

Massive Hemorrhage during Retroperitoneal Laparoscopic Radical Nephrectomy: A Case Report

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Laparoscopic radical nephrectomy (LRN) is the standard surgical treatment for localized renal cell carcinoma. LRN can be performed using a transperitoneal or retroperitoneal approach. We report a case of a complication specific to the retroperitoneal approach. A 63-year-old woman with localized right renal cell carcinoma was treated with retroperitoneal LRN. During placement of the first port, tumor vessels were damaged by a balloon dilator. Massive hemorrhage from the retroperitoneal cavity required conversion to retroperitoneal laparotomy to stop the bleeding. When laparotomy was performed, active bleeding had already ceased. The bleeding was caused by damage to the tumor vessels from the balloon dilator. Subsequent nephrectomy was performed without other complications. This case suggests that the transperitoneal approach is safer than the retroperitoneal approach when a tumor is located laterally and contains many tumor vessels. (J Nippon Med Sch 2021; 88: 367–369)

Key words: laparoscopic nephrectomy, balloon dilator, complication, tumor vessels, open conversion

Introduction

Laparoscopic radical nephrectomy (LRN) is considered the standard surgical treatment for localized renal cell carcinoma (RCC)^{1,2}. LRN can be performed using a transperitoneal or retroperitoneal approach. Each approach has its advantages and disadvantages, and a previous meta-analysis reported that the retroperitoneal approach was as safe as the transperitoneal approach³. In our center, retroperitoneal LRN is mainly performed to avoid complications associated with abdominal organs⁴. However, as described above, the retroperitoneal approach has disadvantages not encountered with the transperitoneal approach. We describe a case of a complication specific to the retroperitoneal approach.

Case Presentation

A 63-year-old woman was incidentally found to have right RCC (long diameter on computed tomography, 65 mm; **Fig. 1**), which appeared to infiltrate the perirenal fat. Right RCC, cT3aN0M0, was diagnosed, and retro-

peritoneal right LRN in the lateral decubitus position was planned.

A skin incision was made immediately under the ribs on the midline of the axilla, and the incision was extended to access the retroperitoneum. The retroperitoneal cavity was expanded with a balloon dilator for the first port placement. Immediately after the balloon dilator was withdrawn, massive hemorrhaging from the retroperitoneal cavity required conversion to retroperitoneal laparotomy, to stop the bleeding. By the time laparotomy was performed, active bleeding had already ceased, and a large blood clot had formed around the tumor. The bleeding was likely caused by damage to vessels around the tumor when the balloon dilator was inflated. Subsequent nephrectomy was performed without other complications. The operation time was 228 min, and the volume of blood loss was 1,049 mL. The pathological diagnosis was clear-cell RCC T1b, and the resection margin was negative.

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Discussion

In retroperitoneal LRN, a small incision in the flank is used to access the retroperitoneal cavity, which is expanded with a balloon dilator. The balloon dilator is inflated by manually feeding air into the balloon. This procedure is essential in the retroperitoneal approach. In the present case, massive hemorrhaging was observed during the procedure. To our knowledge, this is the first re-



Fig. 1 The white arrow shows right renal cell carcinoma on preoperative computed tomography

port of a risk of massive hemorrhage during first port placement in retroperitoneal LRN. In the present case, many vessels were observed around the tumor (Fig. 2). In addition, tumor vessels located on the compression surface of the balloon dilator were likely damaged when the balloon dilator was inflated. The surgeons observed the retroperitoneal cavity with a scope during balloon inflation but did not observe the cavity during balloon deflation. Therefore, bleeding was not noticed immediately. During deflation of the balloon dilator, it may be safer to observe the retroperitoneal cavity with a scope. When bleeding from the dilated surface occurs during deflation of the balloon dilator, the balloon dilator should be dilated again to perform pressure hemostasis.

The retroperitoneal approach is recommended for patients with a history of intraperitoneal surgery, because of the possibility of intraperitoneal adhesions. When the tumor is suspected to infiltrate the retroperitoneum and peritoneum, the transperitoneal approach is preferable because there are no complications such as those in the present case, and it is easy to perform a wide resection. For small (<4 cm) RCC with few tumor vessels, both the transperitoneal and retroperitoneal approach are acceptable.

In conclusion, the transperitoneal approach is safer than the retroperitoneal approach when a tumor is lo-

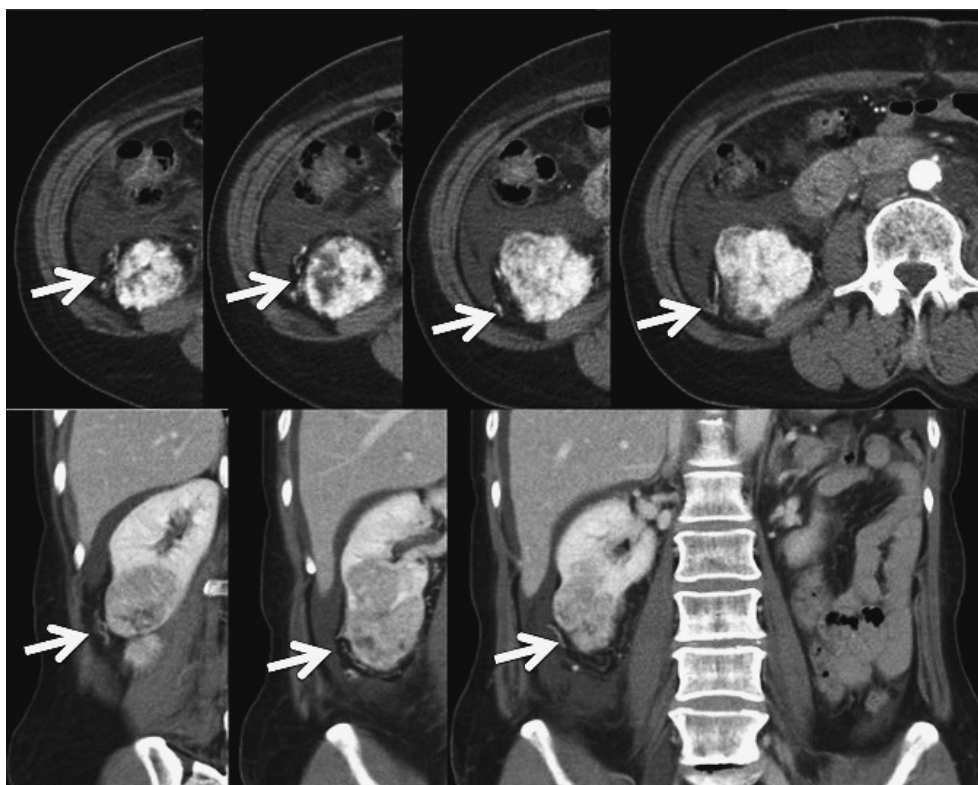


Fig. 2 The white arrows show tumor vessels on preoperative computed tomography

cated laterally and contains many tumor vessels, as in the present case.

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Conflict of Interest: The authors declare no conflicts of interest.

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