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CASE REPORT

Combined robot-assisted radical prostatectomy and anterior resection for synchronous prostate and colorectal carcinoma: a case series

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Background: This article presents a case series of three male patients who underwent combined robot-assisted radical prostatectomy and anterior resection (RARP-AR) for synchronous prostate cancer (PCa) and colorectal cancer (CRC). The aim was to investigate the patient characteristics, surgical sequence, and postoperative oncological and functional outcomes of this surgical modality.

Methods: In all cases, RARP-AR was performed without neoadjuvant chemotherapy or radiation. The patients' postoperative outcomes were assessed in terms of erectile function, and urinary and faecal continence.

Results: The study showed that RARP-AR represents a potential single surgery for the management of synchronous PCa and CRC.

Conclusion: The authors conclude that further studies are needed to validate these findings and standardise the logistics of the combined robotic resection of these anatomically distinct but neighbouring structures.

Keywords: combined robot-assisted radical prostatectomy, anterior resection, synchronous prostate, colorectal carcinoma

Introduction

PCa and CRC are the two most common cancers in males, contributing to 15% and 9% of new cancers, respectively.[1] The coexistence of both cancers has been described in the literature, with evidence showing an increased risk of a second primary PCa within one year after diagnosis of CRC.[2] The exact incidence of synchronous PCa and CRC remains unknown. Combined RARP-AR represents a potential single surgery for the management of both synchronous PCa and CRC coupled with the advantages of a minimally invasive surgical modality. Despite cases having been described in the literature, the logistics of undertaking a combined robotic resection of two anatomically distinct, yet neighbouring structures, has yet to be standardised.[3–6]

In this case series, we present three cases of combined RARP-AR performed by us along with the postoperative oncological and functional outcomes. Functional outcomes evaluated the pre-and postoperative erection score using the latest International Index of Erectile Function (IIEF-5) questionnaire, urinary continence according to the need for absorbent pads, and subjective faecal continence. Table I presents the patients' preoperative profiles.

Case presentations

Case 1

Case 1 presents a 64-year-old male patient with a screening prostate-specific antigen (PSA) level of 3.9 ng/mL (Free: total PSA ratio = 10%) and a clinically normal digital rectal examination (DRE). A multiparametric magnetic resonance imaging (mpMRI) of the prostate revealed an organ-confined prostate imaging-reporting and data system (PI-RADS) scale 4 lesion, while also detecting a suspicious distal sigmoid colon mass. Consequent colonoscopy and biopsy demonstrated a carcinoma in situ of the colon.

Given the size of the colonic lesion and macroscopic concern for deeper penetration, surgery was offered to the patient. No neoadjuvant chemotherapy or radiation was given and the patient underwent RARP-AR during which prostatic resection was performed first, followed by rectal resection and anastomosis. The total console time amounted to 720 minutes with a total intraoperative blood loss of 400 ml and no need for blood transfusion.

Postoperatively, the patient spent 1.5 days in high care with discharge on day 10 from admission. The patient had a minor fall without significant consequences on day 5 post-surgery which

Table I: Preoperative patient profile

Patient	1	2	3
Age	64	71	64
PSA (ng/mL)	3.9	3.6	24
Prostate biopsy (Gleason score)	3 + 4	3 + 4	3 + 4
Rectal biopsy	Carcinoma in situ	Carcinoma in situ	Infiltrating, moderately differentiated CRC
MRI prostate	PI-RADS 4 / confirmed	PI-RADS 4 / confirmed	PI-RADS 4 / confirmed
MRI rectum	Distal sigmoid	Recto-sigmoid junction	Recto-sigmoid junction

was attributed to a syncopal episode. Histology of the resected specimens revealed a pT2pN0pMx Gleason 3 + 4 prostate and a pTispN0pMx of the sigmoid colon. Both specimens had R0 resection margins. Follow-up at 41 months showed a PSA of < 0.03 ng/mL with no urine or faecal incontinence. The postoperative erection score was 6 compared to a preoperative score of 20.

Case 2

Case 2 presents a 71-year-old male patient with a screening PSA of 3.6 ng/mL and a clinically abnormal DRE. A mpMRI of the prostate revealed an organ-confined PI-RADS scale 4 lesion of the prostate with an incidentally detected suspicious recto-sigmoid junction mass. Histology from the consequent prostate biopsy showed a Gleason 3 + 4 adenocarcinoma of the prostate.

The patient underwent colonoscopy and biopsy of the colorectal tumour which demonstrated a carcinoma in situ of the colon. Given the size of the colonic lesion and macroscopic concern for deeper penetration, surgery was offered to the patient. No neoadjuvant chemotherapy or radiation was given and the patient underwent RARP-AR during which rectal resection was performed first, followed by prostatic resection and then colorectal anastomosis. The total console time amounted to 360 minutes with a total intraoperative blood loss of 200 ml and no need for transfusion.

Postoperatively, the patient spent one day in high care and a further three days in the general surgical ward. Histology of the resected specimens revealed a pT2cpN0pMx Gleason 3 + 4 adenocarcinoma of the prostate and confirmed an adenocarcinoma in situ of the rectum (pTispN0pMx). Both specimens had R0 resection margins. Follow-up at 39 months demonstrated a PSA < 0.03 ng/mL with no urine or faecal incontinence. The postoperative erection score was 18 compared to a preoperative score of 19.

Case 3

Case 3 presents a 64-year-old male patient with a preoperative screening PSA of 24 ng/mL and abnormal DRE (cT2c). A mpMRI of the prostate revealed an organ-confined PI-RADS scale 4 lesion of the prostate and an incidental recto-sigmoid junction mass. Consequent biopsy of the colorectal tumour demonstrated a Tubulovillous colorectal carcinoma while a prostate biopsy revealed a Gleason 3 + 4 adenocarcinoma of the prostate.

No neoadjuvant chemotherapy or radiation was given and the patient underwent RARP-AR during which rectal resection was performed first, followed by prostatic resection and then colorectal anastomosis. The total console time amounted to 420 minutes with a total intraoperative blood loss of 200 ml and no need for blood transfusion.

Postoperatively, the patient was sent directly to the general surgical ward. Histology of the resected specimens revealed a pT3apN0pMx Gleason 3 + 4 adenocarcinoma of the prostate and confirmed a Tubulovillous colorectal carcinoma (pT1pN0pMx). Both specimens had R0 resection margins. Follow-up at 13 months demonstrated a PSA < 0.03 ng/mL with no faecal incontinence. The patient occasionally used a pad as needed for minimal urine incontinence. The postoperative erection score was 5 compared with a preoperative score of 5.

Discussion

Surgical technique

Our surgical approach and sequence for the three cases went through a dynamic process of refinement as we sought a pragmatic approach to resecting these dual pathologies. For case 1, we started with the prostatic resection. We re-docked after dissecting the splenic flexure. Issues prolonging the surgery included urine and blood obscuring the view during the mesorectal dissection as well as undertaking multiple team changes during the procedure.

With cases 2 and 3, we started with the mesorectal dissection and rectal tumour resection before proceeding to the prostatic resection and pelvic lymph node dissection (PLND). A technical issue encountered with cases 2 and 3 was that the air distension of the retroperitoneum from the initial rectal resection moderately impaired our vision during the prostatic resection. Nevertheless, cases 2 (360 minutes) and 3 (420 minutes) demonstrated a significant reduction in operative time when compared to case 1 (720 minutes). Mean intraoperative blood loss was 270 ml with no patient requiring transfusion. Cases 1 and 2 were taken to high care postoperatively, spending 1.5 days and one day in high care before transfer to a general surgical ward. Case 3 was transferred directly to a general surgical ward postoperatively. The mean in-hospital days postoperatively were five days (Table II).

In all three cases, complete oncological logical resections were achieved with R0 resection margins on the rectal lesions and undetectable PSA values at consequent follow-up visits (Tables II and III). Case 1 demonstrated a significant loss of erectile function while cases 2 and 3 had almost completely preserved pre-and post-

Table II: Perioperative findings

Patient	1	2	3
Approach	Prostate-rectum-anastomosis	Prostate-rectum-anastomosis	Prostate-rectum-anastomosis
Total time (min)	720	360	420
Total blood loss (ml)	400	200	200
High care (days)	1.5	1	0
In hospital (days)	8	3	4.5
Histology prostate	pT2pN0pMxR0 Gleason 3 + 4	pT2pN0pMxR0 Gleason 3 + 4	pT3apN0pMxR0 Gleason 3 + 4
Histology rectum	pTispN0pMx R0 margins	pTispN0pMx R0 margins	pT1pN0pMx R0 margins

Table III: Follow-up findings

Patient	1	2	3
Time (months)	41	39	13
PSA (ng/mL)	< 0.03	< 0.03	< 0.03
Erection score (pre- and post-surgery)	20/6	19/18	5/5
Urine continence	No pads	No pads	Pad worn for safety
Faecal continence	Normal	Normal	Normal
Recurrence	Nil	Nil	Nil

surgery scores. No faecal or urine incontinence resulted from the surgery.

Current literature

Given the limited availability of data concerning the co-occurrence of synchronous prostate and colorectal cancer, the establishment of a standardised surgical approach remains elusive. Within the literature documenting this particular clinical entity, there exists a notable preference for conducting colorectal resection before prostatectomy, as evidenced by various case series.[3,5,6] Noteworthy among these is the case series conducted by Fukata et al.,[6] encompassing five cases of RARP-AR, wherein the median duration of surgical procedures amounted to 629 minutes, with consistent adherence to the sequence of colorectal resection preceding prostatectomy. Additionally, two distinct single case studies have independently advocated for a surgical strategy where colorectal resection precedes prostatectomy, characterised by procedural durations of 360 and 949 minutes respectively.[3,5] It is important to emphasise that the aforementioned case series have not explored the merits, drawbacks, and appropriateness inherent to various surgical approaches for this unique clinical scenario.

Conclusion

Prostate and colorectal cancer are the two most common cancers in men. Men with CRC are at an increased risk of synchronous PCa. Combined RARP-AR is a potentially safe and efficient surgical approach to the management of synchronous PCa and CRC. A standardised approach to the operation is needed, as well as more long-term data on patient outcomes.

Conflict of interest

The authors declare no conflict of interest.

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Ethical approval

Ethics committee approval was obtained from the University of Cape Town Human Research Ethics Committee (Ref: HREC ref: 376/2023).

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