Letter to the Editor

Defecography with water-soluble contrast enema: an alternative imaging method for detecting minor anastomotic fistula after partial intersphincteric resection

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Submitted Dec 09, 2022. Accepted for publication Aug 17, 2023. Published online Sep 04, 2023.
doi: 10.21037/qims-22-1351
View this article at: https://dx.doi.org/10.21037/qims-22-1351

Intersphincteric resection (ISR) has been popularized as the ultimate anus-preserving surgery and applied for nearly three decades. The anastomosis location in patients undergoing ISR surgery is close to the anal margin, even below the dentate line, which is lower than that in patients undergoing traditional anterior resection. Protective ileostomy may be performed during the ISR procedure to reduce anastomotic leakage (AL) severity and the rate of secondary surgery associated with anastomotic complications. However, as ileostomy diverts stool, AL may be rendered more obscure and difficult to detect; in such cases, AL may develop into fistulas or sinus tracts, making it difficult to be cured. Additionally, although ISR at least partially removes the internal anal sphincter, the external anal sphincter remains in a constant state of tonic contractile activity. Some ultra-low fistulas or sinus tracts, therefore, are "squashed" passively; such fistulas may be difficult to detect by conventional contrast-enema imaging in the resting state. Further, the low position of the anastomosis may render it difficult to perform a detailed examination of the anastomosis by colonoscopy. A recent cohort study on recurrent leakage after stoma closure at a Japanese cancer center reported that 7 out of 28 patients who underwent ISR or all-sphincter-preserving rectal resection with hand-sewn coloanal anastomosis suffered from recurrent leakage after diverting stoma closure (1). Thus, a more accurate assessment of the anastomotic status is needed to reduce anastomotic complications, especially anastomotic fistulas and sinus tracts.

Hence, to more accurately determine the healing status of ultra-low anastomoses, we propose a novel examination method combining iodinated contrast enema and defecography. In this examination, the patient is placed in the left lateral decubitus position. A Foley catheter is inserted through the anus and an iodinated contrast agent (iohexol, 50 mL/15 g iodine) is instilled into the rectum and distal sigmoid colon until the patient reports discomfort (sensation of rectal fullness). A simultaneous recording of

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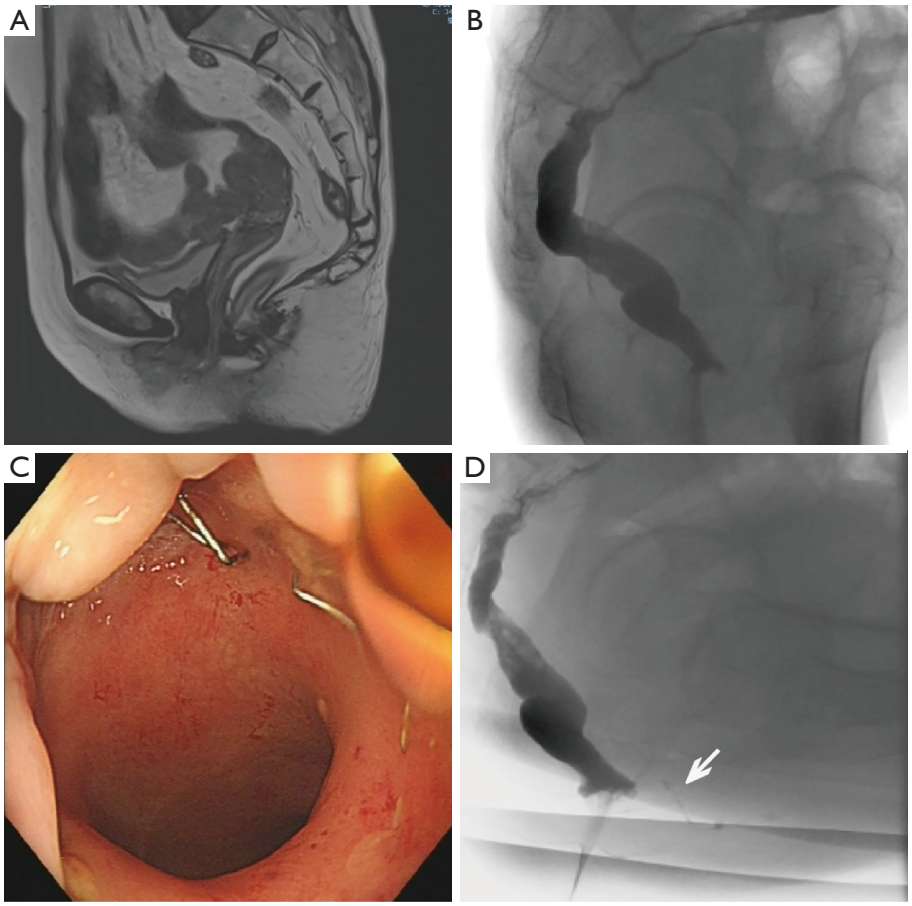

Figure 1 Imaging findings. (A) No obvious anastomotic leakage was found on pelvic magnetic resonance imaging. (B) Routine transanal iodinated contrast imaging failed to reveal minor leakage. (C) No major anastomotic leakage was detected on colonoscopy. (D) Defecography examination with iodinated contrast enema (during squeezing in the lateral position) revealed contrast media leakage anteriorly (towards the vagina) (white arrow).

the contrast agent gradually reaching the sigmoid colon is examined for any signs of contrast agent leakage. The patient is then instructed to sit on a commode (after anal canal removal) and radiographs of the anorectal region are obtained at rest, during lifting, and during squeezing in the lateral position, which are examined for any signs of contrast agent leakage.

Our center has performed over 180 ISRs with a simultaneous prophylactic ileostomy since 2016 (2). The incidence of AL was 8.3% (15/180); all the patients with AL were treated conservatively. In addition to routine preoperative evaluations [digital rectal examination, colonoscopy, and magnetic resonance imaging (MRI)], the above-mentioned novel defecography examination with water-soluble contrast enema was performed on these 15 patients before stoma closure. Using our novel defecography examination, we successfully identified a case of minor asymptomatic rectovaginal fistula that was undetected by conventional methods. This case involved a 69-year-old female patient who was admitted to our hospital for stoma closure 6 months after partial ISR surgery. The coloanal anastomosis was located near the dentate line. During colonic lavage using normal saline enema transanally and via the distal end of the loop enterostomy, the patient became vaguely aware of fluid coming out of her vagina. However, traditional examination methods, including digital rectal examination, pelvic MRI (*Figure 1A*), routine transanal iodinated contrast imaging (*Figure 1B*), and colonoscopy (*Figure 1C*), failed to reveal any minor leakage. Interestingly, our novel defecography examination

with iodinated contrast enema revealed contrast media leakage anteriorly (towards the vagina) at the position of the anastomosis (*Figure 1D*), confirming the presence of an ultra-low minor anastomotic fistula. All procedures performed in this study were in accordance with the ethical standards of the institutional and/or national research committee(s) and with the Declaration of Helsinki (as revised in 2013). Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the editorial office of this journal.

This case confirms the efficacy of our new method for the diagnosis of ultra-low minor anastomotic fistula, which is difficult to be detected with on traditional examinations. The process of squeezing in the lateral position, simulating defecation, increases pressure on the anal canal and allows the aqueous contrast agent to penetrate into minor tissue space via the leakage. Additionally, the external anal sphincter and puborectalis muscle relax, the rectoanal angle straightens, and the anal canal opens to facilitate defecation; thereby, hidden fistulas can be more easily revealed. Additionally, multi-angle imaging can be performed to identify minor fistulas according to clinical needs. Accordingly, our novel defecography examination can overcome the shortcomings of the lack of pressure in the anal canal in iodinated contrast imaging by simulating the defecation process and using an aqueous contrast agent, thereby avoiding the high viscosity of barium in conventional defecography.

Due to technical limitations, some medical units may not be able to perform defecography examinations. Perianal/transperineal ultrasound has value in the diagnosis of perianal disease in patients with Crohn's disease and may be another simple, painless, and possibly accurate diagnostic method for the evaluation of perianal and rectovaginal fistula (3). However, an ultrasound examination was not performed in the present case, and the diagnostic accuracy and sensitivity of perianal/transperineal ultrasound for monitoring anastomotic fistula after ISR require further research.

In summary, defecography with a water-soluble contrast enema may have advantages in the detection of ultra-low minor anastomotic fistulas. This novel method may be regarded as another tool for evaluating anastomotic integrity, complementing anal digital examination, MRI, colonoscopy, and conventional iodine hydrography to improve the detection rate of minor anastomotic fistulas. A prospective study with a large sample size is needed to further evaluate the specificity and sensitivity of this novel method for the detection of minor anastomotic complications after ultra-low anastomosis.

Acknowledgments

Funding: None.

Footnote

Conflicts of Interest: All authors have completed the ICMJE uniform disclosure form (available at https://qims.amegroups.com/article/view/10.21037/qims-22-1351/coif). The authors have no conflicts of interest to declare.

Ethical Statement: The authors are accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved. All procedures performed in this study were in accordance with the ethical standards of the institutional and/or national research committee(s) and with the Declaration of Helsinki (as revised in 2013). Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the editorial office of this journal.

References

1. Kitaguchi D, Nishizawa Y, Sasaki T, Tsukada Y, Ikeda K, Ito M. Recurrence of rectal anastomotic leakage following stoma closure: assessment of risk factors. Colorectal Dis 2019;21:1304-11.
2. Zhong X, Xie X, Hu H, Li Y, Tian S, Qian Q, Jiang C, Ren X. Trans-Anastomotic Drainage Tube Placement After Hand-Sewn Anastomosis in Patients Undergoing Intersphincteric Resection for Low Rectal Cancer:

An Alternative Drainage Method. Front Oncol 2022;12:872120.
3. Maconi G, Ardizzone S, Greco S, Radice E, Bezzio C, Bianchi Porro G. Transperineal ultrasound in the detection of perianal and rectovaginal fistulae in Crohn's disease. Am J Gastroenterol 2007;102:2214-9.

Cite this article as: Ren X, Hu J, Wang P, Xie X, Hu H, Qian Q, Jiang C. Defecography with water-soluble contrast enema: an alternative imaging method for detecting minor anastomotic fistula after partial intersphincteric resection. Quant Imaging Med Surg 2023;13(10):7392-7395. doi: 10.21037/qims-22-1351

