Gastroenterology
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### Further information, URLs

- **Erbe Website**: [www.erbe-med.com](http://www.erbe-med.com)
- **Erbeplus academy / Further education**: [https://de.erbe-med.com/de-de/fortbildung/](https://de.erbe-med.com/de-de/fortbildung/)
- **Videos on gastroenterology**: [www.medical-video.com](http://www.medical-video.com)
These current studies are largely based on the learning curve of POEM Preservation and Incorporation of Valuable endoscopic Innovations Consortium for Assessment and Research (NOSCAR) white paper, ASGE since the last two comprehensive analyses [Natural Orifice Surgery Synopsis: A review was carried out of the latest literature on POEM Sep;31(5):430-40. Stavropoulos SN, Modayil R, Friedel D. Per oral endoscopic myotomy (POEM) USING HYBRIDKNIFE using HybridKnife, POEM could be carried out with the Eckardt score: ≤3 for 96.5% of the patients in both groups. Conclusion of the authors: POEM is considered a safe and effective treatment option for achalasia, however prospective multicenter studies are deemed necessary in order to demonstrate clinical efficiency.

Li QL, Zhou PH. Perspective on peroral endoscopic myotomy for achalasia: Zhongshan experience. Gut Liver. 2015 Mar; 9(2):152-8. Synopsis: Article that provides a review of POEM (peroral endoscopic myotomy) at Zhongshan hospital, Fudan University, China. In addition to other techniques, the waterjet exposure technique was introduced with the aim of simplifying the procedure and improving remission rates.

Conclusion of the authors: POEM was validated as a treatment for achalasia. Questions remain with regard to long-term effectiveness in comparison with LHM (laparoscopic Heller myotomy).


Conclusion of the authors: POEM is a new, minimally-invasive option for the treatment of achalasia that should currently still only be carried out in specialized centers with extensive experience in interventional endoscopy. Initial reproducible results indicate a high therapeutic success rate as well as a low rate of complication. However, this must be qualified at this time by noting that long-term data is not yet available, for example also with regard to the occurrence of reflux disease. There is also just as little data up until now from prospective studies for comparison of POEM with other endoscopic or surgical treatment procedures. It would be helpful if previously untreated patients in the centers were to be included in corresponding studies.

Cai MY, Zhou PH, Yao LQ, Xu MD, Zhong YS, Li QL, Chen WF, Hu JW, Cui Z, Zhu BQ. Peroral endoscopic myotomy for idiopathic achalasia: randomized comparison of water-jet assisted versus conventional dissection technique. Surg Endosc. 2014 Apr;28(4):1158-65. Synopsis: In this POEM study of 100 patients, the effectiveness and safety of HybridKnife (HK) was compared with the conventional technique. Benefits of HybridKnife: surgical time was significantly shorter, mainly due to fewer instrument changes; less light bleeding, total operative time: (22.9 ± 6.7 vs. 35.9 ± 11.7 min; p < 0.0001), time for instrument changes: (2.0 ± 2.4 vs. 19.2 ± 7.6 min.; p < 0.0001), light bleeding: (3.6 ± 1.8 vs. 6.8 ± 5.2; p < 0.0001). There were no serious complications. Additional complications: HK: no subcutaneous emphysema vs. 4 incidences of subcutaneous emphysema with the conventional technique. (p = 0.17), no pneumonia vs. 3 cases with the conventional technique (p = 0.24). Success of treatment evaluated in accordance with the Eckardt score: ≤3 for 96.5% of the patients in both groups. Conclusion of the authors: With HybridKnife, POEM could be carried out by well-trained surgeons, the comparison of POEM with laparoscopic Heller myotomy (LHM) and extended POEM applications.

Result: POEM and LHM are comparable with regard to effectiveness (reduced dysphagia and Eckardt score) and complications, including GERD. POEM was successfully carried out in numerous patients including children (with prior treatment for achalasia as well as those with spastic disorders of the esophagus).

Conclusion of the authors: POEM was validated as a treatment for achalasia. Questions remain with regard to long-term effectiveness in comparison with LHM (laparoscopic Heller myotomy).

A. Neugebauer, M. Zenker, M. D. Enderle. Grundlagen der Hochfrequenz-Chirurgie: Teil 2: Anwendungen in der Endoskopie Endo heute 2012; 25(4): 225-234. Synopsis: All members of staff working in endoscopy should have basic knowledge of electrosurgery. This article explains the most important application areas of electrosurgery in clear and systematic fashion.

A. Repici, M. D. Enderle, A. Neugebauer, H. Manner, A. Eickhoff. Grundlagen der Hochfrequenz-Chirurgie: Teil 2: Anwendungen in der Endoskopie Endo heute 2012; 25(4): 225-234. Synopsis: This article explains the most important application areas of electrosurgery in clear and systematic fashion. Pimentel-Nunes P, Dinis-Ribeiro, Ponchon T, Repici A, Vieth M, De Ceglie A, Amato A, Berr F, Bhandari P, Bialek A, Conio M, Haringsma J, Langner C, Meisner S, Messmann H, Morino M, Neuhaus H, Piesseaux H, Rugge M, Saunders BP, Robaszekwicz M, Seewald S, Kaschin S, Dumoncoeur JM, Hassan C, Deprez PH. Endoscopic submucosal dissection: European Society of Gastrointestinal Endoscopy, (ESGE) Guideline. Endoscopy. 2015 Sep;47(9):829-54. Synopsis: ESGE guideline that discusses in particular the benefits and disadvantages of ESD and EMR. The indications for ESD and EMR that are discussed in terms of application with ESUs. The authors consider application areas of electrosurgery in clear and systematic fashion. The aim is to provide an overview as well as assistance for medical personnel who work with electrosurgery on a daily basis. The fundamentals of electrosurgery are illustrated in simple and comprehensible fashion. The aim is to provide an overview as well as assistance for medical personnel who work with electrosurgery on a daily basis. This technique is used in numerous procedures and has become an integral part of modern medicine.


J. F. Rey, U. Beilenhoff, C.S. Neumann, J. M. Dumoncoeur. European Society of Gastrointestinal Endoscopy (ESGE) guideline: the use of electrosurgical units. Endoscopy. 2010 Sep; 42(9):764-72. Synopsis: ESGE guideline in which, amongst other things, ESD and EMR are discussed in terms of application with ESUs. The authors consider ENDOCUT mode and intermittent mode to be the usual settings to be used in this case. In comparison with EMR, ESD is technically more demanding and time-consuming, however it facilitates en-bloc resection in most cases.

POEM USING HYBRIDKNIFE®

Stavropoulos SM, Modayil R, Friedel D. Per oral endoscopic myotomy for the treatment of achalasia. Curr Opin Gastroenterol. 2015 Sep;31(5):430-40. Synopsis: A review was carried out of the latest literature on POEM since the last two comprehensive analyses [Natural Orifice Surgery Consortium for Assessment and Research (NOSCAR) white paper, ASGE Preservation and Incorporation of Valuable endoscopic Innovations (PIVI)], with integration of these findings into the POEM guidelines. These current studies are largely based on the learning curve of POEM procedures. It would be helpful if previously untreated patients in the centers were to be included in corresponding studies.
more quickly, with easier submucosal injection and fewer incidences of light bleeding.


Synopsis: Prospective study of 17 patients with achalasia.
Result: In all patients, POEM reduces the dysphagia symptom score as well as the pressure at rest in the lower esophageal sphincter. No severe complications were observed in connection with POEM.
Conclusion of the authors: The short-term results of POEM were excellent for achalasia.


Synopsis: Study of 12 patients following Heller myotomy. The primary goal was to alleviate symptoms during the follow-up period.
Result: No severe complications were observed in connection with POEM. While the mean follow-up period was 10.4 months (5-14 months), successful treatment was achieved for 11/12 patients.
Conclusion of the authors: After failure of Heller myotomy, POEM appears to be a highly-promising new form of treatment that leads to short-term alleviation of symptoms in >90% of cases.

ESD USING HYBRIDKNIFE®


Synopsis: In small porcine and in human stomachs (antrum and corpus), submucosal injection with glycerol was investigated in comparison with 0.9% NACL for suitability in ESD with HybridKnife.
Result: No differences were apparent between the solutions with regard to perforation, bleeding and R0 resection. Dissection was significantly faster when glycerol was used for submucosal injection (27.44 vs. 16.44 mm²/min; p < 0.001).

Surgeons judged safety and user-friendliness using a dissection score based on a visual analog scale: in the case of dissection using glycerol, the dissection score was significantly higher (5.9 vs. 2.9; p < 0.001).
Conclusion of the authors: In the case of ESD, submucosal injection using glycerol with HybridKnife is feasible and increases the safety and speed of the procedure in comparison with 0.9% NACL solution.


Synopsis: Randomized controlled study of ESD in early gastric neoplasia (adenomas and adenocarcinomas) with HybridKnife in comparison with the conventional technique.
Result: No significant differences in terms of the size of the lesions, R0 resection rates, perforations, late bleeding, full remission rate of neoplasia at 3-month follow-up. With HybridKnife, the procedure can be completed considerably more quickly: (27.5 ± 30.6 vs. 35.0 ± 22.5 minutes, p = 0.0008).
Conclusion of the authors: ESD of gastric neoplasia using HybridKnife is effective and safe, faster and easier than in comparison with conventional ESD.


Synopsis: Prospective, single-arm pilot study of ESD in lateral spreading tumors (LSTs) in the colon and rectum (larger than 3 cm) using waterjet submucosal injection in 40 patients.
Result: Mean size of the lesions: 8 ± 10.9 cm (33-80 mm).
Time: 86.1 ± 35.5 minutes (40-190 min), en-bloc resection rate: 90% (36/40), curative resection rate (R0) = 80% (32 of 40 LSTs), perforations: 2.5%: (1 patient), these could be treated conservatively, post-operative bleeding = 5% (2 patients), this could be staunched endoscopically.
Conclusion of the authors: ESD is safe and effective for en-bloc and curative resection of large lateral spreading tumors in the colon and rectum. The operative times and complications are considered comparable with published data from specialized centers in Japan.


Synopsis: The goal of this prospective, monocentric study of 29 patients was to evaluate the effectiveness and safety of ESD performed using HybridKnife in the case of gastric neoplasia. Study goals: complete resection rate, time, complication rate and recurrence rate. Result: En-bloc resection rate (endoscopic): 90%, R0 resection (histologically confirmed): 18 out of 28 patients (64.3%), mean operative duration: 74 minutes (15-402 minutes), number of instrument changes required = 10, as a result of heavy bleeding that had to be staunched using forceps, 30-day morbidity: 4/30 (13.8%) postoperative pain: 3 patients, late bleeding: 1 patient, death of one 93-year-old patient: no indication of a connection with the surgery. Complete local remission of neoplasia: 25/28 patients (90.3%) at a follow-up of 22 months (6-44 months). In one patient, a metachromatic gastric adenocarcinoma was diagnosed after 54 weeks following initial waterjet treatment.
Conclusion of the authors: The technique is deemed to make ESD easier and is considered effective and safe.


Synopsis: Prospective pilot study. 40 patients with rectal LST lesions > 3 cm.
Result: En-bloc resection rate was 34/40 (85%). The curative R0 rate was 32/40 (80%). Average operative time was 112 min (84-166 min).
Conclusion of the authors: ESD in connection with HybridKnife is a safe and effective method for patients with large LST lesions of the rectum (for en-bloc and curative treatment). The operative time and complication rates are comparable with earlier data published by Japanese experts.


Review article on EMR and ESD
Conclusion of the author: The volume of evidence to demonstrate the su-
The easy reproducibility of needle-free submucosal injections using a physiological saline solution can accelerate procedures without the need for special solutions. These initial clinical results show that ESDH (endoscopic submucosal dissection using waterjet HybridKnife) is feasible and simplifies the procedure as fewer instrument changes are required.

**ENDOSCOPIC RESECTION OF SUBMUCOSAL TUMORS (STER)**


Synopsis: Prospective, randomized, controlled study of 31 patients with submucosal tumors of the upper GI tract. HybridKnife vs. conventional electric knife.

Result: All tumors were resected en-bloc and the R0 rate was 100%.

The operative time was 85.5 min (55-180 min).

Conclusion of the authors: ESDH (endoscopic submucosal dissection using waterjet HybridKnife) is feasible and simplifies the procedure as fewer instrument changes are required.

**ABLACTION OF BARRETT’S ESOPHAGUS WITH HYBRIDAPC**


Synopsis: Prospective study of 60 patients with Barrett’s esophagus, of which 50 patients were in fact included.

Result: 48 of 50 patients (96%; ITT: 49/60, 82%) achieved macroscopic complete remission with a median of 3.5 APC sessions.

Conclusion of the authors: The safety and effectiveness of HybridAPC was investigated on 50 patients with Barrett’s esophagus. In addition, a transparent cap was also used as an attachment on the endoscope. HybridAPC was shown to be effective and safe in the treatment of Barrett’s esophagus. The stricture formation rate was only 2%.


Synopsis: Review article on APC and HybridAPC technology. Result: After 3 months, macroscopic complete ablation could be achieved using HybridAPC in 96% of the 60 patients in a study. Histologically complete Barrett ablation could be achieved in 78% of the patients.

Conclusion of the authors: HybridAPC is a combination of two established electrosurgical techniques for improving the effectiveness of ablation. Known side-effects are significantly reduced as a result of HybridAPC.

Synopsis: Ex vivo study in a porcine esophagus model with prospectively randomized ex-vivo study, United European Gastroenterol J. 2014 prior submucosal injection (Hybrid-APC) versus standard APC: a randomized study design for comparison of standard APC vs. HybridAPC with submucosal injection. An investigation was carried out of the penetration depth and damage to the submucosa / L. muscularis propria without submucosal injection using the standard probe, and with submucosal injection using the HybridAPC probe. Result: The penetration depth of the coagulation effect of standard APC and HybridAPC was not significantly different at 50 W, however at 70 W, it was significant. The submucosa was more severely damaged when the standard APC probe is used in comparison with HybridAPC. In the specimens, the L. propria muscularis was only damaged when the standard probe was used: 50 W: (1/6); 70 W: (6/6).

Conclusion of the authors: When the HybridAPC probe is used, the penetration depth of the coagulation effect is reduced. The L. propria muscularis is not damaged. Devices, instruments, settings: APC 2, flexible APC probe (20132-156) pulsed APC, effect 2, 50/70 W, gas flow: 0.9 l/min.


Synopsis: Patients were randomized following resection of focal Barrett’s esophagus neoplasia (HGIN) or mucosa carcinomas, and either treated using APC or subject to endoscopic observation. Both patient groups received proton-pump inhibitors. Study goal: Neoplasia recurrence rate, number of patients = 63, follow-up: 2 years. Result: APC = 3% (1 patient) vs. endoscopic observation = 36.7% (11 patients) with neoplasia during the follow-up period.

Conclusion of the authors: In comparison with endoscopic observation, thermal ablation of residual Barrett’s esophagus leads to a significant reduction in the neoplasia recurrence rate during the course of a limited follow-up period of 2 years.

Devices, settings, instruments: VIO 300 D, APC2, flexible 2.3 mm probe, power: pulsed APC, effect 2, 60 W, gas flow: 1.0 l/min.


Synopsis: Conference submission, report on a clinical pilot study of 60 patients.

Result: In 36/55 patients, ablation was completed following a mean of 3.4 APC sessions (1–10). It was possible to record the 3-month follow-up for 17 patients so far. Histologically residual Barrett’s esophagus was evident in 2/17 patients, with the result that complete Barrett ablation could be achieved in 88% of the patients.

Conclusion of the authors: Based on the interim analysis of the pilot series, i-APC (HybridAPC) was shown to be effective and safe in the ablation of Barrett’s esophagus. The rate of treatment-emergent esophageal stenosis was 0%. As a result, this rate was less than the level shown by previously established ablation techniques.

TUMOR ABLATION WITH APC 2


Synopsis: Patient study (28 patients) investigating the clinical effectiveness, safety and local recurrence rate in APC treatment of early gastric neoplasia. Results: Complications: perforations, bleeding and infection = 0; tumor recurrence = 25%; Follow-up: 24.8 months (2 to 78 months).

Conclusion of the authors: Safety profile of the methods: beneficial, however additional long-term studies on this method of treatment are deemed necessary.


Synopsis: The goal of this study is to compare the effects on tissue of pulsed effect 2 and precise APC mode. Ex vivo and in vivo animal model. This study comprised 3 explanted porcine esophagi and 8 live pigs under general anesthetic. Result: In vivo, a well-known type of surface tissue damage of the tunica mucosa (type A) and a new type of tissue damage limited to the tunica muscularis (type B) were detected. Ex vivo, only type A damage was visible. Thermal damage of the tunica muscularis was significantly lower with precise APC in comparison with pulsed APC in vivo. Pulsed effect 2 demonstrated a positive correlation between the penetration depth and power (r = 0.38, p < 0.0002) or application time for which the highest power setting was used (40 W, r = 0.77, p < .0001). This connection could not be demonstrated with precise APC due to its highly-superficial tissue effect.

Conclusion of the authors: Thermal damage to the esophageal tunica muscularis as a result of APC appears to be underestimated ex vivo. The scale of tissue damage was significantly lower with precise APC than with pulsed APC, which indicates that precise APC is particularly suited to the treatment of thermosensitive, thin-walled structures.


Conclusion of the authors: Retrospective investigation of the safety and effectiveness of APC 2/VIO APC with the application modes FORCE, PULSED AND PRECISE that have been extended in comparison with the previous model. 4 studies (600 patients) on the endoscopic treatment of gastrointestinal disorders were retrospectively evaluated. Minor complications were observed in 9-21% of the patients, serious complications in 1-7% of the patients. In comparison with PRECISE mode, PULSED and FORCED APC mode were reported to have shown a 50% higher tissue effect that would have to be taken into consideration. According to the authors, the use of the extended application modes is safe and effective when this fact is taken into consideration.


Conclusion of the authors: Prospective, non-randomized study of the effectiveness of the argon-plasma coagulation modes “PULSED” (46 patients) and “FORCED” (54 patients) in the endoscopic ablation of local obstructive tumors in the gastrointestinal tract. The ablation and
reduction of the tumor mass using both methods was around 85%. There were no serious complications such as, for example, perforations, abdominal abscesses, mediastinitis or fistulas. Using "FORCED" mode, tumors could be ablated more quickly. The authors describe the methods as effective, safe, fast and inexpensive.

TREATMENT OF VASCULAR MALFORMATIONS - GAVE SYNDROME


Synopsis: Retrospective study investigating the effectiveness of APC in the treatment of gastric vascular ectasia (GAVE). (n = 62 patients), average age: 72.6 ± 12.8 years, follow-up period: 46.9 ± 26.5 months. Success rate: 16 patients (25.8%).

Conclusion of the authors: APC is safe and effective in the initial treatment of gastric vascular ectasia, however it does not provide a long-term remedy for bleeding and anemia.


Synopsis: Retrospective investigation (n = 18 patients) regarding the treatment of radiation-induced, hemorrhagic gastric duodenal vascular ectasia (GOVE).

Result: Following treatment: significant increase in the Hb value: from 6.6 g/dL (2.9-9.5 g/dL) to 9.7 g/dL (7.1-12.7 g/dL) (p < 0.001), fewer blood transfusions: 9.1 (0-30) instead of 4.1 (0-15) units v. erythrocytes / patient (p = 0.038). No severe complications, no deaths within the follow-up period of 4.7 months (0.6-24.5 months), no recurrence.

Conclusion of the authors: With APC, radiation-induced hemorrhagic gastric duodenal vascular ectasia can be effectively and safely treated in the short term.

APC TREATMENT OF ZENKER'S DIVERITCULUM


Synopsis: 216 patients were treated using high-power APC (HP-ACP) during a total of 275 sessions. Primary indications were addictive ablation therapy in the case of Barrett’s esophagus, palliative treatment of esophageal cancer, gastric polyps / carcinomas, angiodysplasia, Zenker’s diverticulum and duodenal anastomoses. Result: The mean number of required treatment sessions was 1.7 (1-5). For palliative tumor ablation in the esophagus, the number of sessions was 2.3 (1-5). Minor complications (pain, dysphagia, neuromuscular irritation, asymptomatic accumulation of gas in the intestinal wall) were observed in 29/216 patients (13.4%). Severe complications (perforation, stenosis) in 2 patients (0.9%).

Conclusion of the authors: HP APC appears to be safe and effective in the treatment of different GI conditions, as well as when using different types of endoscopy coagulation in double-balloon enteroscopy.


Synopsis: APC was used in order to treat 125 patients with different types of gastrointestinal disorder.

Result: For local palliative treatment, APC was used successfully in addition to loop coagulation, dilatation, stent implantation and/or radiotherapy in order to treat the following indications: esophageal cancer, gastric carcinomas, rectosigmoid carcinomas and papillary carcinomas.

Repeated treatment was also effective in tubulovillous adenomas of the rectum, stomach, duodenum and papilla. Moreover, APC proved helpful in the coagulation of residual tissue, in staunching of bleeding after polypectomies and in the endoscopic treatment of Zenker’s diverticulum.

Finally, APC was helpful in the coagulation of multiple gastric polyps, in staunching of bleeding in surface bulbus ulcers, following dilatation of benign anastomotic stenoses in the esophagus and colon, and in the case of vascular malformations in the colon, duodenum, maxillary sinus, and in gastric antral vascular ectasia.

Conclusion of the authors: These preliminary experiences demonstrate that APC can be effectively implemented in numerous indications and that it would appear to be relatively safe.

RECANALISATION OF STENOSES


Synopsis: Prospective study of 90 patients on the treatment of stenoses in esophageal cancer. A comparison was made between: 1) APC vs. 2) APC plus bougienage vs. 3) Bougienage only. Primary study objective: dysphagia-free survival up to 6 months after treatment. Results: With APC plus bougienage, it was possible to prevent dysphagia for 115.63 days (95% CI, 105.31-125.95). Conclusion of the authors: APC and bougienage was a safe and comfortable treatment method for alleviating the symptoms of dysphagia in esophageal cancer without complications. Data taken from the abstract published in PubMed.


Synopsis: Individual case report: successful trimming of an EUS-HGS stent using APC. Devices, instruments, settings: VIO300D, APC2; ERBE Elektromedizin, Tuebingen, Germany; power: 80 W gas flow rate: 2 L / min.

POLYPECTOMIE WITH ENDO CUT® Q / PAPILLOTOMY WITH ENDO CUT® I


Synopsis: Use of the ENDOCUT mode from Erbe in a papillectomy (papillary tumor) in 115 patients, removed using the en-bloc or piecemeal
technique.
Result: 93 (80.9%) of the patients could be treated in just one session. The full resection rate was 98.2%.
Conclusion of the authors: Endoscopic papillectomy was acknowledged as a safe and reliable treatment of ampullary adenomas.

Synopsis: Feature represents the current state-of-the-art of electrosurgical generators. The article notes a safety aspect in the use of argon-plasma coagulation. It is noted that the power output as well as the duration of application are considered critical to the thermal effect in the tissue. Devices, instruments, settings: no information provided.

Synopsis: The goal of this study was to evaluate and compare the diagnostic quality of polyps following a snare polypectomy (using two different electrosurgical currents). Result: 116 patients received 148 polypectomies (78 using intermittent mode and 70 using ENDOCUT mode). The thermal intensity with ENDOCUT was lower than in the case of intermittent mode (p < 0.02). Polyps that were resected using ENDOCUT could be more easily evaluated at the margins (75.7% to 60.3%, p = 0.046). The overall tissue structure was similar in both groups. Polyps that were removed using intermittent mode demonstrated poorer quality overall in comparison with polyps removed using ENDOCUT (p = 0.024).
Conclusion of the authors: Significant tissue damage occurred more often when intermittent mode was used than when using ENDOCUT. The overall quality of the samples was better when ENDOCUT mode was used.

Synopsis: Retrospective study of 134 patients with choledocholithiasis. Comparison investigating whether an automatically controlled cutting system (ENDOCUT modes) can reduce the complication rates of endoscopic sphincterotomy (EST) and serum hyperamylasemia following EST in comparison with conventional intermittent mode.
Result: Of the 134 patients, 79 were assigned to the conventional group (intermittent mode) and 55 to the ENDOCUT mode group. There was no significant difference between the groups in terms of age, gender and serum amylase level prior to EST. Complications were determined in 5 patients in the ENDOCUT group (9%): Hyperamylasemia (5 times high than normal) in 4 patients and moderate pancreatitis in one patient. Complications were determined in 13 patients in the conventional intermittent mode group (16%): Hyperamylasemia in 12 patients and moderate pancreatitis in one patient. Serum amylase level was raised in both groups after 24 hours EST (P < 0.02). The average serum amylase level 24 hours after EST in the conventional intermittent mode group was significantly higher than in the ENDOCUT mode group (p < 0.05).
Conclusion of the authors: ENDOCUT mode offers safety benefits in comparison with conventional mixed cutting mode for pancreatitis following EST as a result of a reduction in hyperamylasemia.