CASE SERIES

En bloc Prostatectomy Combined with Abdominoperineal Resection on Locally Advanced Rectal Adenocarcinoma Involving the Prostate: A Case Series

Hansel Shehaila A. Lastrilla, MD and Enrique Ian S. Lorenzo, MD, FPUA

Department of Urology, Jose R. Reyes Memorial Medical Center

The genitourinary tract is known to be infiltrated in 3–10% of cases of advanced rectal adenocarcinoma. It is usually managed with total pelvic exenteration with urinary diversion. Complications are encountered because of this diversion. This case series aims to present four cases of locally advanced rectal adenocarcinoma involving the prostate who underwent en bloc prostatectomy in Jose Reyes Memorial Medical Center.

Methods: This case series consists of review of records of hospital charts, documentation of specimens from the database of the department.

Results: The study consists of four (4) male patients in their 50s presenting with primary rectal adenocarcinoma with invasion to the prostate, bladder or seminal vesicle. Two out of 4 patients had shorter hospital days (6 days) while 2 patients spent 14 and 28 days. Two out of 4 patients have anastomotic leakage, 1 had nosocomial pneumonia and no one had urinary tract infection, postoperatively. All 4 patients had a histopathologic diagnosis of rectal adenocarcinoma with a tumor size of 3.5 to 7.0 cm. Two patients are positive for lymphovascular space invasion while 1 patient has a positive line of resection margin. Two patients had neoadjuvant chemotherapy and radiotherapy while 1 patient had 1 adjuvant chemotherapy and radiotherapy. One patient was lost to follow-up.

Conclusion: En bloc prostatectomy combined with abdominoperineal resection to treat locally advanced rectal adenocarcinoma provides good local control with the risk of having less postoperative complications. Since there is only one stoma, there is less chance of infection and better quality of life. Complete resection of the tumor can be obtain but can also cause urologic morbidity even after chemotherapy and radiotherapy.

Key words: En bloc prostatectomy, abdominoperineal resection, rectal adenocarcinoma

Introduction

Colorectal cancer (CRC) was noted to be the third most common cancer in 2015. In 2018, Asia had the highest proportions of both incident (51.8%) and mortality (52.4%) CRC cases (all genders and ages) per 100,000 population in the world.[1]

In 2022, an estimated 106,180 cases of colon cancer and 44,850 cases of rectal cancer will be diagnosed in the US, and a total of 52,580 people will die from these cancers.[2]

During surgery for colorectal carcinoma, an infiltration of urological organs is found in 5–10% of patients and may rise to 50% when considering patients with locally advanced tumors (T4) at

presentation. Organs adherent to an advanced colorectal carcinoma must be resected to ensure en bloc removal of the mass. Due to the close anatomical relationship of colorectum and urological organs, the latter are at high risk for extirpation during surgery for advanced colorectal carcinoma.[3]

When there is bladder or the prostate infiltration, anterior pelvic exenteration is the best treatment that achieves the largest percentage of tumor free margins and the best 5-year survival. There are few cases of prostatic infiltration wherein the bladder can still be preserved and prostatectomy and abdominoperineal block resection are performed.[4] The study aims to determine the free resection margin, urologic complications, histopathologic findings and local recurrence on patients with locally advanced colorectal cancer who underwent en bloc prostatectomy and to discuss the management and outcomes of patients with locally advanced colorectal cancer.

The Cases

Case 1

Y.E., a 50 year-old male with no bowel movement for three days and occasional bilious vomiting. He is a known case of rectal adenocarcinoma stage IIC (pT4bN0M0) with invasion to prostate and left seminal vesicle. He underwent neoadjuvant short course of radiotherapy for 5 cycles and had 4 cycles of neoadjuvant FOLFOX. Patient underwent abdominoperineal resection en bloc resection, seminal vesicle and coccygectomy, en bloc prostatectomy after 4 months. Intraoperatively, noted a rectal mass 3 cm from anal verge with invasion of the prostate and seminal vesicle (Figure 1). Four days postoperatively, patient noted have increasing creatinine levels secondary to ischemic acute tubular necrosis. Cystogram was done 2 weeks postoperatively and noted extravasation of contrast and indwelling foley catheter was maintained. Repeat whole abdominal CT scan revealed fistulous tract on the posterior bladder wall and retroperitoneal space. Patient had hospital acquired pneumonia, 2 weeks postoperatively. Patient had percutaneous tube nephrostomy insertion, bilateral one month postoperatively. Patient was discharged after 28 days and had adjuvant chemotherapy for 4 cycles and no urinary symptoms on follow-up.

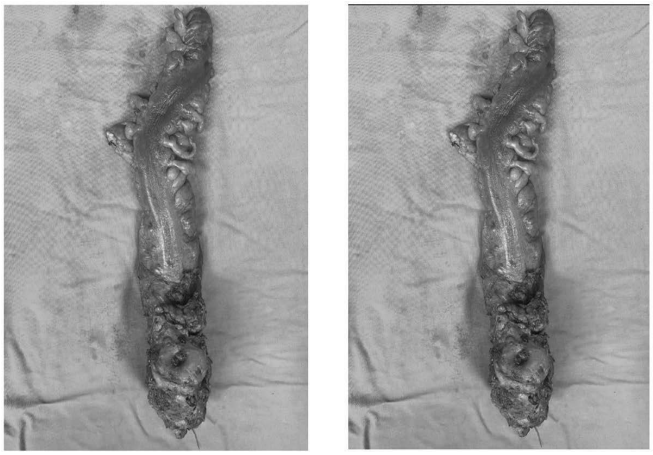

Figure 1. Rectal mass 3 cm from anal verge with invasion of the prostate and seminal vesicle.

Case 2

R.A., a 50-year old male with 1 year history of difficulty in defecation and anal pain associated with anorexia and weight loss. He consulted and subsequently underwent proctosigmoidoscopy with biopsy and colonoscopy which showed rectal adenocarcinoma. Patient underwent sigmoid loop colostomy followed by neoadjuvant chemoradiotherapy for 5 cycles with partial response. On follow-up after 8 months, pelvic MRI showed an eccentric short-segment, heterogeneously-enhancing, nodular wall thickening seen in right lateral aspect of the mucosal/submucosal layer of the lower rectum which is approximately 2.6 cm away from the anal verge. There are few prominent subcentimeter inguinal lymph nodes seen bilaterally. Prostate gland is not enlarged with a weight of 17.5 grams. Patient was referred intraoperatively because of a noted constricting mass at the middle rectum adherent to the prostate (Figure 2). Abdominoperineal resection with en bloc prostatectomy was done. Patient was sent home after 6 days and maintained on indwelling foley catheter for 2 weeks. Cystogram was done prior to removal of IFC, and noted no extravasation of contrast. Patient was has no urinary symptoms on follow-up.

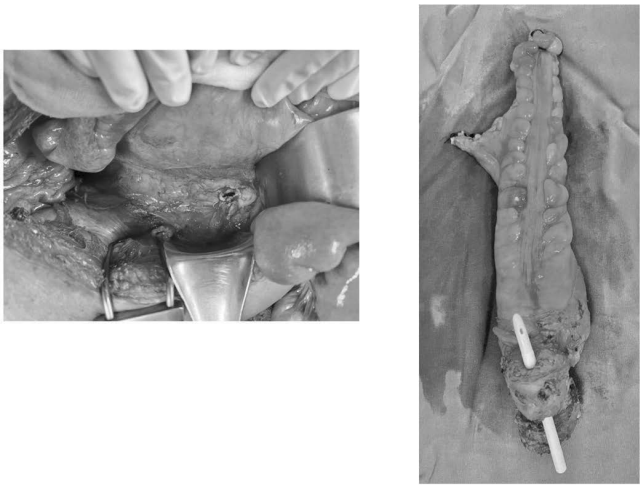

Figure 2. Patient 2 was referred intraoperatively and noted a constricting mass at the middle rectum adherent to the prostate.

Case 3

P.D., a 52 year-old male came in due to prolapsed anal mass and rectal bleeding. Colonoscopy biopsy was done which showed rectal carcinoma with invasion to the bladder. Abdominoperineal resection with en bloc prostatectomy was done with intraoperative findings of rectal mass on the right anterolateral, 1 cm from anal verge up to midrectum with invasion to prostate gland (Figure 3). Patient was sent home after 6 days with unremarkable hospital stay. Patient was advised radiotherapy but was lost to follow-up. Noted leakage after 3 months postoperatively but resolved spontaneously after 1 year.

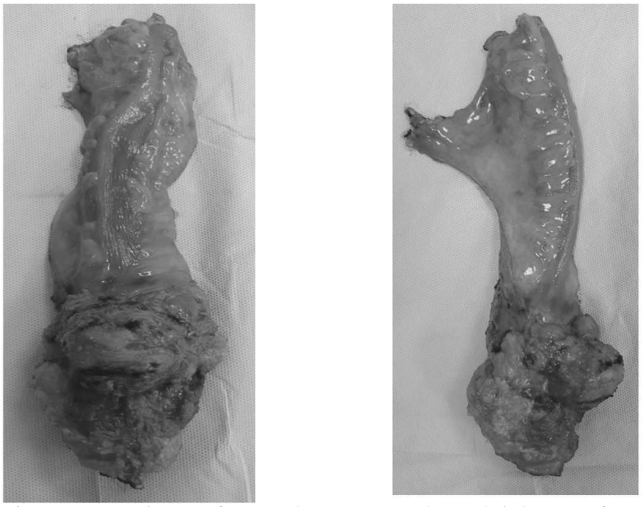

Figure 3. Specimen of a rectal mass anterolateral right 1 cm from anal verge up to midrectum with invasion to prostate gland.

Case 4

S.R., a 57-year-old male who came in due to six months history of hematochezia. Work-up was done which showed rectal adenocarcinoma with prostate involvement. Patient underwent abdominopelvic resection with en bloc prostatectomy and noted an annular, circumferential constricting mass with perianal and prostate involvement. Cystogram was done after 14 days and noted no extravasation of contrast. Patient was sent home after 14 days with no complications and no urinary symptoms. Patient had 13 cycles of adjuvant radiotherapy and 6 cycles of adjuvant chemotherapy.

Result

The study consists of four (4) male patients on their 50s presenting with primary rectal adenocarcinoma with invasion to the prostate, bladder or seminal vesicle (Table 1).

Table 1. Patient demographics.

Patient No.	Age	Tumor	Diagnosis
1	50	Primary	Rectal adenocarcinoma with invasion to the prostate and left seminal vesicle
2	50	Primary	Rectal adenocarcinoma with prostate invasion
3	52	Primary	Rectal carcinoma with invasion to the bladder
4	57	Primary	Rectal adenocarcinoma with prostate involvement

Postoperatively, 2 out of 4 patients have anastomotic leakage, 1 had nosocomial pneumonia, no one had urinary tract infection (Table 2). Patient number 3 noted leakage 3 months postoperatively. Two (2) out of 4 patients had short hospital days (6 days) while 2 patients spent 14 and 28 days.

Table 2. Postoperative complications.

Patient No.	Anastomotic Leakage	Urinary Infection	Hospital acquired Pneumonia	Days in the hospital
1	Yes	No	Yes	28 days
2	No	No	No	6 days
3	Yes	No	No	6 days
4	No	No	No	14 days

All 4 patients had a histopathologic diagnosis of rectal adenocarcinoma with a tumor size of 3.5 to 7.0 cm. One patient had no residual tumor. Two (2) patients are positive for lymphovascular space invasion while 1 patient has a positive line of resection margin (Table 3).

Two patients had neoadjuvant chemotherapy and radiotherapy while 1 patient had 1 adjuvant chemotherapy and radiotherapy. One patient was lost to follow-up.

One patient had liver metastasis on follow-up after 1 year, while 1 patient expired after 1 year post surgery.

Table 3. Histopathology.

Patient No.	Diagnosis	Tumor size	Lymphovascular Invasion	Margin	AJCC classification
1	Rectal adenocarcinoma, extending up to the prostate	3.5 cm	Not demonstrated	Circumferential resection margin, with the nearest measuring 0.2 cm	pT4bN0M0
2	Rectal adenocarcinoma	No residual tumor	Not demonstrated	Not applicable	
3	Rectal adenocarcinoma, well-differentiated, rectum	4.0 cm	Positive for lymphovascular space invasion	Negative all lines of resection	pT3N1aMx
4	Adenocarcinoma, well-differentiated, invading up to the peritoneum, rectum and extending up to the skin of the anus.	7.0 cm	Positive for lymphovascular space invasion	Positive for malignant cells: - Prostate -Lines of resection, prostate - 5 out of 16 (5/16) isolated paracolic lymph nodes	pT4bN2aMx

Table 4. Other management.

Patient No.	Radiotherapy	Chemotherapy
1	neoadjuvant short course of radiotherapy for 5 cycles	1. neoadjuvant chemotherapy x 4 cycles (FOLFOX) 2. adjuvant chemotherapy x 4 cycles
2	neoadjuvant radiotherapy x 5 cycles with partial response	neoadjuvant chemotherapy x 5 cycles with partial response
3	Lost to follow-up	Lost to follow-up
4	13 cycles of adjuvant radiotherapy	6 cycles of adjuvant chemotherapy

Table 5. Follow-up.

Patient No.	Recurrence	Metastasis
1	Yes	Yes (liver)
2	No	No
3	Lost to follow-up	Lost to follow-up
4	N/A	N/A

Discussion

Total pelvic exenteration is the standard approach in treating patients with locally advanced rectal adenocarcinoma with a staging of ≥ T3, involving the seminal vesicles, trigone of the urinary bladder and prostate.[5] It involves en bloc removal of the rectum, urinary bladder, distal ureters, and reproductive organs with curative intent, with negative surgical margins.[6] R0 margin is important for long-term survival.[7]

The creation of the ileal conduit stoma is important and if not done properly, can jeopardize the postoperative recovery by the constant leak of urine around an ill-fitting appliance.[8] This procedure results in double stomas and compromises quality of life. TPE results in chronic morbidity often secondary to urinary diversion.

Majority of recurrences will occur within 2 years after surgery and 90% by 5 years. If the patient exceeds 5 years after surgery without recurrence, the chances of developing a recurrence later become unlikely.[9] Recurrent disease detection based on history and physical examination alone varies from 15 to 40%.[10]

All of the patients in the studies are in their 50s who underwent abdominoperineal resection with en bloc prostatectomy. Ureteral injury and urinary leak after urinary diversion are the most common causes of morbidity and mortality in patients who have undergone TPE.[5]

Postoperatively, all four patients had cystogram after 2 weeks and patient number 1 noted extravasation of contrast which is managed conservatively with indwelling foley catheter. 1 patient had leakage 3 months postoperatively which resolved spontaneously. Only 1 patient had hospital acquired pneumonia. No patient had urinary tract infection.

In terms of being cost-effective, 2 patients had shorter hospital stay compared to the other 2 patients. Two (2) out of 4 patients had short hospital days (6 days) while 2 patients spent 14 and 28 days.

If adequate surgical margins can be achieved, without a total cystectomy, local and distal failure rates will not be lessen by cystectomy and urinary diversion.[5]

The tumor size ranges from of 3.5 to 7.0 cm and 1 patient had no residual tumor. Two (2) patients are positive for lymphovascular space invasion while 1 patient has a positive line of resection margin. One patient had liver metastasis follow-up after 1 year. One patient was advised adjuvant chemotherapy and radiotherapy but was lost to follow-up after surgery and that same patient expired after 1 year.

Conclusion

En bloc prostatectomy combined with abdominoperineal resection to treat locally advanced rectal adenocarcinoma provides good local control with the risk of having less postoperative complications. However, certain conditions like nosocomial infection will cause longer hospital stay. Since there is only one stoma, there is less chance of infection and better quality of life. Complete resection of the tumor can be obtained but can also cause urologic morbidity even after chemotherapy and radiotherapy. Even after the surgery, follow-up is important for the continuation of management because locally advanced rectal carcinoma requires a multi-disciplinary team in its treatment process.

Disclosure

No conflict of interest because the funding for this study came from the primary investigator.

References

1. Sung H, Ferlay J, Siegel RL, Laversanne M, Soerjomataram I, Jemal A, Bray F. Global Cancer Statistics 2020: GLOBOCAN Estimates of Incidence and Mortality Worldwide for 36 Cancers in 185 Countries. CA Cancer J Clin 2021 May;71(3):209-49. doi: 10.3322/caac.21660. Epub 2021 Feb 4.
2. American Cancer Society. Cancer Facts & Figures 2022. Atlanta, Ga: American Cancer Society; 2022.
3. Stief CG, Jonas U, Raab R. Long-term follow-up after surgery for advanced colorectal carcinoma involving the urogenital tract. Eur Urol 2002; 41(5): 546-50. ISSN 0302-2838,https://doi.org/10.1016/S0302-2838(02)00062-3.
4. Amo FH, Ríos DS, Jiménez FM, Espí MG, Manuel FAC. Preservación de la vejiga en el cáncer de recto con invasión de la próstata,Actas Urológicas Españolas,2004; 28(6): 447-51.ISSN 0210-4806,https://doi.org/10.1016/S0210-4806(04)73108-3.

5. Balbay MD, Slaton JW, Trane N, Skibber J, Dinney CP. Rationale for bladder-sparing surgery in patients with locally advanced colorectal carcinoma. Cancer 1999 Dec 1; 86(11): 2212-6. doi: 10.1002/(sici)1097-0142(19991201)86:11<2212::aid-cncr6>3.0.co;2-2.
6. Shirouzu K, Isomoto H, Kakegawa T. Total pelvic exenteration for locally advanced colorectal carcinoma. Br J Surg 1996 Jan;83(1):32-5. doi: 10.1002/bjs.1800830109.
7. The PelvEx Collaborative, Factors affecting outcomes following pelvic exenteration for locally recurrent rectal cancer, Br J Surg 2018; 105(6): 650–7. https://doi.org/10.1002/bjs.10734
8. Russo P, Ravindran B, Katz J, Paty P, Guillem J, Cohen AM. Urinary diversion after total pelvic exenteration for rectal cancer. Ann Surg Oncol 1999 Dec;6(8):732-8. doi: 10.1007/s10434-999-0732-x.
9. Godhi S, Godhi A, Bhat R, Saluja S. Colorectal cancer: Postoperative follow-up and Surveillance. Indian J Surg 2017 Jun;79(3):234-237. doi: 10.1007/s12262-017-1610-6. Epub 2017 Mar 10.
10. Mäkelä JT, Laitinen SO, Kairaluoma MI. Five-year follow-up after radical surgery for colorectal cancer: Results of a prospective randomized trial. Arch Surg 1995;130(10):1062–7. doi:10.1001/archsurg.1995.01430100040009