Clear layer of the biliary and pancreatic ducts without intraductal extension; no dilatation of biliary and pancreatic ducts
No. of endoscopic clips	2	5
Size of resected specimen (cm)	1.4 × 1.0	2.0 × 1.5
Histology of resected specimen	Tubulovillous adenoma	Tubulovillous adenoma
<i>En bloc</i> resection	Yes	Yes
R0 resection	Yes	Yes
Complications	None	Postoperative transient hyperamylasemia
Postoperative hospital stay (d)	4	4

ERCP: Endoscopic retrograde cholangiopancreatography; ESD: Endoscopic submucosal dissection; IDUS: Intraductal ultrasound.

ampullary lesions. This indicates the technical difficulty and limitations of the conventional endoscopic papillectomy for recurrent duodenal papillary lesions.

Preoperative evaluation of ampullary lesions is important for the subsequent management strategy. In this study, preoperative endoscopic findings showed a clear border with no evidence of malignancy, such as ulceration or spontaneous bleeding, and the appropriate ampullary lesion size (≤ 2 cm). Meanwhile, preoperative histopathological examination of biopsy sample revealed papillary adenoma for both cases. Furthermore, endoscopic ultrasonography (EUS) and IDUS are useful diagnostic tools for selecting endoscopic or surgical treatment for ampullary adenomas^[14,15]. These methods may be more efficient than CT for preoperative evaluation of local T staging, regional lymph node metastasis, ductal infiltration, and major vascular invasion in patients with ampullary lesions. It is reported that the accuracy of EUS in diagnosing extension into the bile duct and pancreatic duct is as high as 86%-90% and 77%-92%, respectively. IDUS can be more accurate in visualizing mucosal layers than conventional EUS, with a high accuracy of 90%-95% and 88%-100% in diagnosing extension into the bile duct and pancreatic duct, respectively^[16]. In our study, both patients received careful preoperative evaluation, and several imaging examinations indicated no intraductal involvement of ampullary lesions. EUS for the estimation of tumor staging and ductal infiltration was not performed routinely in this study, but subsequent ERCP and IDUS confirmed no intraductal extension. Whatever, accurate preoperative evaluation could reduce the technical difficulties and the risk of severe complications^[17].

At present, ESD has been widely accepted as standard treatment for early gastrointestinal neoplasms and large laterally spreading lesions^[4], and as an appropriate resection technique for locally remnant and recurrent lesions in patients receiving endoscopic resection^[18,19]. Several studies have reported successful ESD for duodenal lesions^[20-22] using therapeutic gastroscopy, but ESD is rarely used for treatment of recurrent, laterally spreading ampullary lesions by duodenoscope. This is mainly due to the special physiology and complex anatomical features of duodenal papillary lesions (*e.g.*, lesion location, lesion size, thin muscle layer, rich blood supply, secretion of biliary and pancreatic juice, and fibrosis of recurrent lesions), and technical difficulties (*e.g.*, limited operating space and operational difficulties to achieve good endoscopic control and optimal visual fields based on forward-viewing endoscopy)^[2]. Meanwhile, ESD for recurrent, laterally spreading ampullary adenomas raises concerns about a high risk of procedure-related complications. Therefore, ESD should be performed by experienced endoscopists with both ERCP and ESD techniques to reduce the risk of severe complications. In our study, all endoscopic procedures were performed by an experienced endoscopist who had > 20 years' experience in advanced endoscopic techniques and had performed > 2000 ESD and ERCP procedures. Carefully attention was focused on endoscopic management for procedure-related complications. Submucosal fibrosis after endoscopic papillectomy for recurrent cases is a significant risk factor for adverse events. Therefore, we used a hybrid ESD technique for complete resection with a polypectomy snare to remove the lesions after dissecting the submucosal layer. Additionally, strict hemostasis including injection, electrocoagulation and endoclip placement during hybrid ESD were compulsory. The resection wound after ampullary hybrid ESD is exposed directly to biliary and pancreatic juices, which is believed to cause postoperative complications, so we suggest that after biliary and pancreatic stent placement, the resection wound should be closed by endoclips as much as possible. In this study, hybrid ESD with snaring using duodenoscope was technically successful, and *en bloc* resection of the therapeutic scar tissue was achieved. The average procedure time of hybrid ESD was 38.5 min, which was acceptable. No severe adverse events such as bleeding and perforation occurred in the recurrent cases.

ERCP as an important procedure and should be performed after ampullary ESD treatment. Generally, it is easy to perform selective cannulation due to the exposure of biliary and pancreatic duct after papillectomy. Limited endoscopic resection of ampullary lesions may have a risk of leaving residual tissues; therefore, ERCP and IDUS are useful for further evaluation of the condition of the biliary and pancreatic ducts. For these cases, selective cannulation for biliary and pancreatic ducts was successfully performed, and ERCP and IDUS demonstrated no biliary or pancreatic extension and no residual lesions after ESD. Prophylactic stent placement in the pancreatic duct after endoscopic removal is necessary to minimize the risk of post-ERCP pancreatitis^[23]. In this study, we implanted both biliary and pancreatic stents to avoid early complications and late adverse events. There are four purposes of deploying biliary and pancreatic stenting after ESD: to prevent post-ERCP pancreatitis and cholangitis; to drain bile and pancreatic juice far from the wound surface to reduce

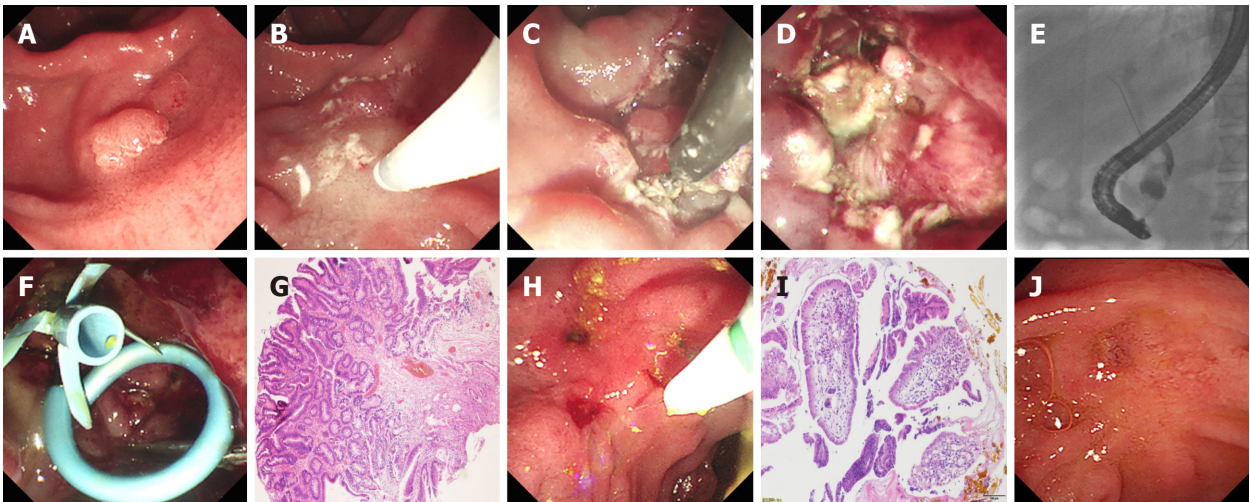


Figure 1 Endoscopic and pathological characteristics of case 1. A-D: Hybrid endoscopic submucosal dissection (ESD) for recurrent, laterally spreading, duodenal papillary adenoma, including marks, submucosal injection and submucosal dissection. The lesion was resected completely using a polypectomy snare, and the artificial ulcer was visible; E: Endoscopic retrograde cholangiopancreatography (ERCP) showed the dilated biliary duct, common bile duct stones, and mildly dilated pancreatic duct; F: Biliary and pancreatic duct stents were implanted, and the endoscopic clips were used for closure of mucosal defects and prevention of complications; G: Hematoxylin and eosin stained resected specimen showing tubulovillous adenoma with a clean cutting edge, 4 ×; H: Endoscopic follow-up 3 mo after hybrid ESD, biliary stent and stones were extracted by ERCP; I: Histological follow-up of biopsy specimen revealed chronic and acute inflammation of small intestinal mucosa, 10 ×; J: Endoscopic follow-up 20 mo after hybrid ESD with no recurrence.

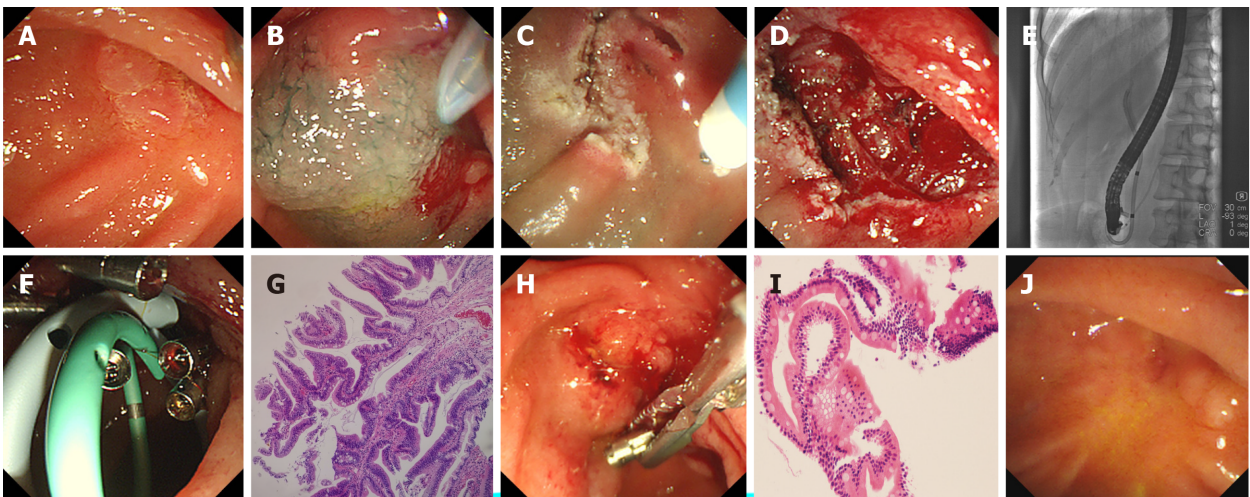


Figure 2 Endoscopic and pathological characteristics of case 2. A: Red and protuberant laterally spreading lesion was seen in the mucosa around the opening of the pancreaticobiliary duct; B-D: Hybrid endoscopic submucosal dissection (ESD) such as submucosal injection and submucosal dissection are shown, and the artificial ulcer was created; E and F: Endoscopic retrograde cholangiopancreatography showed the normal bile and pancreatic ducts, biliary and pancreatic stents were implanted, and close incision was performed by endoscopic clips; G: Hematoxylin and eosin-stained resected specimen showing tubulovillous adenoma with clean cutting edge, 4 ×; H: Endoscopic follow-up 3 mo after hybrid ESD showed that the pancreatic stent disappeared, and the biliary stent and clips were removed; I: Histological follow-up of biopsy specimen revealed chronic and acute inflammation of small intestinal mucosa, 20 ×; J: Endoscopic follow-up 38 mo after hybrid ESD with no recurrence.

the risk of perforation and bleeding; to avoid closure of the pancreaticobiliary opening when the hemostatic clip closes the wound; and to prevent biliary and/or pancreatic stenosis.

CONCLUSION

In conclusion, hybrid ESD by duodenoscope is technically challenging, and may be curative for recurrent, laterally spreading ampullary adenomas < 2 cm in diameter. It should be performed with caution by experienced endoscopists in selected patients to avoid severe complications.

ARTICLE HIGHLIGHTS

Research background

Management of recurrent ampullary adenomas after endoscopic papillectomy is still controversial. Some patients have to receive repetitive endoscopic interventions due to the limitations of conventional endoscopic techniques.

Research motivation

Endoscopic submucosal dissection (ESD) has become a standard treatment for early gastrointestinal neoplasms, as well as an appropriate technique for resection locally remnant and recurrent lesions. At present, ESD is rarely used in the treatment of duodenal papillary lesions by duodenoscope due to the complex anatomy of duodenal papilla and technical difficulties.

Research objectives

In this retrospective study, we report our preliminary experience of hybrid ESD by duodenoscope combined with biliary and pancreatic stent placement for recurrent, laterally spreading, duodenal papillary lesions.

Research methods

Two patients with recurrent, laterally spreading, papillary adenomas underwent hybrid ESD by duodenoscope and endoscopic retrograde cholangiopancreatography (ERCP). Outcomes, including endoscopic and histopathological characteristics, time of hybrid ESD and ERCP procedures, *en bloc* resection, procedure-related complications, and hospital stay were recorded.

Research results

Hybrid ESD using duodenoscope and subsequent biliary and pancreatic stent placement was performed successfully for both patients. The endoscopic size of recurrent papillary lesions was no more than 2 cm. No serious complications occurred during the intraoperative and postoperative periods. Histopathological examination revealed tubulovillous adenoma negative for neoplastic extension at the cut margin in both patients. No recurrence were observed during follow-up.

Research conclusions

Hybrid ESD by duodenoscope is technically challenging, and may be curative for recurrent, laterally spreading papillary adenomas < 2 cm.

Research perspectives

Hybrid ESD by duodenoscope should be performed cautiously in selected patients by experienced endoscopists. A prospective study should be conducted to compare hybrid ESD with conventional endoscopic techniques to gain more evidence.

REFERENCES

- 1 **El Hajj II**, Côté GA. Endoscopic diagnosis and management of ampullary lesions. *Gastrointest Endosc Clin N Am* 2013; **23**: 95-109 [PMID: 23168121 DOI: 10.1016/j.giec.2012.10.004]
- 2 **ASGE Standards of Practice Committee**, Chathadi KV, Khashab MA, Acosta RD, Chandrasekhara V, Eloubeidi MA, Faulx AL, Fonkalsrud L, Lightdale JR, Salzman JR, Shaikat A, Wang A, Cash BD, DeWitt JM. The role of endoscopy in ampullary and duodenal adenomas. *Gastrointest Endosc* 2015; **82**: 773-781 [PMID: 26260385 DOI: 10.1016/j.gie.2015.06.027]
- 3 **Napoleon B**, Gincul R, Ponchon T, Berthiller J, Escourrou J, Canard JM, Boyer J, Barthet M, Ponsot P, Laugier R, Helbert T, Coumaros D, Scoazec JY, Mion F, Saurin JC; Société Française d'Endoscopie Digestive (SFED; French Society of Digestive Endoscopy). Endoscopic papillectomy for early ampullary tumors: long-term results from a large multicenter prospective study. *Endoscopy* 2014; **46**: 127-134 [PMID: 24477368 DOI: 10.1055/s-0034-1364875]
- 4 **Tanaka S**, Kashida H, Saito Y, Yahagi N, Yamano H, Saito S, Hisabe T, Yao T, Watanabe M, Yoshida M, Kudo SE, Tsuruta O, Sugihara KI, Watanabe T, Saitoh Y, Igarashi M, Toyonaga T, Ajioka Y, Ichinose M, Matsui T, Sugita A, Sugano K, Fujimoto K, Tajiri H. JGES guidelines for colorectal endoscopic submucosal dissection/endoscopic mucosal resection. *Dig Endosc* 2015; **27**: 417-434 [PMID: 25652022 DOI: 10.1111/den.12456]
- 5 **Martin JA**, Haber GB. Ampullary adenoma: clinical manifestations, diagnosis, and treatment. *Gastrointest Endosc Clin N Am* 2003; **13**: 649-669 [PMID: 14986792 DOI: 10.1016/s1052-5157(03)00101-6]
- 6 **Fischer HP**, Zhou H. Pathogenesis of carcinoma of the papilla of Vater. *J Hepatobiliary Pancreat Surg* 2004; **11**: 301-309 [PMID: 15549428 DOI: 10.1007/s00534-004-0898-3]

- 7 **de Castro SM**, van Heek NT, Kuhlmann KF, Busch OR, Offerhaus GJ, van Gulik TM, Obertop H, Gouma DJ. Surgical management of neoplasms of the ampulla of Vater: local resection or pancreatoduodenectomy and prognostic factors for survival. *Surgery* 2004; **136**: 994-1002 [PMID: [15523392](#) DOI: [10.1016/j.surg.2004.03.010](#)]
- 8 **Cheng CL**, Sherman S, Fogel EL, McHenry L, Watkins JL, Fukushima T, Howard TJ, Lazzell-Pannell L, Lehman GA. Endoscopic snare papillectomy for tumors of the duodenal papillae. *Gastrointest Endosc* 2004; **60**: 757-764 [PMID: [15557951](#) DOI: [10.1016/s0016-5107\(04\)02029-2](#)]
- 9 **Sahar N**, Krishnamoorthi R, Kozarek RA, Gluck M, Larsen M, Ross AS, Irani S. Long-Term Outcomes of Endoscopic Papillectomy for Ampullary Adenomas. *Dig Dis Sci* 2020; **65**: 260-268 [PMID: [31463668](#) DOI: [10.1007/s10620-019-05812-2](#)]
- 10 **Tringali A**, Valerii G, Boškoski I, Familiari P, Landi R, Perri V, Costamagna G. Endoscopic snare papillectomy for adenoma of the ampulla of vater: Long-term results in 135 consecutive patients. *Dig Liver Dis* 2020; **52**: 1033-1038 [PMID: [32532606](#) DOI: [10.1016/j.dld.2020.05.029](#)]
- 11 **Lü S**, Jiang M, Liu F, Tang H, Yang Y, Zhang W, Zhang M, Jin Z, Li Z. Endoscopic papillectomy of benign papillary tumors: A single-center experience. *Medicine (Baltimore)* 2020; **99**: e20414 [PMID: [32481436](#) DOI: [10.1097/MD.00000000000020414](#)]
- 12 **Lee R**, Huelsen A, Gupta S, Hourigan LF. Endoscopic ampullectomy for non-invasive ampullary lesions: a single-center 10-year retrospective cohort study. *Surg Endosc* 2020; : [PMID: [32215745](#) DOI: [10.1007/s00464-020-07433-7](#)]
- 13 **Li S**, Wang Z, Cai F, Linghu E, Sun G, Wang X, Meng J, Du H, Yang Y, Li W. New experience of endoscopic papillectomy for ampullary neoplasms. *Surg Endosc* 2019; **33**: 612-619 [PMID: [30421083](#) DOI: [10.1007/s00464-018-6577-2](#)]
- 14 **Peng CY**, Lv Y, Shen SS, Wang L, Ding XW, Zou XP. The impact of endoscopic ultrasound in preoperative evaluation for ampullary adenomas. *J Dig Dis* 2019; **20**: 248-255 [PMID: [30834717](#) DOI: [10.1111/1751-2980.12719](#)]
- 15 **Okano N**, Igarashi Y, Hara S, Takuma K, Kamata I, Kishimoto Y, Mimura T, Ito K, Sumino Y. Endosonographic preoperative evaluation for tumors of the ampulla of vater using endoscopic ultrasonography and intraductal ultrasonography. *Clin Endosc* 2014; **47**: 174-177 [PMID: [24765600](#) DOI: [10.5946/ce.2014.47.2.174](#)]
- 16 **Yamamoto K**, Iwasaki E, Itoi T. Insights and updates on endoscopic papillectomy. *Expert Rev Gastroenterol Hepatol* 2020; **14**: 435-444 [PMID: [32380873](#) DOI: [10.1080/17474124.2020.1766965](#)]
- 17 **Catalano MF**, Linder JD, Chak A, Sivak MV Jr, Rajiman I, Geenen JE, Howell DA. Endoscopic management of adenoma of the major duodenal papilla. *Gastrointest Endosc* 2004; **59**: 225-232 [PMID: [14745396](#) DOI: [10.1016/s0016-5107\(03\)02366-6](#)]
- 18 **Rahmi G**, Tanaka S, Ohara Y, Ishida T, Yoshizaki T, Morita Y, Toyonaga T, Azuma T. Efficacy of endoscopic submucosal dissection for residual or recurrent superficial colorectal tumors after endoscopic mucosal resection. *J Dig Dis* 2015; **16**: 14-21 [PMID: [25366265](#) DOI: [10.1111/1751-2980.12207](#)]
- 19 **Oka S**, Tanaka S, Kaneko I, Mouri R, Hirata M, Kanao H, Kawamura T, Yoshida S, Yoshihara M, Chayama K. Endoscopic submucosal dissection for residual/Local recurrence of early gastric cancer after endoscopic mucosal resection. *Endoscopy* 2006; **38**: 996-1000 [PMID: [17058164](#) DOI: [10.1055/s-2006-944780](#)]
- 20 **Yamamoto Y**, Yoshizawa N, Tomida H, Fujisaki J, Igarashi M. Therapeutic outcomes of endoscopic resection for superficial non-ampullary duodenal tumor. *Dig Endosc* 2014; **26** Suppl 2: 50-56 [PMID: [24750149](#) DOI: [10.1111/den.12273](#)]
- 21 **Marques J**, Baldaque-Silva F, Pereira P, Arnelo U, Yahagi N, Macedo G. Endoscopic mucosal resection and endoscopic submucosal dissection in the treatment of sporadic nonampullary duodenal adenomatous polyps. *World J Gastrointest Endosc* 2015; **7**: 720-727 [PMID: [26140099](#) DOI: [10.4253/wjge.v7.i7.720](#)]
- 22 **Jung JH**, Choi KD, Ahn JY, Lee JH, Jung HY, Choi KS, Lee GH, Song HJ, Kim DH, Kim MY, Bae SE, Kim JH. Endoscopic submucosal dissection for sessile, nonampullary duodenal adenomas. *Endoscopy* 2013; **45**: 133-135 [PMID: [23364841](#) DOI: [10.1055/s-0032-1326178](#)]
- 23 **Yamao T**, Isomoto H, Kohno S, Mizuta Y, Yamakawa M, Nakao K, Irie J. Endoscopic snare papillectomy with biliary and pancreatic stent placement for tumors of the major duodenal papilla. *Surg Endosc* 2010; **24**: 119-124 [PMID: [19517183](#) DOI: [10.1007/s00464-009-0538-8](#)]



Published by **Baishideng Publishing Group Inc**
7041 Koll Center Parkway, Suite 160, Pleasanton, CA 94566, USA

Telephone: +1-925-3991568

E-mail: bpgoffice@wjgnet.com

Help Desk: <https://www.f6publishing.com/helpdesk>

<https://www.wjgnet.com>

