Case Report

The case report of surgical and medical co-management in a triple organs resection surgery

Lu Wenning a, Meng Xiangfei b, Wang Rong a, Zhang Liping a, Liu Chaoyang a, Cheng Rui a,∗

a Department of Comprehensive Surgery, The Second Medical Center & National Clinical Research Center for Geriatric Diseases, Chinese PLA General Hospital, Beijing, 100853, China
b Department of Hepatobiliary, The First Medical Center, Chinese PLA General Hospital, Beijing, 100853, China

ABSTRACT

Introduction: and Importance: There have been few studies in the literature that report patient have triple combined procedures done via minimally invasive approaches. We report a co-management SMC intervention helped an 88-years-old patient with multiple surgery risk factors have combined procedures done via robotic-assisted approaches at one sitting with excellent surgical outcomes.

Case presentation: We describe the surgical and medical co-management (SMC) intervention of a 88-year-old male patient who was found to have colonic carcinoma, right renal carcinoma, gall bladder stones, hypertension, plumonary interstitial fibrosis, atrioventricular block. The patient underwent simultaneous triple robotic-assisted laparoscopic surgery procedure consisting of right partial nephrectomy, right hemicolecomy and cholecystectomy using robot. Perioperative optimization approach was recommended and planned after consultation with group comprises internists and surgeons. The internists rounds on the patient daily and helps to manage all chronic medical comorbidities. He was discharged without any severe complications.

Conclusions: This case shows the feasibility and safety of the synchronously triple robotic surgical treatments, with clinic outcomes that is better with that of the separately. SMC approach may maximize therapy efficiency and patient recovery in elder patients with chronic disease who has significantly higher postoperative complications.

1. Introduction

The number of patients with synchronous carcinoma malignancies has been increasing over the recent years because of carefully examination before surgery [1,2]. Thus, the demand for combined medical services in patients, especially in elder patients with chronic disease who has significantly higher postoperative complications, poses a new challenge for surgeons. Surgical and medical co-management (SMC) team should be addressed about therapeutic challenges [3]. The SMC team comprises of surgeons and internists, is a patient centered, protocol-driven collaborative model used to optimize the therapy of surgical patients.

There have been few studies in the literature that report patient have triple combined procedures done via minimally invasive approaches [4]. We report a co-management SMC intervention helped an 88-years-old patient with multiple surgery risk factors have combined procedures done via robotic-assisted approaches at one sitting with excellent surgical outcomes.

This case report has been reported in line with the SCARE Criteria [5].

2. Presentation of case

A 88-years-old man visited our hospital because of positive fecal occult blood test. Colonoscopy showed colon tumor located at the hepatic flexure but no distant or lymph node metastases. Examination of Colonoscopy showed rectal cancer (Fig. 1A). His medical history included hypertension, hyperlipidemia, arrhythmia of atrioventricular block and chronic plumonary interstitial fibrosis. Drugs used incuding rosuvastatin, amiodipine besylate, no aspirin. He smoked and alcohol for fifty years. On preoperative PET imaging and abdominal CT he also had a 2.8 cm right renal mass at the middle pole. The mass appeared...
exophytic and showed heterogeneous enhancing: the imaging features were consistent with Clear cell carcinoma of the kidney (Fig. 1B). He also had gall bladder stones in abdominal MRI (Fig. 1C). His pulmonary function tests showed FEV1 = 80% of predicted and oxygen partial pressure (80 mmHg) of arterial blood, staging chest CT scan show servers chronic diffuse interstitial fibrosis of the lungs (Fig. 1D). American Society of Anesthesiologists (ASA) class score is 3 (a patient with severe systemic disease) and obesity of BMI (29.3 Kg/m²).

Operative procedure: A multidisciplinary surgical approach was recommended and planned after consultation with an urologist, a colorectal and a hepatobiliary surgeon. The patient underwent simultaneous triple robotic-assisted laparoscopic surgery (RAS) procedure consisting of right partial nephrectomy, right hemicolectomy and cholecystectomy using robot da Vinci® Xi (Intuitive Surgical Inc). The partial nephrectomy was performed first. Renal enucleation was performed with 20 min renal ischemia (Fig. 2A). The hand assisted incision was closed. The patient repositioned in lithotomy position and the robotic cholecystectomy procedure performed (Fig. 2B). The colectomy was performed following cholecystectomy using the same hand assisted access (Fig. 2C). Total operative time was 480 min with robotic time of 360 min.

Interventions Performed by SMC: Perioperative optimization approach was recommended and planned after consultation with SMC group. The internists rounds on the patient daily and helps to manage all chronic medical comorbidities. Acute medical or surgical conditions, or both, and complications are managed cooperatively by surgeons and internists. The patient received medical prehabilitation includes: lifestyle (stop smoking), medical (medication review), other (breathing exercise regimen). We did a protective ventilation approach, based on the combination of low tidal volumes (<6 mL/kg ideal body weight), adequately titrated positive end-expiratory pressure (PEEP) and of inspired oxygen (100%FiO2) to maintain satisfactory arterial oxygen saturation. Rehabilitation was standardized with bronchial toilet beginning in the immediate postoperative period, to include intensive chest physiotherapy (30 min twice a day), incentive spirometry, early ambulation, and oxygen supply through a mask to ensure an arterial oxygen saturation of more than 90%. We did goal-directed fluid therapy and early pull out of nasogastric tube to minimizing organ dysfunction, early oral feeding to preservation of gastrointestinal function, active pain control (opioid-sparing anesthesia and analgesia, localaneshe tic infiltration of incisions), and promotion of patient autonomy including early mobilization.

Outcomes: Postoperative, the pain score ranged from 1 to 3, mean 2.2. He resumed normal bowel activity on the 1st and oral diet was administered 2days after surgery. At 10 days after surgery, the bowel integrity was restored. Histopathologic examination of clear cell renal cell carcinoma, moderately differentiated adenocarcinoma of the colon, and chronic cholecystitis. He was discharged with no any sever perioperative complications.

3. Discussion

We report on RAS for synchronous triple abdominal lesions in colorectal cancer, renal cancer and gallstones of an aged patient with multiple chronic diseases.

With the widespread use of imaging techniques like ultrasound, CT scan and MRI, the incidence of synchronous tumor is increasing before operate examination in the last decade, colorectal and renal carcinoma have been reported ocurre synchronously either [6]. The treatment of synchronous carcinoma is, preferably, synchronous resection. Gallstone disease (GD) is one of the most common abdominal conditions [7] and is highly concurrent in colorectal cancer patients [8]. Acute cholecystitis...
after colectomy is a common complication. In view of the mortality from cholecystitis, prophylactic cholecystectomy may be necessary. The laparoscopic surgery has shown to be feasible and safe, and it has become the gold standard of synchronous resection due to advantages of minimally invasive surgery. When compared with a single laparoscopic procedure, combined procedures did not increase postoperative pain, hospitalization, or recovery period [9]. Following the recent introduction of the DaVinci system, RAS has been attempted in various fields. Furthermore, it has been suggested that robotic surgery has several advantages when compared to standard laparoscopic surgery. Optics, ergonomics, a higher degree of precision in surgeon’s hand, are all enhanced with the use of a robotic platform [10]. There are few cases of simultaneous laparoscopic surgery for colorectal cancer and genitourinary cancer, therefore no case is report of triple simultaneous RAS for colorectal cancer, renal cancer and gallstones. We first report on the RAS for synchronous triple abdominal lesions in colorectal cancer, renal cancer and gallstones of an aged patient with multiple chronic diseases. In our current case, the operative time taken to perform the combined surgical procedure was almost the same as the total time taken if all the surgical procedures were done separately. An oral diet was resumed in a similar manner as done for the patient undergoing a single colectomy procedure. On analysis of the preoperative pain scores, it appeared that the pain scores in the patient was not significant increase than in a single score of the three separate surgical procedures. RAS has shown to be feasible and safe, and it may become the standard operate of synchronous resection due to advantages of minimally invasive surgery.

Strengthening the perioperative management of surgery by preventing and treating complications timely are important for the reduction of perioperative mortality in elective surgery. In addition to admission to the ICU, there are two proposals to improve outcome in highly risk surgical patients: co-management and critical care outreach [11,12]. Studies of perioperative co-management or critical care outreach have provided active results for improved patient outcomes. Co-management and critical care outreach for high risk surgical patients have been proved to decrease postoperative complications and mortality [13]. A study reporting the association of the co-management program intervention in 2 key surgical services—Orthopedic and Neurosurgery demonstrates that intervention by co-management was associated with a significant decrease in medical complications [14]. We implemented many perioperative optimization approaches for the patient to avoid perioperative sever complications according to his preoperative assessment result. The surgeons and internists together perform detailed history and examination preoperative, diagnose and optimize patient comorbidities pre and postoperative, treatment with acute medical decompensation and facilitate safe discharges. Hence, although the patient was considered highly risk for surgery because 88-year-old, obesity, increasing ASA status, multiple chronic conditions [15,16], and received a synchronous resection of three important organs, and longtime anesthesia exposure, he was recover and discharged without any severe postoperative complications. Surgeons and internists co-management approach, may maximize therapy efficiency and patient recovery.

In conclusion, RAS may become the preference operate of synchronous resection due to advantages of minimally invasive surgery, at the same time, the SMC may serve as a potential model for delivering high-quality, efficient, and well-coordinated therapy. This model may have the potential to deliver similar results in outcomes and value to other institutions.

**Ethics approval**

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 Editor-in-Chief of this journal on request.

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**Author contribution**

Lu Wenning, Meng Xiangfe: the first two authors contributed equally to this work, and writing, review and editing of the manuscript; Zhang Liping, Liu Chaoyang, Wang Rong: contributed for diagnosis and treatment of the patient; Cheng Rui: responsible for the patient’s therapy, follow-up, and revised the paper.

**Registration of research studies**

1. Name of the registry: was not required
2. Unique Identifying number or registration ID: no
3. Hyperlink to your specific registration (must be publicly accessible and will be checked): no

**Guarantor**

Cheng Rui was responsible for the work and the conduct of the study, had access to the data, and controlled the decision to publish.

**Provenance and peer review**

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**Consent of the patient**

Written informed consent was obtained from the patient for publication of this case report and accompanying images.

**Declaration of competing interest**

The authors declared no potential conflicts of interests with respect to research, authorship and/or publication of the article.
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Appendix A. Supplementary data

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