

## CASE REPORT

# Distal rectal cancer managed with intersphincteric resection and temporary ileostomy: A case report from a tertiary hospital in Ndola, Zambia

Seke M.E. Kazuma, Bright Chirengendure, Joseph Musowoya, Boniface Kaela, Luyando Simunyama, Kamwi Mundia, Khumbolakhe Fisonga

Department of Surgery, Ndola Teaching Hospital, Ndola, Zambia

Correspondence: Dr Seke M.E. Kazuma ([sekekazuma@gmail.com](mailto:sekekazuma@gmail.com))

© 2024 S.M.E. Kazuma et al. This **uncorrected proof** has been published before the article's inclusion in an upcoming issue of the *East and Central African Journal of Surgery* so that it can be accessed and cited as early as possible. This open access article is licensed under a Creative Commons Attribution 4.0 International License (<http://creativecommons.org/licenses/by/4.0/>), which permits unrestricted use, distribution, and reproduction in any medium, provided you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license, and indicate if changes were made.



East Cent Afr J Surg  
Published 29 April 2024

## Abstract

Colorectal cancer ranks as the fourth leading cause of cancer-related deaths globally. Curative treatment for resectable disease is achieved through total mesorectal excision, which improves survival, reduces tumour recurrence, and results in an enhanced quality of life for survivors. The discovery that rectal cancer rarely extends beyond a distal resection margin of 1 cm has enabled sphincter preservation with acceptable continence and has modernized oncologic surgery practices through the adoption of intersphincteric resection (ISR). Neoadjuvant therapy—an integral part of the standard care when available—enables chemoreduction of locally advanced, very low rectal cancer, allowing for ISR. This report discusses a patient with distal rectal cancer, threatening but not invading the left levator muscle, treated with ISR at Ndola Teaching Hospital, Ndola, Zambia. The tumour was excised with a negative resection margin using total mesorectal excision principles via the ISR procedure, accompanied by a diverting ileostomy. Postoperatively, the patient underwent adjuvant chemoradiation therapy. Following ileostomy reversal, the patient exhibited good continence and continued follow-up at our national Cancer Diseases Hospital. According to national records, this represents Zambia's first report of a patient treated with ISR.

**Keywords:** rectal neoplasms, intersphincteric resection, sphincter preservation, anal continence, ileostomy, surgical oncology, Zambia

## Introduction

Colorectal cancer ranks as the third most prevalent cancer globally and the fourth leading cause of cancer-related mortality.[1] Radical treatment by total mesorectal excision—introduced by Heald in 1982—offers a chance of cure, improves survival, reduces tumour recurrence, and improves survivors' quality of life.[2] Traditionally, distal rectal cancer was treated by abdominoperineal excision (APR), resulting in patients losing their anal sphincters, which is associated with permanent colostomy placement, reduced quality of life, and psychological distress postoperatively.[3]-[5] The discovery that rectal cancer rarely exceeds a distal resection margin (DRM) of 1 cm has advanced oncologic surgical practices, allowing for sphincter preservation with satisfactory continence.[5]

APR affords a DRM of 5 cm with a circumferential resection margin (CRM) of 1 mm.[3],[5],[6] Low anterior resection (LAR) offers a DRM of 2 to 5 cm, while intersphincteric resection (ISR) can offer a DRM of 1 cm.[6]

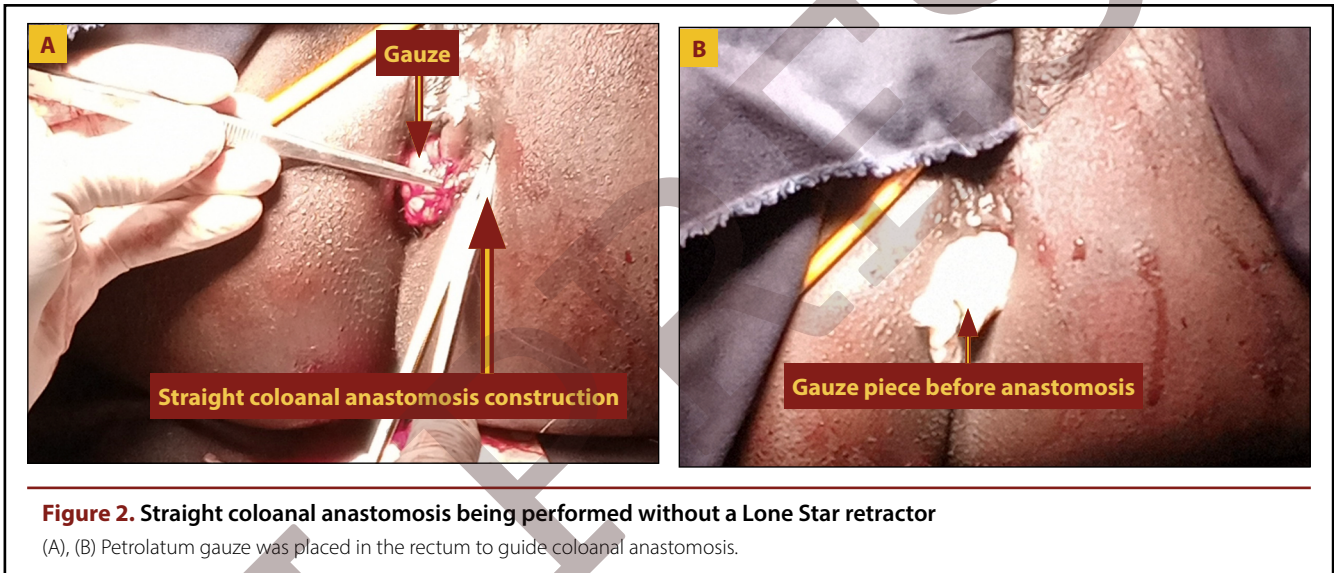
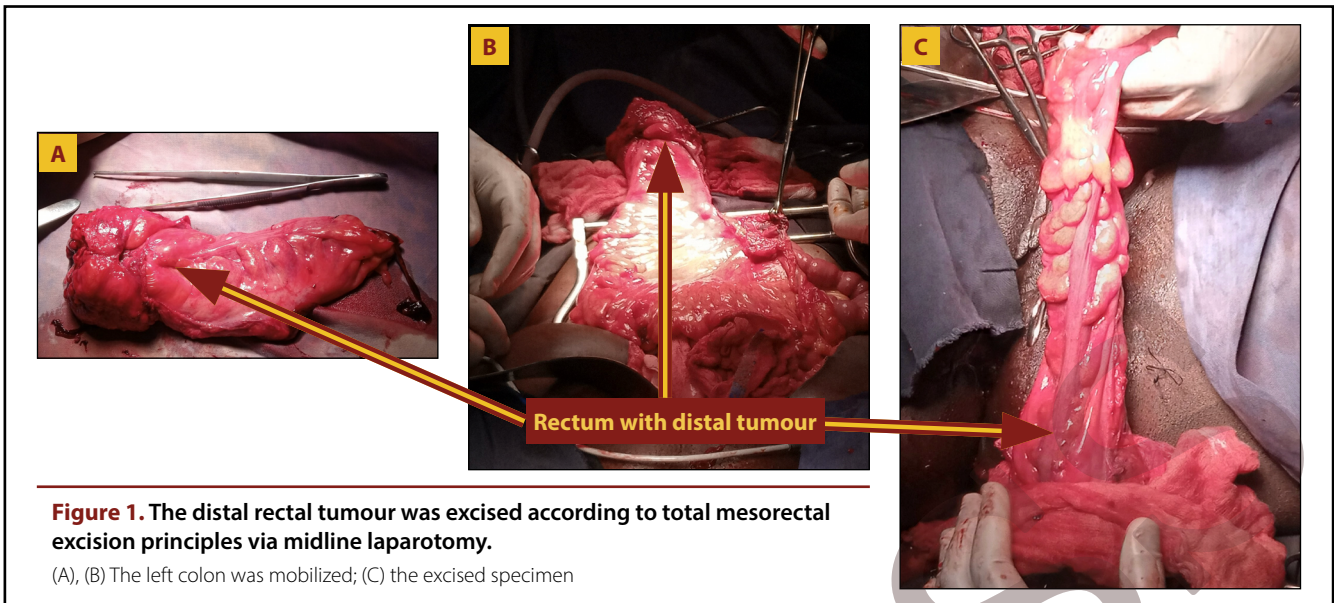
Neoadjuvant therapy for distal rectal cancer with chemoradiation has led to the achievement of a 1-cm DRM, allowing sphincter-preserving surgery with satisfactory continence, achieved by straight coloanal anastomosis that affords normal defecation.[7] In contemporary rectal oncologic surgery, sphincter preservation is achieved by LAR and ISR,[8] among which only ISR affords a DRM of 1 cm, allowing ultra-low coloanal anastomosis and sphincter preservation. If a sufficient DRM cannot be achieved, then ISR cannot be performed, and APR is offered.[8]

This report details the ISR approach towards managing the DRM in a patient with low rectal cancer, which was proximal but not invasive to the left levator muscle. Opting against any treatment leading to a permanent colostomy, this patient, who was managed at Ndola Teaching Hospital, represents the first report of ISR in Zambia, as per the existing national records.

## Case presentation

A 53-year-old woman self-referred with symptoms of rectal bleeding, blood in stool, and tenesmus of an 8-month duration. The patient had experienced weight loss for about 7

[PAGE NUMBERS NOT FOR CITATION PURPOSES]



months. She was HIV negative with no comorbidities and had no family history of cancer. On examination, she had an ECOG (Eastern Cooperative Oncology Group) Performance Status grade of 0. The abdominal examination was unremarkable. The digital rectal examination revealed a circumferential, polypoid, hard mass with contact bleeding. CEA (carcinoembryonic antigen) and CA 19-9 (carbohydrate antigen 19-9) were within normal limits.

Colonoscopy revealed a rectal mass, the distal end of which was located between 1.8 and 2.0 cm proximal to the anal verge. The scope was able to negotiate beyond the mass, and a complete colonoscopy was achieved. A biopsy was collected that showed moderately differentiated invasive adenocarcinoma. Contrast-enhanced computed tomography confirmed a rectal mass without distant metastasis. Pelvic magnetic resonance imaging confirmed a rectal mass abutting the left levator ani muscle, as well as an initial clinical stage of cT3N2M0 with a clear CRM. The diagnosis was stage III rectal cancer, necessitating neoadjuvant therapy. However, due to COVID-19 pandemic-related restrictions, the patient could not be referred to Cancer Diseases Hospi-

tal for the recommended neoadjuvant therapy. Consequently, the national multidisciplinary team advised proceeding with upfront surgery with either APR or ISR, followed by adjuvant therapy.

Exploration at the time of surgery revealed a resectable superficial liver metastasis in segment 5, measuring 0.5 × 0.5 cm (cM1), with no peritoneal metastasis or ascites. Importantly, the patient maintained normal anal sphincter function.

Curative surgery was performed as follows:

1. A midline laparotomy was performed with the patient in a supine position for abdominal access.
2. High ligation of the inferior mesenteric artery 1 to 2 cm above its origin was performed, and the inferior mesenteric vein was divided and ligated 2 cm below the inferior border of the pancreas.
3. Mobilization of the splenic flexure was facilitated by dissection along the white line of Toldt and division of the splenicocolic ligament.
4. The greater omentum was dissected off the left colon up to the position of the middle colic vessels.

[PAGE NUMBERS NOT FOR CITATION PURPOSES]

5. Total mesorectal excision of the rectum up to the intersphincteric groove was performed.
6. The perineal portion of the procedure was conducted in the lithotomy position.
7. ISR was executed, with the specimen removed abdominally (and not rectally) to minimize tumour perforation risk (Figure 1).
8. A hand-sewn, straight, coloanal anastomosis was performed (Figure 2).
9. A diverting loop ileostomy and liver metastasis excision were performed.
10. Abdominal lavage and drain placement were carried out, and the specimen shown in Figure 2A was submitted for histopathologic examination, which confirmed a complete (R0) resection of moderately differentiated adenocarcinoma with clear margins (CRM >1 mm and DRM of 1.8 cm) and no evidence of lymphovascular or neural invasion (pT3N1M1).

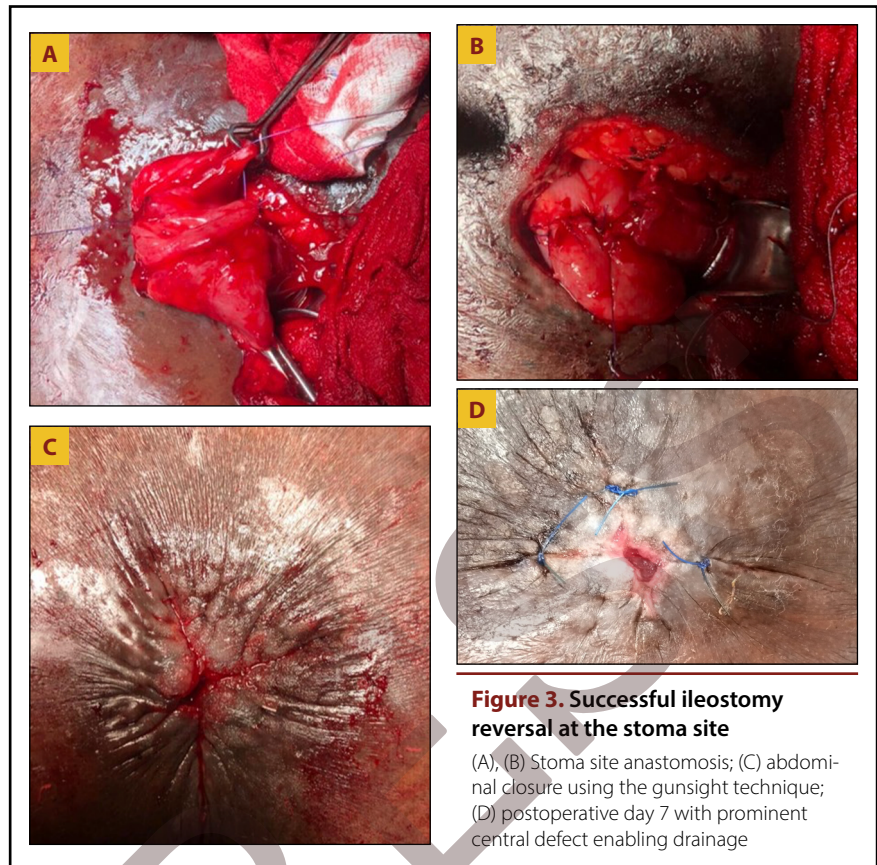
11. Reversal of the ileostomy was performed, as shown in Figure 3.

The patient recovered without postoperative wound complications, following a course of antibiotics, analgesics, and anticoagulant therapy. She was discharged after 9 postoperative days and was referred for chemoradiotherapy 6 weeks postoperatively. The patient received a 45-Gy radiotherapy dose at 9 Gy per fraction, along with chemotherapy consisting of capecitabine and oxaliplatin. She was referred to our facility 16 weeks later for the reversal of the ileostomy.

Subsequent assessments, including colonoscopy and rectal enema, confirmed the absence of recurrence and a patent rectum. She was optimized for ileostomy reversal. She had a haemoglobin of 12.6 g/dL, with normal liver and kidney function. The loop ileostomy was reversed at the stoma site (Figure 3) using a gunsight closure technique to minimize the risk of wound complications. The patient recovered well and was discharged 5 days later. She was followed up for 30 days and was referred to Cancer Diseases Hospital in Lusaka for long-term follow-up. Over the following 2 years (up to the time of this report being composed), our patient has remained recurrence-free, underscoring the effective management of rectal cancer with ISR and adjuvant chemoradiation therapy.

## Discussion

Colorectal cancer is often advanced at presentation, particularly in our setting. Neoadjuvant therapy enables downstaging of borderline resectable to a resectable status, facilitating curative surgical management with anal sphincter preservation.[9] The goal of curative oncological surgery for rectal cancer is to secure a negative resection margin, prevent recurrence, preserve rectal, anal continence, and genitourinary



**Figure 3. Successful ileostomy reversal at the stoma site**

(A), (B) Stoma site anastomosis; (C) abdominal closure using the gunsight technique; (D) postoperative day 7 with prominent central defect enabling drainage

functions, and mitigate any decline in quality of life.[8],[9] Before the advent of sphincter preservation surgery, patients with rectal cancer were offered the APR proposed by Miles,[10] leading to a permanent colostomy and a subsequent decrease in quality of life.[11] Achieving a negative margin in rectal cancer surgery requires the en bloc removal of the mesorectum and its associated vascular and lymphatic networks while conserving the autonomic nervous system.[8],[9]

Our patient had rectal cancer located in the lower third of the rectum that invaded perirectal fat but not the posterior vaginal wall; therefore, it was staged as T3. Total mesorectal excision was offered to our patient as the CRM was clear. There was no involvement of the anal sphincter, and the tumour abutted the left levator ani muscle.

The concept of anal sphincter-preserving surgery, particularly LAR for tumours situated 2 to 5 cm from the anal verge, was introduced by Parks et al.,[12] offering an alternative to permanent colostomy when the anal sphincter and levator ani muscle are not invaded by the tumour. A significant advancement came from Schiessel et al.,[13] who demonstrated that a DRM of 1 to 2 cm from the anal verge could yield outcomes comparable to LAR, thus avoiding the need for APR in these cases. Schiessel et al. found that the anal sphincter can be spared through ISR with a DRM of 1 cm; this approach was offered to our patient. This surgical treatment is supported by the NCCN guidelines of 2021.[9]

Our patient presented with a rectal tumour situated 1.8 cm from the anal verge, leading to the recommendation of ISR after initial imaging excluded distant metastasis, and tumour markers (CA 19-9 and CEA) were found to be within normal limits. The patient was not offered the NCCN-recommended step of neoadjuvant chemoradiotherapy because

[PAGE NUMBERS NOT FOR CITATION PURPOSES]

of a COVID-19 outbreak that led to the suspension of all new and nonurgent cancer treatments while the nation was overwhelmed with COVID-19 patients. The timeline for resuming neoadjuvant therapy after the lifting of COVID-19 restrictions remained unclear. Given the tumour's resectability (clear CRM of 1 mm and free mesorectal fascia) and the feasibility of achieving negative margins, immediate surgery was proposed following recommendations from the national multidisciplinary team meeting. [8],[9] Achieving a resection margin >1 mm, which correlates with a negative radial margin, has been identified as a critical factor in reducing local recurrence and improving survival after curative surgery, as highlighted by Park et al. [12], and this was achieved in our patient. Rates of local rectal cancer recurrence after curative treatment range between 2.6% and 32%. [8]

Our patient received adjuvant therapy with 6 cycles of capecitabine and oxaliplatin and 5 fractions of 9-Gy radiation therapy over a period of 16 weeks. The ileostomy reversal was carried out 8 weeks after she completed adjuvant chemoradiation therapy.

To minimize the morbidity associated with laparotomy, the stoma closure was performed directly at the stoma site. [14] We used a gunsight closure technique to lower the risk of surgical site infections while ensuring cosmetically favourable outcomes relative to traditional linear closure methods. [15]

Using the ISR approach and carefully avoiding autonomic nerve damage at the hypogastric plexus during pelvic dissection in the total mesorectal excision procedure, we preserved the patient's anal continence and sexual function. [8] Rectal reservoir function was preserved via a straight coloanal anastomosis. [16] Injury to the hypogastric plexus and its branches can cause anal incontinence, urgency, stool frequency, and soiling—symptoms collectively known as LAR syndrome. [8],[16] Our patient's faecal incontinence severity index was normal, indicating well-preserved anal continence.

## Conclusions

Sphincter-preserving surgery can be achieved through ISR as a curative treatment for rectal cancer that effectively spares the external anal sphincter, preserves anal continence, enhances survival rates, and sustains quality of life. ISR, when performed by skilled surgeons, results in lower rates of LAR syndrome. ISR should be offered to patients with very low rectal cancer to avoid the need for a permanent colostomy and the subsequent decline in quality of life often associated with APR. Ideally, ISR should be preceded by neoadjuvant chemoradiation to optimize treatment outcomes.

**Acknowledgements:** We thank the management of Ndola Teaching Hospital for their support.

## References

1. Luo C, Cen S, Ding G, Wu W. Mucinous colorectal adenocarcinoma: clinical pathology and treatment options. *Cancer Commun (Lond)*. 2019;39(1):13. doi:10.1186/s40880-019-0361-0 [View Article] [PubMed]
2. Heald RJ, Husband EM, Ryall RD. The mesorectum in rectal cancer surgery—the clue to pelvic recurrence? *Br J Surg*. 1982;69(10):613-616. doi:10.1002/bjs.1800691019 [View Article] [PubMed]
3. Hong KS, Moon N, Chung SS, Lee RA, Kim KH. Oncologic outcomes in rectal cancer with close distal resection margins: a retrospective analysis. *Ann Surg Treat Res*. 2015;89(1):23-29. doi:10.4174/astr.2015.89.1.23 [View Article] [PubMed]

4. Park JJ, Kim JC. Intersphincteric resection for patients with low-lying rectal cancer: oncological and functional outcomes. *Ann Coloproctol*. 2018;34(4):167-174. doi:10.3393/ac.2018.08.02 [View Article] [PubMed]
5. Shirouzu K, Murakami N, Akagi Y. Intersphincteric resection for very low rectal cancer: a review of the updated literature. *Ann Gastroenterol Surg*. 2017;1(1):24-32. doi:10.1002/ags3.12003 [View Article] [PubMed]
6. Collard M, Lefevre JH. Ultimate Functional preservation with intersphincteric resection for rectal cancer. *Front Oncol*. 2020;10:297. doi:10.3389/fonc.2020.00297 [View Article] [PubMed]
7. Guedj N, Maggiori L, Poté N, et al. Distal intramural and tumor spread in the mesorectum after neoadjuvant radiochemotherapy in rectal cancer: about 124 consecutive patients. *Hum Pathol*. 2016;52:164-172. doi:10.1016/j.humpath.2016.01.017 [View Article] [PubMed]
8. Kazuma SME, Nittala R, Sukumar V, Kazi M, Saklani A. Review of intersphincteric resections for rectal cancer treatment. *Surg Case Rep (Tallinn)*. 2021;4(4):j.SCR.2021.04.03. doi:10.31487/j.SCR.2021.04.03 [View Article]
9. Benson AB, Venook AP, Al-Hawary MM, et al. NCCN guidelines insights: rectal cancer, version 6.2020. *J Natl Compr Canc Netw*. 2020;18(7):806-815. doi:10.6004/jnccn.2020.0032 [View Article] [PubMed]
10. Miles WE. A method of performing abdomino-perineal excision for carcinoma of the rectum and the terminal portion of the pelvic colon. *Lancet*. 1908;172(4451):1812-1813. doi:10.1016/S0140-6736(00)99076-7 [View Article] [PubMed]
11. Zedan A, Tawfik A, Aboeleuph E, Salah A, Morsy A. Intersphincteric resection is the optimal procedure for very low rectal cancer: techniques, morbidity, oncologic and functional outcomes. *J Cancer Ther*. 2019;10(5):400-410. doi:10.4236/jct.2019.105033 [View Article]
12. Park JG, Lee MR, Lim SB, et al. Colonic J-pouch anal anastomosis after ultralow anterior resection with upper sphincter excision for low-lying rectal cancer. *World J Gastroenterol*. 2005;11(17):2570-2573. doi:10.3748/wjg.v11.i17.2570 [View Article] [PubMed]
13. Schiessel R, Karner-Hanusch J, Herbst F, Teleky B, Wunderlich M. Intersphincteric resection for low rectal tumours. *Br J Surg*. 1994;81(9):1376-1378. doi:10.1002/bjs.1800810944 [View Article] [PubMed]
14. Kazuma SME, Musowowa J, Chirengendure B, Mumbwe M, Inambao M. A retrospective case series describing the outcomes of 7 early reversals of temporary ileostomies at a teaching hospital in Ndola, Zambia. *East Cent Afr J Surg*. 2021;26(1):41-44. doi:10.4314/ecajs.v26i1.7 [View Article]
15. Li CK, Liang WW, Wang HM, et al. Gunsight sutures significantly reduce surgical-site infection after ileostomy reversal compared with linear sutures. *Gastroenterol Rep (Oxf)*. 2020;9(4):357-362. doi:10.1093/gastro/goaa075 [View Article] [PubMed]
16. Spanos CP. Intersphincteric resection for low rectal cancer: an overview. *Int J Surg Oncol*. 2012;2012:241512. doi:10.1155/2012/241512 [View Article] [PubMed]

## Peer reviewed

**Competing interests:** S.M.E.K. is a deputy editor of the East and Central African Journal of Surgery but was not involved in the processing or peer review of this article, and he did not have any influence on the decision to accept this article for publication. The other authors declare that they have no competing interests related to this work.

**Received:** 30 Mar 2022 • **Revised:** 1 Nov 2022, 13 Mar 2023, 30 Apr 2023

**Accepted:** 20 Sep 2023 • **Published:** 29 Apr 2024

**Cite this article as:** Kazuma SME, Chirengendure B, Musowoya J, et al. Distal rectal cancer managed with intersphincteric resection and temporary ileostomy: a case report from a tertiary hospital in Ndola, Zambia. *East Cent Afr J Surg*. Published online April 29, 2024. doi:10.4314/ecajs.v28i3.4

© S.M.E. Kazuma et al. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are properly cited. To view a copy of the license, visit <http://creativecommons.org/licenses/by/4.0/>.