
RESIDENT'S CORNER

Transperitoneal laparoscopic radical nephrectomy after multiple previous abdominal surgeries and intraperitoneal hyperthermic chemotherapy: a case report

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Laparoscopic indications are still growing due to the acquisition and development of new skills and expertise in the laparoscopic field. We report the first case of a successful transperitoneal right radical nephrectomy after intraperitoneal hyperthermic chemotherapy in a

56-year-old female who previously underwent multiple abdominal surgeries for appendicular adenocarcinoma with pseudomyxoma peritonei. In patients with multiples previous abdominal surgeries and intraperitoneal chemotherapy, transperitoneal laparoscopic surgeries are feasible in experienced hands. However, patient safety is paramount and conversion to open surgery should always be considered in case of complications.

Key Words: retroperitoneal lymph node dissection, testicular cancer, teratoma

Introduction

Adenocarcinoma of the appendix sometimes presents with disseminated disease or with a condition known as pseudomyxoma peritonei. The most acknowledged curative treatment of this condition involves extensive cytoreductive surgery and hyperthermic intraperitoneal chemotherapy as described by Sugarbaker in 1987.¹ Extensive adhesions usually develop after these procedures which render following surgeries technically challenging. In fact many authors discourage laparoscopic nephrectomies after extensive abdominal surgery because of the increased surgical complications rate (bleeding, bowel perforation, longer surgical time, questionable oncologic result, etc).² The case presented shows a different philosophy: the patient successfully underwent laparoscopic radical nephrectomy after multiple extensive abdominal surgeries and intraperitoneal chemotherapy for adenocarcinoma of the appendix.

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Case report

A 56-year-old female patient was investigated for diffuse abdominal pain in 2006. Abdominal computerized tomodensitometry (CT) revealed carcinomatosis of unknown origin involving the small bowel, greater omentum and the liver and the presence of many adenopathies within the abdominal cavity. Since chest CT, positron emission tomodensitometry (PET) scan, gastroscopy and colonoscopy failed to reveal neither a primary digestive nor pulmonary tumoral site; an ovarian cancer was the most probable diagnostic. The gynecological oncologist decided to start the chemotherapy (taxol and carboplatin) and have her scheduled for surgery upon her response to chemotherapy. Unfortunately, she suffered from a small bowel perforation while on chemotherapy requiring surgical abscess drainage and intestinal necrosis resection. Since she was on chemotherapy and suffering from an acute condition, an extensive exploratory laparotomy was not performed. Pathology did not reveal malignant material, besides infected necrosis. A favorable evolution was noted and six months post chemotherapy, the patient underwent a debulking surgery including, hysterectomy, bilateral

ovariectomy, greater omentectomy, appendectomy and multiple peritoneal biopsies. Pathology reports showed an appendicular mucosecreting adenocarcinoma with pseudomyxoma peritonei and multiple metastases within the abdominal cavity. After a multidisciplinary consensus, a Folfiri (5-FU, Leucovorin and Irinotecan) protocol was administered. She underwent a third surgery in September 2008 for a right hemicolectomy, a segment VI hepatectomy, a radical right phrenectomy, cholecystectomy, splenectomy, peritonectomy and cytoreductive surgery with Oxaliplatin intraperitoneal hyperthermic chemotherapy. At postoperative day 5, the patient suffered from anastomotic leak and was re-operated for an end ileostomy. Favorable evolution was noted besides dehydration episodes secondary to diarrhea from the ileostomy. In May 2009, on the basis of diarrheas and esthetic concern, the patient was operated for a fifth time to re-establish digestive continuity. A control PET-CT scan done in the same year, revealed a progressive and hypermetabolic right kidney lesion which was previously known to be a hypometabolic cyst according to numerous previous radiology exams. Another abdominal CT-scan confirmed the solid nature of this lesion that had progressed from 36 mm to 47 mm in less than a year, Figure 1. A renal cell carcinoma was most probable and the patient was scheduled for right laparoscopic radical nephrectomy despite her previous numerous surgeries. She was well informed of the high conversion risk and of all inherent risks of radical laparoscopic nephrectomy. A transperitoneal approach was chosen rather than retroperitoneal because it was felt that complications associated with adhesions (such as bowel trauma secondary to traction) would be more easily recognized if they were to happen. Furthermore, the laparoscopic expert was more comfortable with the transperitoneal approach.

Under general anesthesia, the patient was positioned in a left lateral decubitus. A 1 cm incision lateral to the rectus muscle at 5 cm above the umbilicus was performed and the first port, an Xcel bladeless trocar (Ethicon Inc, Somerville, NJ, USA) was inserted under direct visual entry with a 10 mm 0-degree lens. Once the peritoneal cavity was entered, extensive adhesions were noted and a pneumoperitoneum was set at 15 mmHg. Adhesions were carefully dissected using the blunt 10 mm 0-degree lens in order to make enough space to insert a 5 mm port located at 2 fingerbreadths below the right costal margin and a second 5 mm port was inserted in the midline between the umbilicus and the xiphoid process. Finally, a second 10 mm port was inserted 5 cm below the iliac crest. The colon and

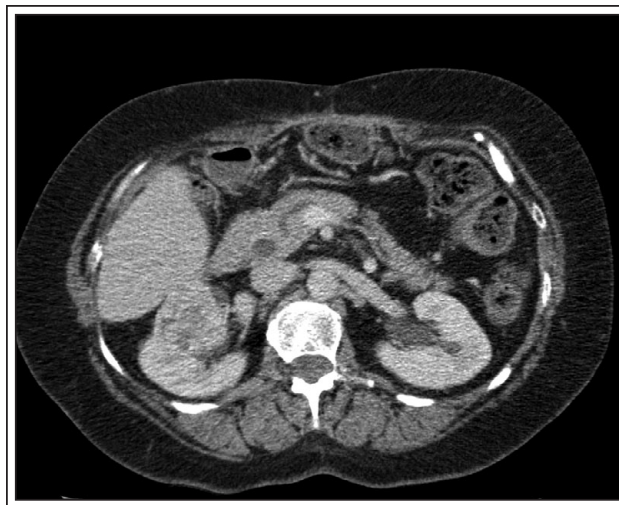


Figure 1. Preoperative CT scan of the right renal lesion.

duodenum were reflected medially to expose the vena cava and the renal hilum. The renal artery and vein were dissected, clipped individually and divided. The liver was adherent to the anterior abdominal wall and there were no need to lift it for better exposure. The lower pole was dissected and the right ureter was clipped and divided. Finally, the posterior and upper poles were dissected. The right kidney was then placed into an Endo Catch bag (Covidien Plc, Loughlinstown, Dublin, Ireland) and extracted by extending the 10 mm port's incision, Figure 2.

The remaining ports were then removed under direct vision and the wounds were closed. The surgical time was 150 minutes and the blood loss was estimated to be less than 100 cc. She was discharged

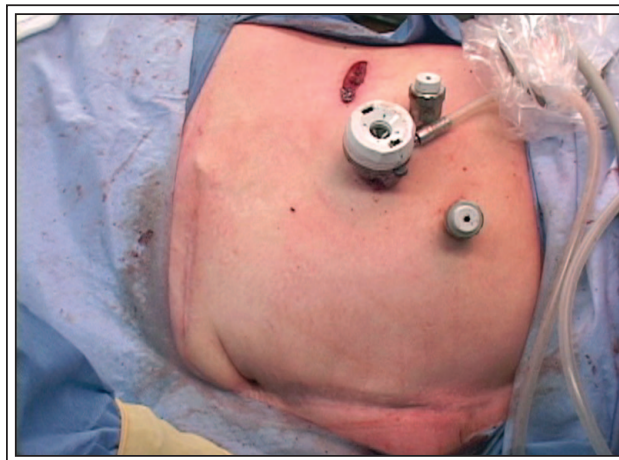


Figure 2. Picture taken after the nephrectomy showing the scars from the patient's past surgeries.

on postoperative day 4 with no per nor postoperative complications. The histological examination confirmed a renal cell carcinoma with renal vein invasion. The final pathological staging was pT3bN0M0.

Discussion

We report the first case of a laparoscopic nephrectomy in a patient with multiple previous abdominal procedures and intraperitoneal chemotherapy. This case is interesting at many levels. First, it is of mention that the patient suffered and survived two malignant lesions and multiple extensive surgeries. Moreover, it is the first described case of major laparoscopic surgery after cytoreductive surgery and hyperthermic intraperitoneal chemotherapy. Many authors would have discouraged the laparoscopic approach for a patient who had intraperitoneal chemotherapy. While many published articles talked about the feasibility of laparoscopic procedure following previous abdominal surgeries,³⁻⁷ there is no article to our knowledge referring to laparoscopic surgery following intraperitoneal chemotherapy.

We placed our trocars far from previous surgery, Figure 2 in order to avoid adherence that usually forms over incisions. It is important to assess prior incision locations before the first trocar insertion to avoid bowel or omentum injuries. A renal biopsy was not performed because radiologic image was compatible with a primary renal cancer.⁸⁻¹⁰ Furthermore, appendicular adenocarcinoma renal metastasis had not been reported.

Traditionally, open radical nephrectomy was the gold standard for treatment of all renal masses.¹¹ Currently, with the advent of minimally invasive approaches, the standard of care for a localized renal mass is laparoscopic nephrectomy because of the high cure rate comparable to open surgery with the advantage of shorter hospital stay and convalescence as well as less blood loss and pain.¹² Obviously, in this particular case, cosmetic result was not real advantage of laparoscopy. This case provides evidence that even major laparoscopic surgery should not be overlooked on the assumption of adhesions after intraperitoneal chemotherapy. However, expert surgeons should perform these laparoscopic surgeries. These procedures are at high risk of conversion and a complete set of instruments for open surgery should always be prepared in the operating room in case of imminent complication requiring emergency conversion. Failure to progress by laparoscopic approach is another indication of conversion to open surgery.

Conclusion

We described a case of laparoscopic radical nephrectomy after major abdominal cytoreductive surgery and intraperitoneal chemotherapy for pseudomyxoma peritonei. To the authors' knowledge, this is the first case reported and it provides tangible evidence that laparoscopic approach is feasible even after intraperitoneal chemotherapy. Laparoscopic surgery could be the first initial approach in similar cases, however it does not preclude conversion to open surgery in the situations where an adverse event or a lack of progression occurs. Those principles of minimally invasive surgery need to be respected in every case. □

References

1. Sugarbaker PH, Kern K, Lack E. Malignant pseudomyxoma peritonei of colonic origin. Natural history and presentation of a curative approach to treatment. *Dis Colon Rectum* 1987;30(10): 772-779.
2. Al-Qudah HS, Rodriguez AR, Sexton WJ. Laparoscopic management of kidney cancer: updated review. *Cancer Control* 2007;14(3):218-230.
3. Jones DB, Soper NJ. Laparoscopic general surgery: current status and future potential. *AJR Am J Roentgenol* 1994;163(6):1295-1301.
4. Diez J, Delbene R, Ferreres A. The feasibility of laparoscopic cholecystectomy in patients with previous abdominal surgery. *HPB Surg* 1998;10(6):353-356.
5. Shokeir T, Badawy A, Abo-Hashem H. Preoperative risk factors for intraabdominal adhesions should not contraindicate surgical laparoscopy for infertility. *JSLs* 2008;12(3):267-272.
6. Akyurek N, Salman B, Irkorucu O et al. Laparoscopic cholecystectomy in patients with previous abdominal surgery. *JSLs* 2005;9(2):178-183.
7. Bouasker I, El Ouaer MA, Smaali I et al. Laparoscopic cholecystectomy on a previously operated abdomen]. *Tunis Med* 2010;88(2):88-91.
8. Niceforo JR, Coughlin BF. Diagnosis of renal cell carcinoma: value of fine-needle aspiration cytology in patients with metastases or contraindications to nephrectomy. *AJR* 1993;161.
9. Pandharipande PV, Gervais DA, Hartman RI et al. Renal mass biopsy to guide treatment decisions for small incidental renal tumors: a cost-effectiveness analysis. *Radiology* 2010;256(3): 836-846.
10. Saldarriaga J, Schwartz J, De Perot T, Vallee JP, Iselin C. Renal mass biopsy: usefulness and indications. *Rev Med Suisse* 2010; 6(274):2358-2361.
11. Andre C, Novick, Steven C Campbell, Arie Belldegrun et al. Guidelines for management of the clinical stage 1 renal mass. 2009; Available at: <http://www.auanet.org/content/media/renalmass09.pdf>.
12. Jeon SH, Kwon TG, Rha KH et al. Comparison of laparoscopic versus open radical nephrectomy for large renal tumors: a retrospective analysis of multi-center results. *BJU Int* 2011;107(5): 817-821.