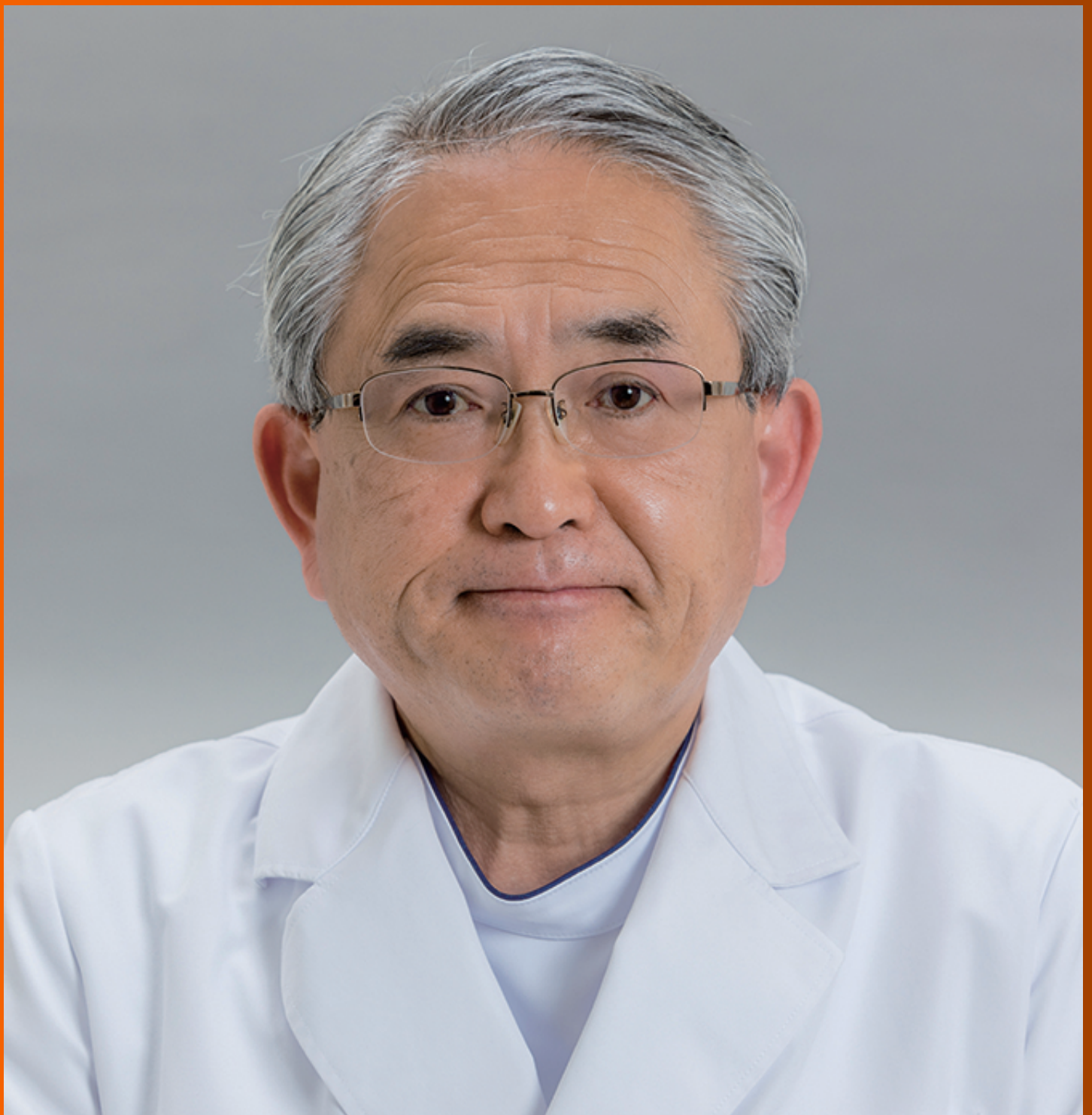


# World Journal of *Gastroenterology*

*World J Gastroenterol* 2024 July 7; 30(25): 3126-3184



**EDITORIAL**

- 3126 Large non-pedunculated colorectal polyp management: The elephant in the room  
*Jiang SX, Shahidi N*
- 3132 Alanine aminotransferase as a risk marker for new-onset metabolic dysfunction-associated fatty liver disease  
*Wang D, Zhou BY, Xiang L, Chen XY, Feng JX*
- 3140 Refining the targeted population and achieving better for colorectal cancer screening  
*Zhou NY, Lin YX, Chen LX, Ye LS, Hu B*
- 3143 Quantitative assessment of self-management in patients with non-alcoholic fatty liver disease: An unmet clinical need  
*Borriello R, Esposito G, Mignini I, Gasbarrini A, Zocco MA*
- 3147 Risk of hepatic decompensation from hepatitis B virus reactivation in hematological malignancy treatments  
*Barone M*
- 3152 Double-nylon purse-string suture technique: Another addition to the endoscopist's toolbox for full-thickness defect closure  
*Walia A, Trasolini RP, Shahidi N*

**ORIGINAL ARTICLE****Retrospective Study**

- 3155 Computed tomography-based radiomics combined with machine learning allows differentiation between primary intestinal lymphoma and Crohn's disease  
*Xiao MJ, Pan YT, Tan JH, Li HO, Wang HY*
- 3166 Predicting hepatocellular carcinoma: A new non-invasive model based on shear wave elastography  
*Jiang D, Qian Y, Gu YJ, Wang R, Yu H, Dong H, Chen DY, Chen Y, Jiang HZ, Tan BB, Peng M, Li YR*

**LETTER TO THE EDITOR**

- 3179 Scale offers the possibility of identifying adherence to lifestyle interventions in patients with non-alcoholic fatty liver disease  
*Liu CQ, Hu B*
- 3182 Back to the drawing board: Overview of the next generation of combination therapy for inflammatory bowel disease  
*Lowell JA, Farber MJ, Sultan K*

**ABOUT COVER**

Editorial Board Member of *World Journal of Gastroenterology*, Kentaro Yoshioka, MD, PhD, Director, Center for Liver Diseases, Meijo Hospital, Nagoya 460-0001, Aichi, Japan. kyoshiok8@gmail.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 abstracted and indexed in Science Citation Index Expanded (SCIE), MEDLINE, PubMed, PubMed Central, Scopus, Reference Citation Analysis, China Science and Technology Journal Database, and Superstar Journals Database. The 2024 edition of Journal Citation Reports® cites the 2023 journal impact factor (JIF) for *WJG* as 4.3; Quartile: Q1. The *WJG*'s CiteScore for 2023 is 7.8.

**RESPONSIBLE EDITORS FOR THIS ISSUE**

Production Editor: *Hua-Ge Yu*; Production Department Director: *Xu Guo*; Cover Editor: *Jia-Ru Fan*.

**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

**EXECUTIVE ASSOCIATE EDITORS-IN-CHIEF**

Xian-Jun Yu (Pancreatic Oncology), Jian-Gao Fan (Chronic Liver Disease), Hou-Bao Liu

**EDITORIAL BOARD MEMBERS**

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

**PUBLICATION DATE**

July 7, 2024

**COPYRIGHT**

© 2024 Baishideng Publishing Group Inc

**PUBLISHING PARTNER**

Shanghai Pancreatic Cancer Institute and Pancreatic Cancer Institute, Fudan University  
Biliary Tract Disease Institute, Fudan University

**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>

**POLICY OF CO-AUTHORS**

<https://www.wjgnet.com/bpg/GerInfo/310>

**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>

**PUBLISHING PARTNER'S OFFICIAL WEBSITE**

<https://www.shca.org.cn>  
<https://www.zs-hospital.sh.cn>



## Large non-pedunculated colorectal polyp management: The elephant in the room

Shirley X Jiang, Neal Shahidi

**Specialty type:** Gastroenterology and hepatology

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

**Peer-review model:** Single blind

**Peer-review report's classification**

**Scientific Quality:** Grade B

**Novelty:** Grade C

**Creativity or Innovation:** Grade D

**Scientific Significance:** Grade C

**P-Reviewer:** Pan ZY, China

**Received:** March 3, 2024

**Revised:** May 19, 2024

**Accepted:** June 11, 2024

**Published online:** July 7, 2024

**Processing time:** 119 Days and 11.6 Hours



**Shirley X Jiang, Neal Shahidi**, Department of Medicine, University of British Columbia, Vancouver V6Z 2K5, BC, Canada

**Corresponding author:** Neal Shahidi, FRCPC, MD, PhD, Assistant Professor, Department of Medicine, University of British Columbia, 770-1190 Hornby Street, Vancouver V6Z 2K5, BC, Canada. [nealshahidi@gmail.com](mailto:nealshahidi@gmail.com)

### Abstract

Minimally invasive innovations have transformed coloproctology. Specific to colorectal cancer (CRC), there has been a shift towards less invasive surgical techniques and use of endoscopic resection as an alternative for low risk T1 CRC. The role of endoscopic resection is however much more extensive: It is now considered the first line management strategy for most large ( $\geq 20$  mm) non-pedunculated colorectal polyps, the majority of which are benign. This is due to the well-established efficacy, safety, and cost-effectiveness of endoscopic techniques compared to surgery. Multiple endoscopic modalities now exist with distinct risk-benefit profiles and their outcomes are further improved by site-specific technical modifications, auxiliary techniques, and adverse event mitigation strategies. Endoscopic capacity continues to evolve with emerging endoscopic techniques and expanding applications, particularly in the confines of a multi-disciplinary setting.

**Key Words:** Cancer; Colonoscopy; Endoscopy; Polyp; Endoscopic mucosal resection; Endoscopic submucosal dissection

©The Author(s) 2024. Published by Baishideng Publishing Group Inc. All rights reserved.

**Core Tip:** There is a movement towards minimally invasive management of colorectal disease, including the use of less invasive surgical techniques for colorectal cancer. Similarly, a paradigm shift in endoscopic resection has led to the development of a gamut of techniques, which are now first-line management strategies for most large ( $\geq 20$  mm) non-pedunculated colorectal polyps (LNPCPs) - the majority of which are benign. This is due to their proven efficacy, safety and cost-effectiveness compared to surgery. With increasing detection of LNPCPs in universal screening programs, further adoption of an endoscopic approach in the era of minimally invasive resection techniques is anticipated.

**Citation:** Jiang SX, Shahidi N. Large non-pedunculated colorectal polyp management: The elephant in the room. *World J Gastroenterol* 2024; 30(25): 3126-3131

**URL:** <https://www.wjgnet.com/1007-9327/full/v30/i25/3126.htm>

**DOI:** <https://dx.doi.org/10.3748/wjg.v30.i25.3126>

## INTRODUCTION

The shift towards minimally invasive treatment strategies has been pervasive in gastroenterology and general surgery, including the practice of coloproctology. The introduction of laparoscopic surgery to the management of colorectal disease led to a reduction in morbidity, mortality, duration of hospitalization and rate of ostomy formation, while maintaining long term efficacy compared to open surgery[1,2]. Robot-assisted surgery has also demonstrated superior safety and cost-effectiveness, despite being more resource-intensive[3]. More recently, transanal endoscopic surgery (TES) permits local excision of early stage rectal cancer while preserving the anal sphincter and autonomic nerves, with an advantageous safety profile[4]. In contrast, radical resection, particularly in the rectum, emphasizes the potential risk of surgery on morbidity, mortality, and quality of life. Efforts to avoid these risks have driven advances in the medical management of inflammatory bowel disease and neoadjuvant chemoradiotherapy for rectal cancer, as discussed by Emile and Ragheb[5].

## MINIMALLY INVASIVE ENDOSCOPIC RESECTION FOR LARGE POLYPS

As an extension of minimally invasive treatment strategies, Emile and Ragheb[5] introduce the use of endoscopic resection techniques, specifically endoscopic submucosal dissection (ESD) and endoscopic full thickness resection (EFTR) for low-risk T1 colorectal cancer (CRC) as an alternative to surgery[5]. However, malignant lesions represent only a fraction of large ( $\geq 20$  mm) non-pedunculated colorectal polyps (LNPCPs), with submucosal invasion identified in up to 16% of LNPCPs selected for *en-bloc* endoscopic resection[6]. Rather, LNPCP considered in aggregate are commonly encountered in approximately 1 in 13 patients with fecal immunochemistry test positivity[7]. LNPCPs were historically managed by surgery, which can be associated with 25.3% morbidity and 0.8% in-hospital mortality[8]. Despite this, the rate of surgery for benign colorectal polyps continues to rise in the United States[9].

Recently, endoscopic resection has become the first-line management strategy for most LNPCP due to its comparable efficacy but superior safety and cost-effectiveness compared to surgery[10]. In a meta-analysis of 50 studies including 6779 large polyps (benign and malignant) undergoing endoscopic resection, 96.3% of procedures were successful and 92% avoided surgery. Surgery due to adverse events occurred in 1% and mortality-related to endoscopic resection was 0.08%[11]. Compared to minimally invasive laparoscopic surgery, endoscopic resection for complex colorectal polyps was more cost effective and yielded greater quality-adjusted life-years[12].

Amongst techniques, endoscopic mucosal resection (EMR) is preferred for most LNPCPs[10]. High-quality EMR is now well established[13]. Firstly, submucosal injection of colloid lifts the LNPCP to facilitate capture of polypoid tissue into a snare. An electrocautery current is then applied to transect the tissue. Following this, careful inspection of the defect is carried out for further polypoid tissue or signs of injury. Depending on size, further resections are systematically completed until all polypoid tissue and a margin of normal mucosa has been removed. Following successful EMR, a prospective study of 1000 consecutive LNPCP reported 98.1% were adenoma-free and avoided surgery at 16 months[14]. Due to its efficiency and safety, EMR has demonstrated significant cost savings and reduction of 2.81 nights of admission per patient compared to surgery[15].

The safety of EMR is owed to advancements in adverse event mitigation. The most common adverse event following EMR is clinically significant bleeding, with higher risk in larger lesions and proximal location[16]. A recent systematic review and meta-analysis including 4 randomized controlled trials found that prophylactic clip closure in the proximal colon significantly reduced bleeding from 9.0% to 3.5%[17]. Perforation, the most feared complication of endoscopic resection, can be mitigated by standardized evaluation of deep mural injury (DMI) and timely prophylactic closure. In a prospective cohort of 3717 LNPCP, significant DMI occurred in 2.7% of cases, of which 97.0% were successfully clipped without further sequelae[18]. Post-EMR recurrence is mitigated by thermal ablation of the post-EMR margin, supported by evidence from a randomized controlled trial demonstrating recurrence rates of 5.2% and 21.0% in the treatment and control groups, respectively[19]. Finally, if residual or recurrent adenoma is found on subsequent surveillance, it can generally be endoscopically treated with less than 5% of recurrences requiring surgery[20].

Further, site-specific modifications and auxiliary techniques improve technical success in challenging LNPCP[21-23]. Non-lifting lesions prone to incomplete resection can be treated with cold-forceps avulsion with adjuvant snare-tip soft coagulation, which has been shown to reduce rates of surgery to mirror more straightforward lifting lesions[23]. Thus, endoscopic resection is recommended even for complex LNPCP that have been historically designated for surgery. Previously attempted, circumferential ( $\geq 90\%$  of the lumen), peri-appendiceal, ileocecal valve, and anorectal junction LNPCP can be endoscopically removed with 90%-95% success in expert hands[21-25].

Cold snare resection (CSR) is gaining recognition as an important resection technique, particularly for serrated lesions. Similar to EMR, CSR is a systematically applied snare technique to remove all polypoid tissue but utilizes mechanical transection rather than electrocautery, thus limiting thermal injury. While it was initially presumed to trade efficacy for safety, this has not borne out in the evidence. Particularly, serrated LNPCP appear to be uniquely amenable to CSR due to their low profile and rare frequency of submucosal fibrosis. In a comparative study of large sessile serrated lesions treated with CSR or EMR, the rates of recurrence, bleeding, and DMI were 4.3%, 0.0%, and 0.0% for CSR and 4.6%, 5.1%, and 3.4% for EMR[26].

For malignant LNPCP, *en-bloc* endoscopic resection can achieve oncologic cure as illustrated by Emile and Ragheb's discussion of ESD and EFTR[5]. Specifically, low risk T1 CRC is defined by the absence of lymphovascular invasion, poor differentiation, high-grade tumor budding and deep submucosal invasion ( $\geq 1000 \mu\text{m}$ ), in the setting of *en-bloc* resection with negative histologic margins (R0); the presence of any unfavorable characteristic designates the lesion as high risk[27-29]. Lesions without a high-risk feature have a low risk of lymph node metastasis, with a meta-analysis of 71 studies of 5167 patients demonstrating pooled incidence of local and distant recurrence for low risk T1 CRC of 0.7%, compared to 7.0% if any high risk criteria were found[30]. Thus, endoscopically resected low risk T1 CRC is considered "curative" while high risk T1 CRC requires consideration for completion oncologic surgery.

For T1 CRC, multiple treatment modalities are available. A meta-analysis including 19979 patients with T1 CRC found that patients undergoing primary endoscopic resection and surgery had similar disease-free survival of 94.8% and 96.5%, respectively but lower rate of procedure-related adverse events at 2.3% and 10.9%, respectively[31]. Given the limited ability of EMR to achieve *en-bloc* resection for lesions greater than 20 mm, ESD is preferred for LNPCP with endoscopic signs of superficial submucosal invasive cancer (SMIC)[28,32-34]. ESD uses an electrosurgical knife to dissect in the submucosal plane beneath the lesion, thus allowing for *en-bloc* resection regardless of size. However, ESD has limited success in cases of submucosal fibrosis and deep invasion, leading to development of EFTR. While multiple techniques exist, EFTR is the colorectum generally uses an over-the-scope clip (OTSC) and snare resection. Using the full-thickness resection device (Ovesco Endoscopy; Tübingen, Germany), the lesion is pulled into a cap, facilitating OTSC closure of the duplicated colonic wall, and finally a pre-loaded snare completes the resection above the clip[35]. Alternatively, transanal endoscopic surgery (TES), encompassing both transanal endoscopic microsurgery (TEM) and transanal minimally invasive surgery (TAMIS), utilizes surgical instruments to enable full thickness excision. Compared to ESD, TEM has similar rate of curative resection and adverse events but can be more time and resource intensive[36].

Emerging endoscopic techniques for T1 CRC include endoscopic intermuscular dissection (EID) in the rectum and cooperative endoscopic laparoscopic surgery (CELS) in the colon. EID uses an electrocautery knife to dissect between the circular and longitudinal layers of the muscularis propria in the rectum, achieving deeper margins while preserving the rectal wall[37]. An example of CELS is colonoscopy-assisted laparoscopic wedge resection, whereby laparoscopic resection is guided by direct endoscopic visualization to facilitate more precise full-thickness resection[38]. Newer techniques can be expected in the near future.

The number of endoscopic techniques corresponds to the heterogeneity in LNPCPs, highlighting the role of optical diagnosis to determine the most appropriate modality. Optical evaluation uses a combination of size, location, surface pattern, morphology, and gross morphologic features to predict histopathology, and SMIC presence and depth. In the absence of optical features, covert or invisible SMIC may still exist in some LNPCP; this risk can be defined by location, morphology, and granularity[39]. Accurate prediction of SMIC has been shown to facilitate more deliberate use of *en-bloc* resection techniques, such as ESD, which are curative but more resource intensive. Unsurprisingly, selective use of EMR and ESD is the most cost-effective strategy to balance procedural cost and additional completion surgeries[40]. In the rectum where malignancy risk is substantial, use of a selective resection algorithm of EMR and ESD has been shown to improve oncologic outcomes compared to a universal EMR program[41]. Selective resection algorithms are key to optimize specific risk-benefit profiles of various modalities, ultimately enhancing the performance of endoscopic resection as a whole.

---

## CONCLUSION

In the minimally invasive revolution introduced by Emile and Ragheb[5], endoscopic resection has become preferred over surgery as first-line management for most large polyps based on its proven efficacy, safety, and cost-effectiveness. Recognizing this key innovation in CRC prevention and management is crucial to prevent unnecessary surgery and support iterative advances in endoscopic resection techniques.

---

## FOOTNOTES

**Author contributions:** Jiang SX contributed to drafting of the article; Shahidi N contributed to critical revision of the article for important intellectual content and final approval of the article.

**Conflict-of-interest statement:** Neal Shahidi received a speaker's honorarium from Pharmacology, Boston Scientific. Shirley X Jiang did not report a conflict of interest.

**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: <https://creativecommons.org/licenses/by-nc/4.0/>

**Country of origin:** Canada

**ORCID number:** Neal Shahidi [0000-0002-4536-0515](https://orcid.org/0000-0002-4536-0515).

**S-Editor:** Li L

**L-Editor:** A

**P-Editor:** Yu HG

## REFERENCES

- Kuhry E**, Schwenk WF, Gaupset R, Romild U, Bonjer HJ. Long-term results of laparoscopic colorectal cancer resection. *Cochrane Database Syst Rev* 2008; **2008**: CD003432 [PMID: 18425886 DOI: [10.1002/14651858.CD003432.pub2](https://doi.org/10.1002/14651858.CD003432.pub2)]
- Juo YY**, Hyder O, Haider AH, Camp M, Lidor A, Ahuja N. Is minimally invasive colon resection better than traditional approaches? First comprehensive national examination with propensity score matching. *JAMA Surg* 2014; **149**: 177-184 [PMID: 24352653 DOI: [10.1001/jamasurg.2013.3660](https://doi.org/10.1001/jamasurg.2013.3660)]
- Chok AY**, Zhao Y, Tan IE, Au MKH, Tan EJKW. Cost-effectiveness comparison of minimally invasive, robotic and open approaches in colorectal surgery: a systematic review and bayesian network meta-analysis of randomized clinical trials. *Int J Colorectal Dis* 2023; **38**: 86 [PMID: 36988723 DOI: [10.1007/s00384-023-04361-5](https://doi.org/10.1007/s00384-023-04361-5)]
- Li W**, Xiang XX, Da Wang H, Cai CJ, Cao YH, Liu T. Transanal endoscopic microsurgery versus radical resection for early-stage rectal cancer: a systematic review and meta-analysis. *Int J Colorectal Dis* 2023; **38**: 49 [PMID: 36800079 DOI: [10.1007/s00384-023-04341-9](https://doi.org/10.1007/s00384-023-04341-9)]
- Emile SH**, Ragheb J. Toward less invasive coloproctology: The future is out there. *World J Gastroenterol* 2024; **30**: 199-203 [PMID: 38314131 DOI: [10.3748/wjg.v30.i3.199](https://doi.org/10.3748/wjg.v30.i3.199)]
- Fuccio L**, Repici A, Hassan C, Ponchon T, Bhandari P, Jover R, Triantafyllou K, Mandolesi D, Frazzoni L, Bellisario C, Bazzoli F, Sharma P, Rösch T, Rex DK. Why attempt en bloc resection of non-pedunculated colorectal adenomas? A systematic review of the prevalence of superficial submucosal invasive cancer after endoscopic submucosal dissection. *Gut* 2018; **67**: 1464-1474 [PMID: 29208675 DOI: [10.1136/gutjnl-2017-315103](https://doi.org/10.1136/gutjnl-2017-315103)]
- Meulen LWT**, van der Zander QEW, Bogie RMM, Keulen ETP, van Nunen AB, Winkens B, Straathof JWA, Hoge CV, de Ridder R, Moons LMG, Masclee AAM. Evaluation of polypectomy quality indicators of large nonpedunculated colorectal polyps in a nonexpert, bowel cancer screening cohort. *Gastrointest Endosc* 2021; **94**: 1085-1095.e2 [PMID: 34139253 DOI: [10.1016/j.gie.2021.06.008](https://doi.org/10.1016/j.gie.2021.06.008)]
- Ma C**, Teriaky A, Sheh S, Forbes N, Heitman SJ, Jue TL, Munroe CA, Jairath V, Corley DA, Lee JK. Morbidity and Mortality After Surgery for Nonmalignant Colorectal Polyps: A 10-Year Nationwide Analysis. *Am J Gastroenterol* 2019; **114**: 1802-1810 [PMID: 31634261 DOI: [10.14309/ajg.0000000000000407](https://doi.org/10.14309/ajg.0000000000000407)]
- Peery AF**, Cools KS, Strassle PD, McGill SK, Crockett SD, Barker A, Koruda M, Grimm IS. Increasing Rates of Surgery for Patients With Nonmalignant Colorectal Polyps in the United States. *Gastroenterology* 2018; **154**: 1352-1360.e3 [PMID: 29317277 DOI: [10.1053/j.gastro.2018.01.003](https://doi.org/10.1053/j.gastro.2018.01.003)]
- Kaltenbach T**, Anderson JC, Burke CA, Dominitz JA, Gupta S, Lieberman D, Robertson DJ, Shaukat A, Syngal S, Rex DK. Endoscopic Removal of Colorectal Lesions-Recommendations by the US Multi-Society Task Force on Colorectal Cancer. *Gastroenterology* 2020; **158**: 1095-1129 [PMID: 32122632 DOI: [10.1053/j.gastro.2019.12.018](https://doi.org/10.1053/j.gastro.2019.12.018)]
- Hassan C**, Repici A, Sharma P, Correale L, Zullo A, Bretthauer M, Senore C, Spada C, Bellisario C, Bhandari P, Rex DK. Efficacy and safety of endoscopic resection of large colorectal polyps: a systematic review and meta-analysis. *Gut* 2016; **65**: 806-820 [PMID: 25681402 DOI: [10.1136/gutjnl-2014-308481](https://doi.org/10.1136/gutjnl-2014-308481)]
- Law R**, Das A, Gregory D, Komanduri S, Muthusamy R, Rastogi A, Vargo J, Wallace MB, Raju GS, Mounzer R, Klapman J, Shah J, Watson R, Wilson R, Edmundowicz SA, Wani S. Endoscopic resection is cost-effective compared with laparoscopic resection in the management of complex colon polyps: an economic analysis. *Gastrointest Endosc* 2016; **83**: 1248-1257 [PMID: 26608129 DOI: [10.1016/j.gie.2015.11.014](https://doi.org/10.1016/j.gie.2015.11.014)]
- Bourke MJ**, Bhandari P. How I remove polyps larger than 20 mm. *Endoscopy* 2019; **51**: 1151-1154 [PMID: 31658474 DOI: [10.1055/a-0999-5427](https://doi.org/10.1055/a-0999-5427)]
- Moss A**, Williams SJ, Hourigan LF, Brown G, Tam W, Singh R, Zanati S, Burgess NG, Sonson R, Byth K, Bourke MJ. Long-term adenoma recurrence following wide-field endoscopic mucosal resection (WF-EMR) for advanced colonic mucosal neoplasia in infrequent: results and risk factors in 1000 cases from the Australian Colonic EMR (ACE) study. *Gut* 2015; **64**: 57-65 [PMID: 24986245 DOI: [10.1136/gutjnl-2013-305516](https://doi.org/10.1136/gutjnl-2013-305516)]
- Jayanna M**, Burgess NG, Singh R, Hourigan LF, Brown GJ, Zanati SA, Moss A, Lim J, Sonson R, Williams SJ, Bourke MJ. Cost Analysis of Endoscopic Mucosal Resection vs Surgery for Large Laterally Spreading Colorectal Lesions. *Clin Gastroenterol Hepatol* 2016; **14**: 271-8.e1 [PMID: 26364679 DOI: [10.1016/j.cgh.2015.08.037](https://doi.org/10.1016/j.cgh.2015.08.037)]
- Bahin FF**, Rasouli KN, Byth K, Hourigan LF, Singh R, Brown GJ, Zanati SA, Moss A, Raftopoulos S, Williams SJ, Bourke MJ. Prediction of Clinically Significant Bleeding Following Wide-Field Endoscopic Resection of Large Sessile and Laterally Spreading Colorectal Lesions: A Clinical Risk Score. *Am J Gastroenterol* 2016; **111**: 1115-1122 [PMID: 27296942 DOI: [10.1038/ajg.2016.235](https://doi.org/10.1038/ajg.2016.235)]
- Forbes N**, Gupta S, Frehlich L, Meng ZW, Ruan Y, Montori S, Chebaa BR, Dunbar KB, Heitman SJ, Feagins LA, Albéniz E, Pohl H, Bourke MJ. Clip closure to prevent adverse events after EMR of proximal large nonpedunculated colorectal polyps: meta-analysis of individual patient

- data from randomized controlled trials. *Gastrointest Endosc* 2022; **96**: 721-731.e2 [PMID: 35667388 DOI: 10.1016/j.gie.2022.05.020]
- 18 **Bar-Yishay I**, Shahidi N, Gupta S, Vosko S, van Hattem WA, Schoeman S, Sidhu M, Tate DJ, Hourigan LF, Singh R, Moss A, Raftopoulos SC, Brown G, Zanati S, Heitman SJ, Lee EYT, Burgess N, Williams SJ, Byth K, Bourke MJ. Outcomes of Deep Mural Injury After Endoscopic Resection: An International Cohort of 3717 Large Non-Pedunculated Colorectal Polyps. *Clin Gastroenterol Hepatol* 2022; **20**: e139-e147 [PMID: 33422686 DOI: 10.1016/j.cgh.2021.01.007]
- 19 **Klein A**, Tate DJ, Jayasekera V, Hourigan L, Singh R, Brown G, Bahin FF, Burgess N, Williams SJ, Lee E, Sidhu M, Byth K, Bourke MJ. Thermal Ablation of Mucosal Defect Margins Reduces Adenoma Recurrence After Colonic Endoscopic Mucosal Resection. *Gastroenterology* 2019; **156**: 604-613.e3 [PMID: 30296436 DOI: 10.1053/j.gastro.2018.10.003]
- 20 **Tate DJ**, Desomer L, Argenziano ME, Mahajan N, Sidhu M, Vosko S, Shahidi N, Lee E, Williams SJ, Burgess NG, Bourke MJ. Treatment of adenoma recurrence after endoscopic mucosal resection. *Gut* 2023; **72**: 1875-1886 [PMID: 37414440 DOI: 10.1136/gutjnl-2023-330300]
- 21 **Nanda KS**, Tutticci N, Burgess NG, Sonson R, Williams SJ, Bourke MJ. Endoscopic mucosal resection of laterally spreading lesions involving the ileocecal valve: technique, risk factors for failure, and outcomes. *Endoscopy* 2015; **47**: 710-718 [PMID: 25763831 DOI: 10.1055/s-0034-1391732]
- 22 **Tate DJ**, Desomer L, Awadie H, Goodrick K, Hourigan L, Singh R, Williams SJ, Bourke MJ. EMR of laterally spreading lesions around or involving the appendiceal orifice: technique, risk factors for failure, and outcomes of a tertiary referral cohort (with video). *Gastrointest Endosc* 2018; **87**: 1279-1288.e2 [PMID: 29309777 DOI: 10.1016/j.gie.2017.12.018]
- 23 **Tate DJ**, Bahin FF, Desomer L, Sidhu M, Gupta V, Bourke MJ. Cold-forceps avulsion with adjuvant snare-tip soft coagulation (CAST) is an effective and safe strategy for the management of non-lifting large laterally spreading colonic lesions. *Endoscopy* 2018; **50**: 52-62 [PMID: 29020690 DOI: 10.1055/s-0043-119215]
- 24 **Tutticci N**, Klein A, Sonson R, Bourke MJ. Endoscopic resection of subtotal or completely circumferential laterally spreading colonic adenomas: technique, caveats, and outcomes. *Endoscopy* 2016; **48**: 465-471 [PMID: 27009082 DOI: 10.1055/s-0042-101854]
- 25 **Holt BA**, Bassan MS, Sexton A, Williams SJ, Bourke MJ. Advanced mucosal neoplasia of the anorectal junction: endoscopic resection technique and outcomes (with videos). *Gastrointest Endosc* 2014; **79**: 119-126 [PMID: 23953401 DOI: 10.1016/j.gie.2013.07.003]
- 26 **van Hattem WA**, Shahidi N, Vosko S, Hartley I, Britto K, Sidhu M, Bar-Yishay I, Schoeman S, Tate DJ, Byth K, Hewett DG, Pellisé M, Hourigan LF, Moss A, Tutticci N, Bourke MJ. Piecemeal cold snare polypectomy versus conventional endoscopic mucosal resection for large sessile serrated lesions: a retrospective comparison across two successive periods. *Gut* 2021; **70**: 1691-1697 [PMID: 33172927 DOI: 10.1136/gutjnl-2020-321753]
- 27 **Shaukat A**, Kaltenbach T, Dominitz JA, Robertson DJ, Anderson JC, Cruise M, Burke CA, Gupta S, Lieberman D, Syngal S, Rex DK. Endoscopic Recognition and Management Strategies for Malignant Colorectal Polyps: Recommendations of the US Multi-Society Task Force on Colorectal Cancer. *Gastroenterology* 2020; **159**: 1916-1934.e2 [PMID: 33159840 DOI: 10.1053/j.gastro.2020.08.050]
- 28 **Hashiguchi Y**, Muro K, Saito Y, Ito Y, Ajioka Y, Hamaguchi T, Hasegawa K, Hotta K, Ishida H, Ishiguro M, Ishihara S, Kanemitsu Y, Kinugasa Y, Murofushi K, Nakajima TE, Oka S, Tanaka T, Taniguchi H, Tsuji A, Uehara K, Ueno H, Yamanaka T, Yamazaki K, Yoshida M, Yoshino T, Itabashi M, Sakamaki K, Sano K, Shimada Y, Tanaka S, Uetake H, Yamaguchi S, Yamaguchi N, Kobayashi H, Matsuda K, Kotake K, Sugihara K; Japanese Society for Cancer of the Colon and Rectum. Japanese Society for Cancer of the Colon and Rectum (JSCCR) guidelines 2019 for the treatment of colorectal cancer. *Int J Clin Oncol* 2020; **25**: 1-42 [PMID: 31203527 DOI: 10.1007/s10147-019-01485-z]
- 29 **Hassan C**, Wysocki PT, Fuccio L, Seufferlein T, Dinis-Ribeiro M, Brandão C, Regula J, Frazzoni L, Pellise M, Alfieri S, Dekker E, Jover R, Rosati G, Senore C, Spada C, Gralnek I, Dumonceau JM, van Hooft JE, van Cutsem E, Ponchon T. Endoscopic surveillance after surgical or endoscopic resection for colorectal cancer: European Society of Gastrointestinal Endoscopy (ESGE) and European Society of Digestive Oncology (ESDO) Guideline. *Endoscopy* 2019; **51**: 266-277 [PMID: 30722071 DOI: 10.1055/a-0831-2522]
- 30 **Dang H**, Dekkers N, le Cessie S, van Hooft JE, van Leerdam ME, Oldenburg PP, Flothuis L, Schoones JW, Langers AMJ, Hardwick JCH, van der Kraaij J, Boonstra JJ. Risk and Time Pattern of Recurrences After Local Endoscopic Resection of T1 Colorectal Cancer: A Meta-analysis. *Clin Gastroenterol Hepatol* 2022; **20**: e298-e314 [PMID: 33271339 DOI: 10.1016/j.cgh.2020.11.032]
- 31 **Yeh JH**, Tseng CH, Huang RY, Lin CW, Lee CT, Hsiao PJ, Wu TC, Kuo LT, Wang WL. Long-term Outcomes of Primary Endoscopic Resection vs Surgery for T1 Colorectal Cancer: A Systematic Review and Meta-analysis. *Clin Gastroenterol Hepatol* 2020; **18**: 2813-2823.e5 [PMID: 32526343 DOI: 10.1016/j.cgh.2020.05.060]
- 32 **De Ceglie A**, Hassan C, Mangiavillano B, Matsuda T, Saito Y, Ridola L, Bhandari P, Boeri F, Conio M. Endoscopic mucosal resection and endoscopic submucosal dissection for colorectal lesions: A systematic review. *Crit Rev Oncol Hematol* 2016; **104**: 138-155 [PMID: 27370173 DOI: 10.1016/j.critrevonc.2016.06.008]
- 33 **Fujiya M**, Tanaka K, Dokoshi T, Tominaga M, Ueno N, Inaba Y, Ito T, Moriichi K, Kohgo Y. Efficacy and adverse events of EMR and endoscopic submucosal dissection for the treatment of colon neoplasms: a meta-analysis of studies comparing EMR and endoscopic submucosal dissection. *Gastrointest Endosc* 2015; **81**: 583-595 [PMID: 25592748 DOI: 10.1016/j.gie.2014.07.034]
- 34 **Lim XC**, Nistala KRY, Ng CH, Lin SY, Tan DJH, Ho KY, Chong CS, Muthiah M. Endoscopic submucosal dissection vs endoscopic mucosal resection for colorectal polyps: A meta-analysis and meta-regression with single arm analysis. *World J Gastroenterol* 2021; **27**: 3925-3939 [PMID: 34321855 DOI: 10.3748/wjg.v27.i25.3925]
- 35 **Schmidt A**, Beyna T, Schumacher B, Meining A, Richter-Schrag HJ, Messmann H, Neuhaus H, Albers D, Birk M, Thimme R, Probst A, Faehndrich M, Frieling T, Goetz M, Riecken B, Caca K. Colonoscopic full-thickness resection using an over-the-scope device: a prospective multicentre study in various indications. *Gut* 2018; **67**: 1280-1289 [PMID: 28798042 DOI: 10.1136/gutjnl-2016-313677]
- 36 **McCarty TR**, Bazarbashi AN, Hathorn KE, Thompson CC, Aihara H. Endoscopic submucosal dissection (ESD) versus transanal endoscopic microsurgery (TEM) for treatment of rectal tumors: a comparative systematic review and meta-analysis. *Surg Endosc* 2020; **34**: 1688-1695 [PMID: 31292744 DOI: 10.1007/s00464-019-06945-1]
- 37 **Moons LMG**, Bastiaansen BAJ, Richir MC, Hazen WL, Tuynman J, Elias SG, Schrauwen RWM, Vleggaar FP, Dekker E, Bos P, Fariña Sarasqueta A, Lacle M, Hompes R, Didden P. Endoscopic intermuscular dissection for deep submucosal invasive cancer in the rectum: a new endoscopic approach. *Endoscopy* 2022; **54**: 993-998 [PMID: 35073588 DOI: 10.1055/a-1748-8573]
- 38 **Hanevelt J**, Moons LMG, Hentzen JEK, Wemeijer TM, Huisman JF, de Vos Tot Nederveen Cappel WH, van Westreenen HL. Colonoscopy-Assisted Laparoscopic Wedge Resection for the Treatment of Suspected T1 Colon Cancer. *Ann Surg Oncol* 2023; **30**: 2058-2065 [PMID: 36598625 DOI: 10.1245/s10434-022-12973-4]
- 39 **Burgess NG**, Hourigan LF, Zanati SA, Brown GJ, Singh R, Williams SJ, Raftopoulos SC, Ormonde D, Moss A, Byth K, Mahajan H, McLeod D, Bourke MJ. Risk Stratification for Covert Invasive Cancer Among Patients Referred for Colonic Endoscopic Mucosal Resection: A Large Multicenter Cohort. *Gastroenterology* 2017; **153**: 732-742.e1 [PMID: 28583826 DOI: 10.1053/j.gastro.2017.05.047]



- 40 **Bahin FF**, Heitman SJ, Rasouli KN, Mahajan H, McLeod D, Lee EYT, Williams SJ, Bourke MJ. Wide-field endoscopic mucosal resection versus endoscopic submucosal dissection for laterally spreading colorectal lesions: a cost-effectiveness analysis. *Gut* 2018; **67**: 1965-1973 [PMID: 28988198 DOI: 10.1136/gutjnl-2017-313823]
- 41 **Shahidi N**, Vosko S, Gupta S, Whitfield A, Cronin O, O'Sullivan T, van Hattem WA, Sidhu M, Tate DJ, Lee EYT, Burgess N, Williams SJ, Bourke MJ. A Rectum-Specific Selective Resection Algorithm Optimizes Oncologic Outcomes for Large Nonpedunculated Rectal Polyps. *Clin Gastroenterol Hepatol* 2023; **21**: 72-80.e2 [PMID: 35526795 DOI: 10.1016/j.cgh.2022.04.021]



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

**Telephone:** +1-925-3991568

**E-mail:** [office@baishideng.com](mailto:office@baishideng.com)

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

<https://www.wjgnet.com>

