Laparoscopic curative resection of synchronous primary colon adenocarcinoma and renal cell carcinoma: a case report

ABSTRACT

Introduction: Synchronous colorectal and renal carcinomas are rare entity, with a reported incidence of 0.4 to 4.85%. Both are primary cancers occurring in the same patient, either at the same time or within 6 months apart.

Presentation of Case: We report a case of a 61-year-old man who presented with 3 months history of left lower abdominal pain and painless per rectal bleeding. Colonoscopy revealed a fungating mass 20 cm from the anal verge and histopathological examination of the biopsies confirmed a moderately differentiated adenocarcinoma. Computed tomography scan of abdomen showed a thickened sigmoid colon with enlarged pericolic lymph nodes and an incidental finding of a left renal upper pole mass. He underwent laparoscopic left partial nephrectomy and laparoscopic anterior resection in the same setting. Histopathological examination revealed moderately differentiated adenocarcinoma of sigmoid colon and a clear cell renal cell carcinoma with good margins of resection. He recovered well, completed adjuvant chemotherapy and remained recurrence free at his 1-year follow-up.

Conclusions: Simultaneous laparoscopic surgery for synchronous colorectal and renal carcinomas offers the advantages of primary tumour resection within the same setting & is technically feasible and safe. When attempting surgery for tumours involving left hemicolon and left kidney, a combined approach where nephrectomy followed by colonic resection should be the surgical strategy.

Keywords: Synchronous tumours, colorectal carcinoma, renal carcinoma

1. INTRODUCTION

Colorectal carcinoma is the second most common cancer in Malaysia, with an age-standardised rate of 14.6 and 11.1 per 100,000 population for male and female respectively [1]. Renal cell carcinoma occurs less frequently, with an age-standardised rate of 1.7 and 0.8 per 100,000 population for male and female respectively [1]. Synchronous cancers are defined as two or more primary cancers in the same patient at the same time or within 6 months apart [2]. The synchronous association of colorectal and renal cell cancer is rare, with studies reporting only 0.4-4.85% [3,4]. Simultaneous laparoscopic multi-organ resection combined with colorectal cancer has been shown to be safe and feasible option in selected patients [5,6]. Here, we present a patient with synchronous sigmoid colon adenocarcinoma and renal cell carcinoma that was successfully treated with simultaneous laparoscopic partial nephrectomy and laparoscopic anterior resection.

2. PRESENTATION OF CASE

A 61-year-old man presented with 3 months history of left lower abdominal pain and painless per rectal bleeding. Colonoscopy showed a constricting tumour 20cm from anal verge which biopsies revealed to be a moderately differentiated adenocarcinoma. Initial carcinoembryonic antigen level was 3.5ng/mL. A staging computed tomography (CT) scan of the thorax, abdomen and pelvis was performed that demonstrated a thickened wall of the sigmoid colon (Figure 1A) with enlarged pericolic lymph nodes. There was also an incidental mass arising from the upper pole of the left kidney (Figure 1B). A preliminary diagnosis of primary colon cancer with renal metastasis was suspected. A decision for combined left partial nephrectomy and anterior resection was made at an oncologic multidisciplinary meeting.

The laparoscopic left partial nephrectomy was performed with prior left ureteric stenting. The patient was positioned in the right lateral decubitus position under general anaesthesia. Four trocars were used: The first 12-mm port was placed at the paraumbilicus to introduce the laparoscope. Another 12-mm port was placed at the left hypochondrium, and two 5-mm ports were placed at the left lower quadrant. The surgery started with mobilization of the splenic flexure and descending colon along the white line of Toldt to gain exposure of the left kidney. The left ureter and gonadal vein were identified and traced to the hilum. Hilar dissection was carefully carried out with renal artery slung with vessel loops. Gerota's fascia was dissected off the renal surface while preserving the perirenal fat in contact

with the tumour. Intraoperative laparoscopic ultrasonography was performed to delineate the tumour's margin and vascularity (Figure 2A). A vascular bulldog clamp was then positioned across the renal artery. Renal parenchymal incision was made circumferentially around the tumour with endoscopic scissor. The subsequent parenchymal repair was done with intracorporeal suturing of 2/0 Vicryl (Ethicon, Ireland) suture with a sliding hemolock technique. The vascular bulldog clamp was released to revascularize the kidney, thus terminating warm ischemia. Total warm ischemia time was 15 minutes 32 seconds. Good hemostasis was achieved upon unclamping of hilar artery. Flushing of left ureteric catheter with normal saline showed no leak from the collecting system. The tumour, with a margin of normal parenchymal as well as the overlying perinephric fat and Gerota's fascia was then placed into a 10 mm specimen retrieval bag and positioned in the lower abdomen.

Then, anterior resection was performed next with the patient repositioned to a supine position with both legs in a modified lithotomy position. Additional 3 more ports were added, one 12-mm port at the right iliac fossa and two 5-mm ports at the right lumbar and suprapubic. The patient was placed in a Trendelenburg position with the left-side of the patient elevated once all ports were inserted. The inferior mesenteric artery and vein were isolated, clipped with haemolock and divided close to their origins. Mobilization of the sigmoid & left hemi-colon was carried out using a mostly the medial-to-lateral approach. The lateral attachments of the sigmoid and left hemi-colon were divided up to the splenic flexure. Next the upper part of the rectum was mobilized with the posterior dissection along the avascular plane of Heald followed by lateral mobilization. The mesorectum at the upper rectum was divided using ultrasonic dissector (Harmonic Scalpel, Ethicon Endo-Surgery, Cincinnati, OH). The rectum was then transected (Figure 2B) using a 60-mm roticulated endoscopic linear stapler (Echelon, Ethicon Endo-Surgery, Cincinnati, OH) inserted through the right iliac fossa trocar. A transverse incision was made over the left iliac fossa followed by application of the Alexis dual-ring wound protector/retractor (Applied Medical, Rancho Santa Margarita, CA). The tumor-bearing segment was exteriorized and a purse-string device & bowel clamps were applied. The descending colon was subsequently divided extracorporeally, with the insertion of a 29-mm circular stapler (CDH, Ethicon Endo-Surgery, Cincinnati, OH) anvil into the lumen. The descending colon and the anvil were returned into peritoneal cavity and the abdomen closed. The pneumoperitoneum was

re-established and an end-to-end colorectal anastomosis was created through transanal insertion of the shaft of the circular stapler and docking of the anvil and the shaft. Total operation time was 305 minutes with a blood loss of 50 ml. There were no peri-operative complications. The patient passed flatus on the postoperative day 1, was allowed soft diet on postoperative day 3 and discharged home on postoperative day 4. Histopathologic examination (HPE) revealed moderately differentiated adenocarcinoma (Figure 3A) extending to subserosa (4 cm, I out of 21 lymph node positive, T3N1M0) and clear cell renal cell carcinoma (Figure 3B) (3.5 cm, T1N0M0) with clear resection margins. The patient had since completed 8 cycles of adjuvant combination chemotherapy of Oxaliplatin and Capecitabine (Xelox) and remained recurrence free at his 2-year follow-up.

3. DISCUSSION

This report confirms that simultaneous laparoscopic partial nephrectomy and anterior resection is not only technically feasible but also safe. The patient had benefitted from the combined surgery with rapid postoperative recovery with no morbidity. Conventional open surgery involving simultaneous resection of synchronous primary colon and renal carcinoma usually entails a liberal laparotomy incision that is often associated with significant postoperative morbidity. The use of laparoscopy allows thorough examination of all quadrants of the peritoneal cavity during the first surgery which is essential for staging. It provides a magnified view enabling early control and ligation of vascular pedicles. The second stage of the surgery is also able to utilise the original ports position from the first part of the surgery which minimises the insertion of additional working ports. The laparoscopic resection is advantageous as it eliminates the need for the patient to wait for second surgery which would be susceptible to the scheduling delays. It allows early recovery and initiation of adjuvant chemotherapy as both the specimen HPE will be available after the surgery. Our patient recovered uneventfully and was able to complete 8 cycles of adjuvant XELOX chemotherapy, a combination shown to be superior to 5-FU/leucovorin for patients with stage III colon cancer [7], without any ill effects. However, the main limitations for such a combined approach are that the completion of both procedures relies on the experience & technical expertise of the surgeons involved with the surgery. Complications encountered during the resection of first tumour may result in postponement of the

second surgery. The operative time is longer but usually offset by early recovery, shorter overall hospital stay and minimal morbidity.

Partial nephrectomy is the recommended approach for management of clinical T1a (<4 cm) renal masses as it minimizes the risk of chronic kidney disease (CKD) or CKD progression, while providing similar oncological outcomes, including excellent local control when compared to radical nephrectomy [8]. Transperitoneal approach as in our case is the most commonly adopted approach as it is associated with a wider working space which facilitates intra-operative suturing [9]. Lymph node dissection is generally not performed unless there is a suspicion of lymphadenopathy identified on imaging or during surgical exploration. It is done primarily for staging purpose [8]. As in our case, lymph node dissection was not performed. The tumour was removed with a margin of normal parenchymal as well as the overlying perirenal fat and Gerota's fascia.

Laparoscopic approach has now gained acceptance as the preferred approach for patients with colonic carcinoma as it offers both the short-term benefits and long-term equivalent oncological result when compared to conventional surgery [10,11]. During laparoscopic anterior resection, oncological principles of the surgery were strictly adhered to. This included minimal handling of tumour during dissection, en bloc resection with high ligation of inferior mesenteric artery, radical lymph node dissection & adequate proximal, lateral and distal resection margins.

In our case, laparoscopic left partial nephrectomy was performed first followed by standard laparoscopic anterior resection. This is the sequence of surgery we would advocate for all the combined laparoscopic surgeries involving left hemi-colon and left kidney. The positioning of patient differs between the two procedures with the patient placed initially in the right lateral decubitus for the laparoscopic partial nephrectomy and then supine modified lithotomy position for laparoscopic anterior resection. More attention is required for the positioning of patient in a lateral decubitus position. It involves a joint effort of operating room nursing, anaesthesia and surgical teams. Certain precautions need to be taken when positioning the patient. Stabilization with straps is required to prevent movement and positional shift. Attention need to be paid to avoid eye and ear injuries, ensuring the downside eye and ear are free from pressure, with the use of donut roll for the ear and

eye guard. Neck flexion need to be avoided with midline positioning of the neck with supporting towels. Adequate padding over the pressure points and dependent areas was used to prevent specific nerve injuries and pressure sores. Significant attention must be provided to address potential ventilation issues due to dependent lung compromise and ventilation perfusion mismatch. As for the surgical approach, the lateral mobilization of the splenic flexure and descending colon for left partial nehrectomy facilitates subsequent mobilization of left hemi-colon for anterior resection. Hence, it is a technical advantage to perform partial nephrectomy first.

4. CONCLUSION

Simultaneous laparoscopic left partial nephrectomy and anterior resection is feasible and safe. When attempting surgery for tumours involving left hemicolon and left kidney, a combined approach where nephrectomy followed by colonic resection should be the surgical strategy.

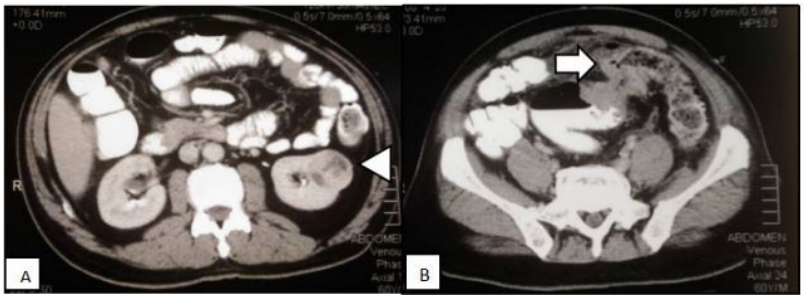

Figure 1 Axial computed tomography (CT) scan of abdomen demonstrating (A) Upper pole mass (white arrowhead) of left kidney. (B) Thickened wall of sigmoid colon (white arrow).

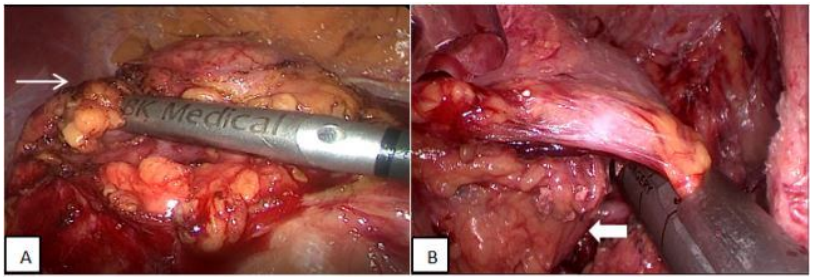

Figure 2 (A) Laparoscopic ultrasonographic probe used to delineate the margin and vascularity of left renal tumour (white arrow). (B) Rectal transection made with endoscopic linear stapler at an appropriate margin from sigmoid tumour (white block arrow).

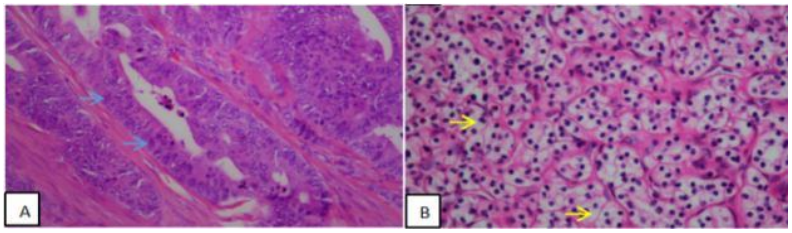

Figure 3 (A) Adenocarcinoma of sigmoid colon: Malignant glands lined by dysplastic epithelium, displaying abundant mitotic figures (blue arrows). (B) Left renal tumour: The individual tumour cells have hyperchromatic round nuclei with crinkly nuclear membrane and inconspicuous nucleoli. The cytoplasm is abundant and clear containing glycogen (yellow arrows).

Patient Perspective

The patient is very satisfied with the outcomes of surgery in particularly he experienced minimal post-operative pain and excellent cosmesis.

Ethical Approval:

As per international standard or university standard written ethical approval has been collected and preserved by the author(s).

Consent

As per international standard or university standard, patient(s) written consent has been collected and preserved by the author(s).

Competing interests

The authors declare that they have no competing interests

Authors contributions

SLS was involved in the conception, design, analysis and interpretation of data, and the initial drafting of the manuscript. WTS was involved in the acquisition of data, analysis and interpretation of data, and the initial drafting of the manuscript. GCT, NM & MN provided inputs for important intellectual content. All authors read and approved the final manuscript.

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