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

World Journal of *Gastroenterology*

World J Gastroenterol 2022 February 7; 28(5): 502-607

Published by Baishideng Publishing Group Inc

World Journal of Gastroenterology

Contents

Weekly Volume 28 Number 5 February 7, 2022

World Journal of Gastroenterology

Weekly Volume 28 Number 5 February 7, 2022

Contents

ABOUT COVER

Editorial Board Member of *World Journal of Gastroenterology*, Guang Ji, MD, PhD, Professor, Institute of Digestive Diseases, Longhua Hospital, Shanghai University of Traditional Chinese Medicine, No. 725 South Wanping Road, Shanghai 200032, China. jiliver@vip.sina.com

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 2021 edition of Journal Citation Report® cites the 2020 impact factor (IF) for *WJG* as 5.742; Journal Citation Indicator: 0.79; IF without journal self cites: 5.590; 5-year IF: 5.044; Ranking: 28 among 92 journals in gastroenterology and hepatology; and Quartile category: Q2. The *WJG*'s CiteScore for 2020 is 6.9 and Scopus CiteScore rank 2020: Gastroenterology is 19/136.

RESPONSIBLE EDITORS FOR THIS ISSUE

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

EDITORIAL BOARD MEMBERS
http://www.wjgnet.com/1007-9327/editorialboard.htm

PUBLICATION DATE
February 7, 2022

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

World Journal of Gastroenterology

Submit a Manuscript: https://www.f6publishing.com

World J Gastroenterol 2022 February 7; 28(5): 588-593

DOI: 10.3748/wjg.v28.i5.588

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

CASE REPORT

Simultaneous endoscopic and video-assisted retroperitoneal debridement in walled-off pancreatic necrosis using a laparoscopic access platform: Two case reports

Lars Lindgaard, Morten Laksáfoss Lauritsen, Srdan Novovic, Erik Feldager Hansen, John Gásdal Karstensen, Palle Nordblad Schmidt

ORCID number: Lars Lindgaard 0000-0001-7275-3093; Morten Laksáfoss Lauritsen 0000-0002-5824-8207; Srdan Novovic 0000-0001-6246-874X; Erik Feldager Hansen 0000-0003-4323-4133; John Gásdal Karstensen 0000-0001-9333-0399; Palle Nordblad Schmidt 0000-0001-9243-8824.

Author contributions: Lindgaard L, Novovic S, Hansen EF, and Schmidt PN designed the study; Lindgaard L and Schmidt PN drafted the manuscript; Karstensen JG edited the manuscript; all authors critically revised the manuscript and approved the final content.

Informed consent statement: Written informed consent was obtained from the patients for publication of their case details and accompanying images.

Conflict-of-interest statement: We declare no conflict of interests.

CARE Checklist (2016) statement: The authors have read the CARE Checklist (2016), and the manuscript was prepared and revised according to the CARE Checklist (2016).

Country/Territory of origin:

Lars Lindgaard, Morten Laksáfoss Lauritsen, Srdan Novovic, Erik Feldager Hansen, John Gásdal Karstensen, Palle Nordblad Schmidt, Pancreatitis Centre East (PACE), Gastro Unit,Copenhagen University Hospital–Amager and Hvidovre, Hvidovre 2650, Capital Region, Denmark

Morten Laksáfoss Lauritsen, Srdan Novovic, John Gásdal Karstensen, Department of Clinical Medicine, University of Copenhagen, Copenhagen 2100, Capital Region, Denmark

Corresponding author: John Gásdal Karstensen, MD, PhD, Associate Professor, Chief Physician, Surgeon, Pancreatitis Centre East (PACE), Gastro Unit, Copenhagen University Hospital–Amager and Hvidovre, Kettegård Alle 30, Hvidovre 2650, Capital Region, Denmark. john.gasdal.karstensen@regionh.dk

Abstract

BACKGROUND

Infected walled-off necrosis is a potentially life-threatening complication of necrotizing pancreatitis. While some patients can be treated by drainage alone, many patients also need evacuation of the infected debris. Central necroses in relation to the pancreatic bed are easily reached *via* an endoscopic transluminal approach, whereas necroses that involve the paracolic gutters and the pelvis are most efficiently treated *via* a percutaneous approach. Large and complex necroses may need a combination of the two methods.

CASE SUMMARY

Transluminal and percutaneous drainage followed by simultaneous endoscopic and modified video-assisted retroperitoneal debridement was carried out in two patients with very large (32-38 cm), infected walled-off necroses using a laparoscopic access platform. After 34 d and 86 d and a total of 9 and 14 procedures, respectively, complete regression of the walled-off necroses was achieved. The laparoscopic access platform improved both access to the cavities as well as the overview. Simultaneous transluminal and percutaneous necrosectomy are feasible with the laparoscopic access platform serving as a useful adjunctive.

CONCLUSION

This approach may be necessary to control infection and achieve regression in some patients with complex collections.

Denmark

Specialty type: Gastroenterology and hepatology

Provenance and peer review: Invited article; Externally peer reviewed.

Peer-review model: Single blind

Peer-review report's scientific quality classification
Grade A (Excellent): A
Grade B (Very good): 0
Grade C (Good): C
Grade D (Fair): 0
Grade E (Poor): 0

Received: March 4, 2021
Peer-review started: March 4, 2021
First decision: May 1, 2021
Revised: May 3, 2021
Accepted: December 28, 2021
Article in press: December 28, 2021
Published online: February 7, 2022

P-Reviewer: De Vincentis F, Liu C
S-Editor: Fan JR
L-Editor: Filipodia
P-Editor: Fan JR

Key Words: Acute necrotizing pancreatitis; Walled-off necroses; Minimally invasive surgical procedures; Multiple organ failure; Natural orifice transluminal endoscopy; Sepsis; Case report

Core Tip: Infected walled-off necrosis is a potentially life-threatening complication of necrotizing pancreatitis. In cases with large or complex walled-off necrosis, treatment combining endoscopic, transluminal and percutaneous video-assisted retroperitoneal debridement may be needed. We report on two patients who underwent a combination of endoscopic and percutaneous drainage and necrosectomy for their large, infected walled-off necroses. Furthermore, we introduce a laparoscopic access platform as a useful adjunctive to endoscopic necrosectomy and video-assisted retroperitoneal debridement.

Citation: Lindgaard L, Lauritsen ML, Novovic S, Hansen EF, Karstensen JG, Schmidt PN. Simultaneous endoscopic and video-assisted retroperitoneal debridement in walled-off pancreatic necrosis using a laparoscopic access platform: Two case reports. *World J Gastroenterol* 2022; 28(5): 588-593
URL: https://www.wjgnet.com/1007-9327/full/v28/i5/588.htm
DOI: https://dx.doi.org/10.3748/wjg.v28.i5.588

INTRODUCTION

Infected walled-off necrosis (WON) is a potentially life-threatening complication of necrotizing pancreatitis. Traditionally, such patients were treated *via* open surgery, but during the last decade an endoscopic or surgical step-up approach using minimally invasive techniques has become the treatment of choice[1-5].

Whereas some patients can be treated by drainage alone, many patients also need evacuation of the infected debris. In such cases, it is our experience that central necroses in relation to the pancreatic bed are most easily reached by endoscopic, transluminal drainage followed by endoscopic necrosectomy (EN), whereas necroses that involve the paracolic gutters and the pelvis are more effectively treated with percutaneous drainage and video-assisted retroperitoneal debridement (VARD).

We report on two patients who needed a combination of endoscopic and percutaneous drainage and necrosectomy for their large, infected WONs. Furthermore, we introduce a laparoscopic access platform (Figures 1 and 2) as a useful adjunctive to EN and VARD.

CASE PRESENTATION

Chief complaints

Case 1: A 36-year-old male with a history of proctocolectomy and J-pouch due to ulcerative colitis was admitted to a local hospital because of jaundice.

Case 2: An 18-year-old boy was admitted to another hospital with severe necrotizing pancreatitis of unknown etiology.

History of present illness

Case 1: Magnetic resonance imaging raised suspicion of a cholangiocarcinoma in the liver hilum, a diagnosis that was subsequently confirmed. An endoscopic retrograde cholangiopancreatography revealed multiple intra- and extrahepatic bile duct strictures consistent with primary sclerosing cholangitis but failed to relieve the obstruction. Subsequent percutaneous transhepatic biliary drainage was carried out. After the endoscopic retrograde cholangiopancreatography, the patient developed post-endoscopic retrograde cholangiopancreatography pancreatitis, severe sepsis, and multiple organ failure and was admitted to the intensive care unit (ICU).

Figure 1 GelPOINT path transanal access platform.

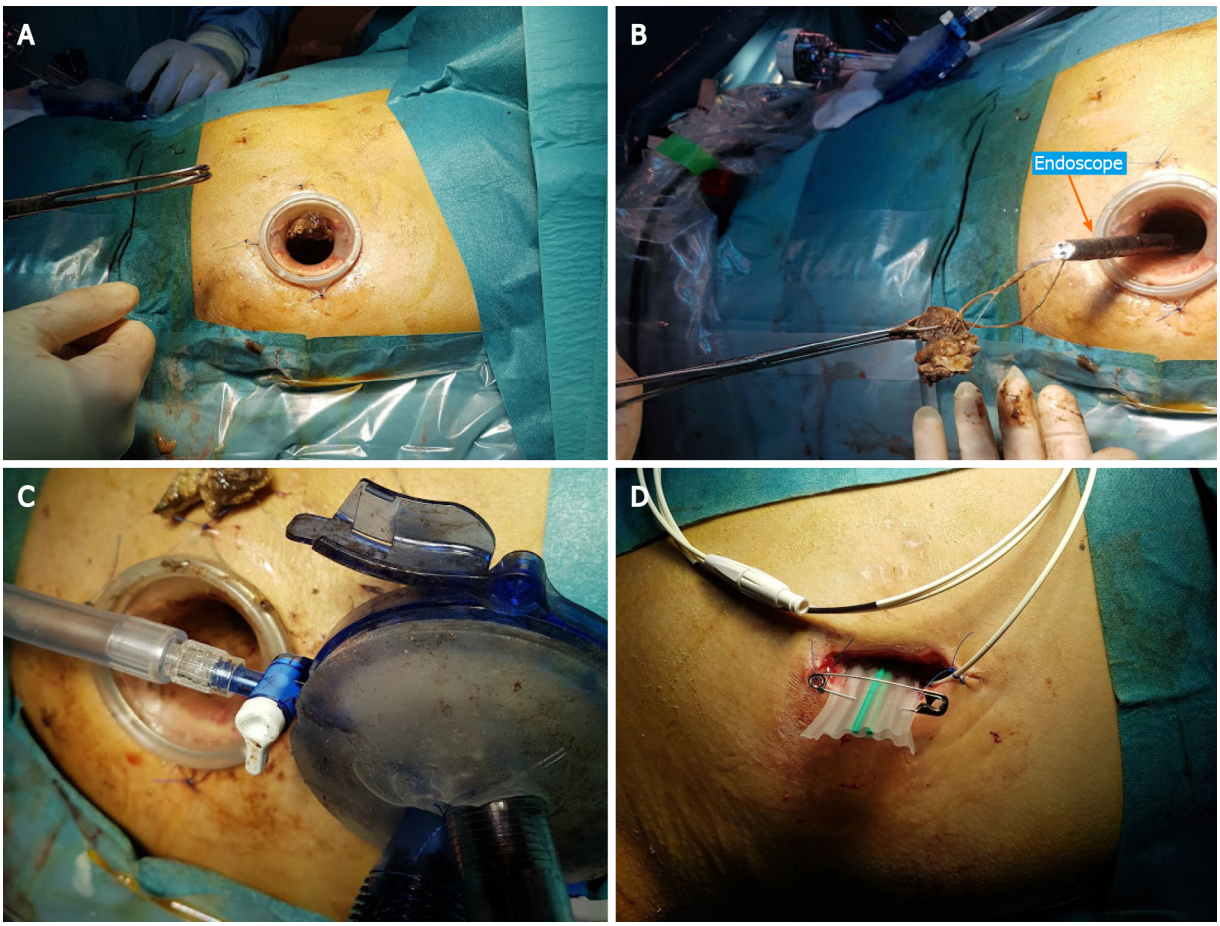

Figure 2 Endoscopic-laparoscopic retroperitoneal debridement. A: GelPOINT path transanal access platform with access channel placed in the video-assisted retroperitoneal debridement incision; B and C: Necrotic debris evacuated through the access channel during endoscopic, transluminal necrosectomy; D: Corrugated drainage sheet placed in the video-assisted retroperitoneal debridement incision at the end of the procedure.

Case 2: On day 2, he was referred to the ICU with respiratory and circulatory failure. On day 3, he developed intra-abdominal hypertension and renal failure with the need for dialysis.

FINAL DIAGNOSIS

Case 1: After 6 wk, which included severe episodes of gastrointestinal bleeding that needed coiling and laparotomy with creation of an ileostomy, he was referred to our hospital for endoscopic drainage of a large (12 cm × 14 cm × 38 cm), infected, left-sided WON extending from the spleen down through the left paracolic gutter into the left groin (Figure 3A).

Case 2: On day 43, he was referred to the ICU at our hospital with septicemia and a large (16 cm × 24 cm × 32 cm), infected, left-sided WON extending from the pancreatic bed into the pelvis (Figure 4A).

TREATMENT

Case 1: Between days 57 and 143, the patient underwent one endoscopic transluminal drainage, four EN, two VARD, and seven combined EN/VARD procedures.

Case 2: The same day, VARD was performed. Five days later, after only one VARD and one EN session, he was discharged from the ICU. The patient underwent a total of one endoscopic transluminal drainage, four VARD, two EN and two combined VARD/EN procedures, with the last procedure occurring on day 77.

OUTCOME AND FOLLOW-UP

Case 1: There was complete regression of the large WON (Figure 3B).

Case 2: There was complete regression of the large WON (Figure 4B).

DISCUSSION

In this paper, we describe 2 patients with necrotizing pancreatitis who needed treatment with a combination of EN and VARD. Both patients were referred to our hospital with signs of sepsis due to very large, infected WONs. We chose to combine two minimally invasive techniques to control the infection as quickly as possible in order to accelerate the treatment course.

EN is ideal for treating central WONs, whereas VARD is especially suitable in the case of lateral collections extending into the paracolic gutters and the pelvis. Even though flexible endoscopes can reach remote parts of the retroperitoneum, an isolated endoscopic approach can prove more time-consuming and delay evacuation of large collections as compared to a combined approach. Furthermore, large fluid collections may become compartmentalized over the course of treatment, creating isolated portions of the WON that can no longer be reached *via* the transluminal route. A successful combination of EN and VARD has been described elsewhere[6,7].

VARD has been thoroughly described in the literature[8,9]. However, use of a laparoscopic platform has not to our knowledge been documented. With the GelSeal cap closed and CO_2 insufflation through the platform, the large cavity could be expanded during the procedure, thus making debridement easier. During transgastric necrosectomy, debris was removed through the access channel of the platform by the surgeon or endoscopy assistants, reducing the procedure time. Finally, the platform facilitated debridement *via* the percutaneous route using the flexible endoscope. The success of the method needs to be investigated in prospective studies evaluating the risk of recurrence and fistula formation as well as matters relating to costs of the technique.

CONCLUSION

We conclude that simultaneous transluminal and percutaneous necrosectomy is practical and hypothesize that it may accelerate treatment in cases of complex WONs due to acute pancreatitis. Furthermore, a laparoscopic access platform is a useful adjunctive to the procedure.

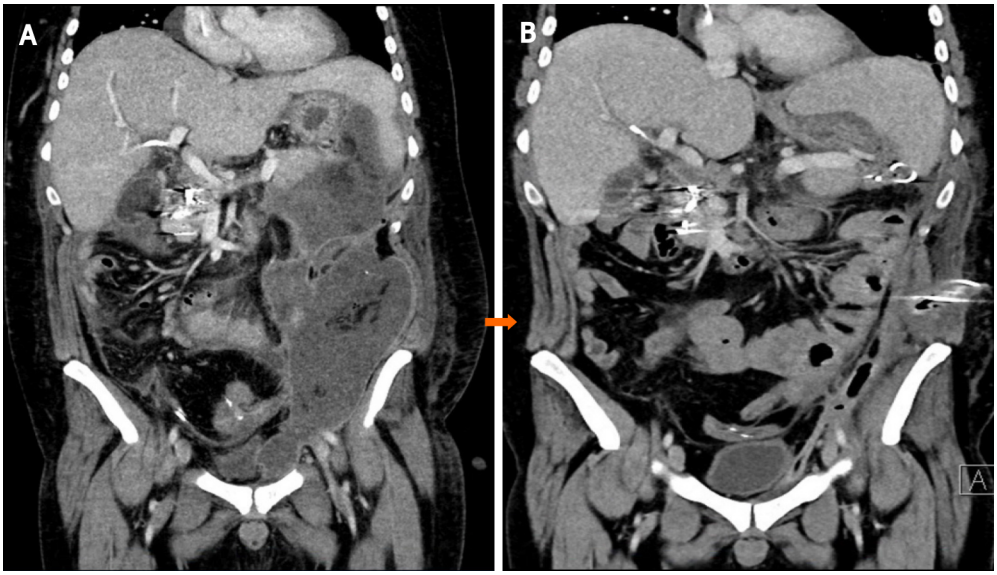

Figure 3 Case 1. Coronal computed tomography with walled-off necrosis. A: Before drainage; B: After 86 d and 14 procedures.

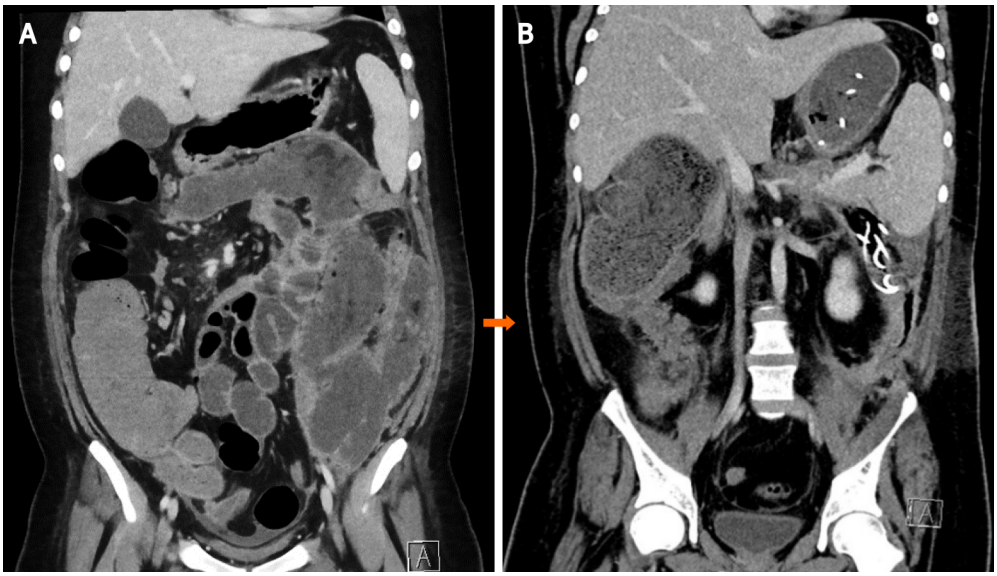

Figure 4 Case 2. Coronal computed tomography with walled-off necrosis. A: Before drainage; B: After 34 d and nine procedures.

REFERENCES

1 **van Santvoort HC**, Besselink MG, Bakker OJ, Hofker HS, Boermeester MA, Dejong CH, van Goor H, Schaapherder AF, van Eijck CH, Bollen TL, van Ramshorst B, Nieuwenhuijs VB, Timmer R, Laméris JS, Kruyt PM, Manusama ER, van der Harst E, van der Schelling GP, Karsten T, Hesselink EJ, van Laarhoven CJ, Rosman C, Bosscha K, de Wit RJ, Houdijk AP, van Leeuwen MS, Buskens E, Gooszen HG; Dutch Pancreatitis Study Group. A step-up approach or open necrosectomy for necrotizing pancreatitis. *N Engl J Med* 2010; **362**: 1491-1502 [PMID: 20410514 DOI: 10.1056/NEJMoa0908821]

2 **Horvath K**, Freeny P, Escallon J, Heagerty P, Comstock B, Glickerman DJ, Bulger E, Sinanan M, Langdale L, Kolokythas O, Andrews RT. Safety and efficacy of video-assisted retroperitoneal debridement for infected pancreatic collections: a multicenter, prospective, single-arm phase 2 study. *Arch Surg* 2010; **145**: 817-825 [PMID: 20855750 DOI: 10.1001/archsurg.2010.178]

3 **Bakker OJ**, van Santvoort HC, van Brunschot S, Geskus RB, Besselink MG, Bollen TL, van Eijck CH, Fockens P, Hazebroek EJ, Nijmeijer RM, Poley JW, van Ramshorst B, Vleggaar FP, Boermeester MA, Gooszen HG, Weusten BL, Timmer R; Dutch Pancreatitis Study Group. Endoscopic transgastric vs surgical necrosectomy for infected necrotizing pancreatitis: a randomized trial. *JAMA* 2012; **307**: 1053-1061 [PMID: 22416101 DOI: 10.1001/jama.2012.276]

4 **van Brunschot S**, van Grinsven J, van Santvoort HC, Bakker OJ, Besselink MG, Boermeester MA,

Bollen TL, Bosscha K, Bouwense SA, Bruno MJ, Cappendijk VC, Consten EC, Dejong CH, van Eijck CH, Erkelens WG, van Goor H, van Grevenstein WMU, Haveman JW, Hofker SH, Jansen JM, Laméris JS, van Lienden KP, Meijssen MA, Mulder CJ, Nieuwenhuijs VB, Poley JW, Quispel R, de Ridder RJ, Römkens TE, Scheepers JJ, Schepers NJ, Schwartz MP, Seerden T, Spanier BWM, Straathof JWA, Strijker M, Timmer R, Venneman NG, Vleggaar FP, Voermans RP, Witteman BJ, Gooszen HG, Dijkgraaf MG, Fockens P; Dutch Pancreatitis Study Group. Endoscopic or surgical step-up approach for infected necrotising pancreatitis: a multicentre randomised trial. *Lancet* 2018; **391**: 51-58 [PMID: 29108721 DOI: 10.1016/S0140-6736(17)32404-2]

5 **Schmidt PN**, Novovic S, Roug S, Feldager E. Endoscopic, transmural drainage and necrosectomy for walled-off pancreatic and peripancreatic necrosis is associated with low mortality--a single-center experience. *Scand J Gastroenterol* 2015; **50**: 611-618 [PMID: 25648776 DOI: 10.3109/00365521.2014.946078]

6 **Fagenholz PJ**, Thabet A, Mueller PR, Forcione DG. Combined endoscopic trangastric drainage and video assisted retroperitoneal pancreatic debridement - The best of both worlds for extensive pancreatic necrosis with enteric fistulae. *Pancreatology* 2016; **16**: 788-790 [PMID: 27344627 DOI: 10.1016/j.pan.2016.06.009]

7 **Sorrentino L**, Chiara O, Mutignani M, Sammartano F, Brioschi P, Cimbanassi S. Combined totally mini-invasive approach in necrotizing pancreatitis: a case report and systematic literature review. *World J Emerg Surg* 2017; **12**: 16 [PMID: 28331537 DOI: 10.1186/s13017-017-0126-5]

8 **Olthof PB**, Schnitzbauer AA, Schadde E. The HPB controversy of the decade: 2007-2017 - Ten years of ALPPS. *Eur J Surg Oncol* 2018; **44**: 1624-1627 [PMID: 29954639 DOI: 10.1016/j.ejso.2018.06.005]

9 **van Brunschot S**, Besselink MG, Bakker OJ, Boermeester MA, Gooszen HG, Horvath KD, van Santvoort HC. Video-Assisted Retroperitoneal Debridement (VARD) of Infected Necrotizing Pancreatitis: An Update. *Curr Surg Reports* 2013; **1**: 121 [DOI: 10.1007/s40137-013-0015-0]

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