

Oncology

Renal fossa recurrence with synchronous port site and appendicular metastases after laparoscopic nephrectomy: Role of metastases and abdominal wall en bloc resection

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ABSTRACT

Isolated renal fossa recurrence and port site metastasis after laparoscopic nephrectomy are two different entities, and despite being rare, in selected cases would benefit from surgical resection. We report the case of a 61-year-old male with local renal fossa recurrence with synchronous metastasis involving the port site, the abdominal wall and the appendix, which was successfully treated with open surgical resection and is free of metastasis or recurrence. To conclude opportune treatment of similar cases, remain a safe and curative option, and should be considered after reviewing the case within a multidisciplinary team.

Introduction

Laparoscopic nephrectomy (LN) is the standard of care for most kidney cancers which accounts for 2% of all cancers.^{1–3} The most common type is renal cell carcinoma (RCC) and of these, the clear cell (cc) variant is the most characteristic. There are still significant concerns regarding the induction of local recurrence and port site metastasis after LN.^{1–3}

The incidence of local recurrence and the risk of port site metastasis is low, it ranges between 0 and 1% of all laparoscopic urologic surgeries, and seems to be multifactorial, but specifically related to the oncological safety of the procedure, and the aggressiveness of the tumor.^{1–3} By definition renal fossa recurrences (RFR) are recurrences in the renal fossa which could be isolated or non-isolated, and port site recurrences are early recurrent tumor lesions developing locally in the abdominal wall.^{3,4}

We present the case of a 61-year-old male with ccRCC treated with laparoscopic radical nephrectomy, who 6-months later developed a non-isolated renal fossa recurrence (niRFR), and synchronous port site metastases with involvement of the appendix.

Case presentation

A 61-year-old male, with hypertension and diabetes, underwent laparoscopic radical nephrectomy for a right kidney, small renal mass (SRM) < 4 cm, with a RENAL score of 10 (Endophytic mass, crossing the polar lines, and in proximity to the collecting system). The surgery went as planned, estimated blood loss was 100 ml, the pneumoperitoneum pressure was maintained below 15 mm HG, and no airseal device or entrapment bag was used, which could explain the burden of the recurrence.

Pathological examination revealed a 4 cm, ccRCC, nucleolar grade WHO/ISUP 2, with negative surgical margins, staged as pT1a cNOMO R0. 6-months after surgery the patient complaint of right lower quadrant abdominal pain, and on physical examination a palpable mass at the port site was found, and was referred to our institution.

Radiological work up with CT scan showed a solid enhancing mass measuring 3.5 × 3x2.9 cm at the renal fossa, a lower quadrant abdominal wall enhancing mass, measuring 20 × 10 × 7 cm, extending from the port site to the pubic bone, another abdominal wall mass extending to the right inguinal canal measuring 8 × 6x5 cm, an intraperitoneal enhancing mass involving the ascending colon mesentery measuring 4 × 3.5 × 3 cm, an intraperitoneal nodule measuring 2 × 2x1 cm, and a

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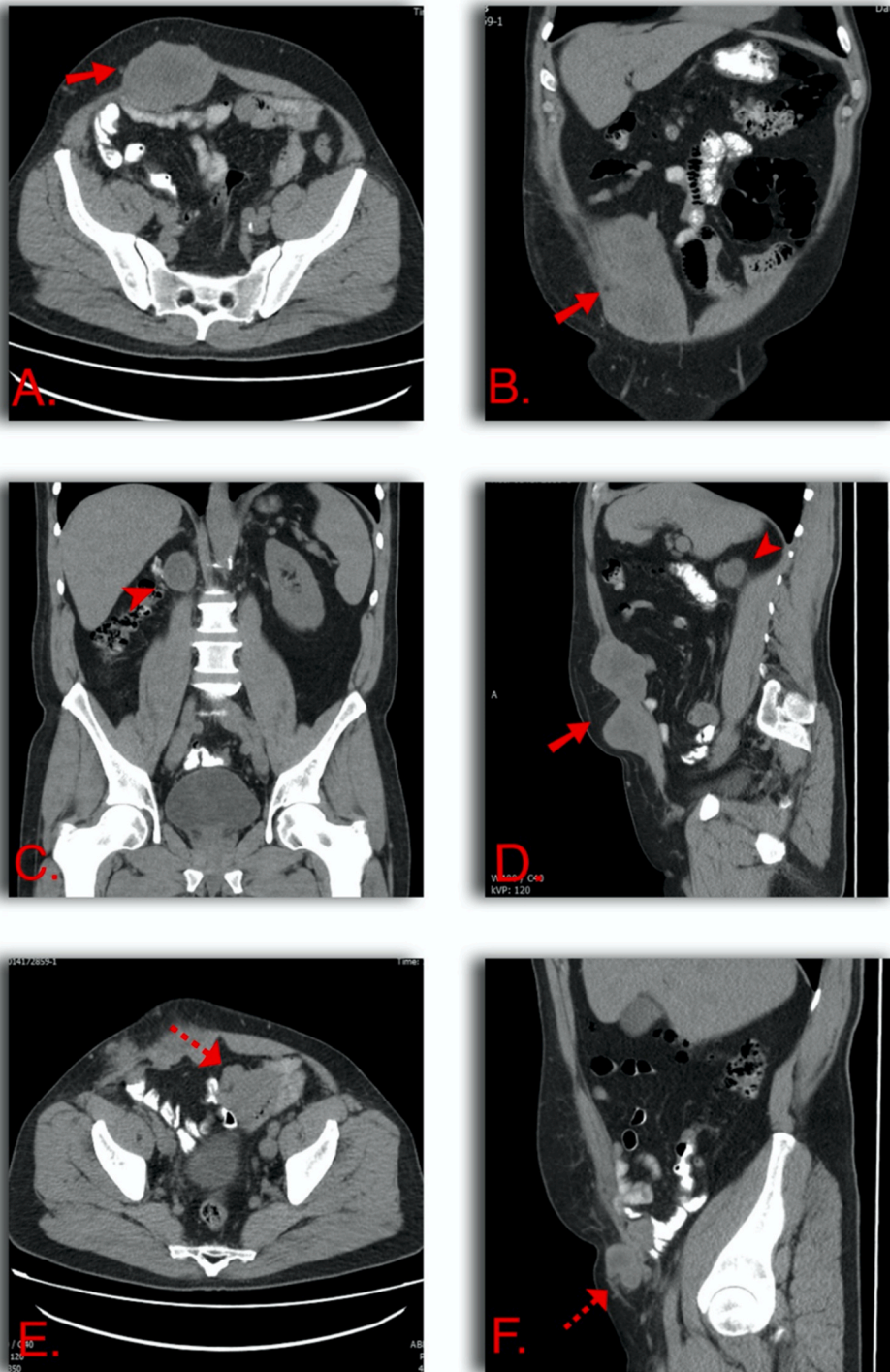
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Fig. 1. Computerized tomography (CT) showing: **A, B** Solid mass at the port site in the right lower abdominal quadrant measuring $20 \times 10 \times 7$ cm, involving all the muscles and the fasciae of the abdominal wall. **C, D.** Solid mass at the right renal fossa (arrowhead) measuring $3.5 \times 3.0 \times 2.9$ cm, and the port site recurrence, aforementioned (Arrow) **E and F.** Intraperitoneal solid enhancing mass on the left iliac fossa, involving the ascending colon mesentery, measuring $4 \times 3.5 \times 3$ cm (Dotted arrow) and a solid enhancing mass compromising the appendix, measuring $6 \times 3 \times 2$ cm (Dotted arrow).



solid enhancing mass compromising the appendix, measuring $6 \times 3 \times 2$ cm (Fig. 1). Chest CT, and bone scintigraphy were both negative.

A 20-cm skin incision was performed along the trocar site scar, and the trocar site mass was resected en bloc with the abdominal wall muscles, fasciae and the peritoneum surrounding the mass. After peritoneal access was gained, the mass involving the ascending colon mesentery was resected, leaving a 2 cm colonic injury, the 2 cm peritoneal nodule was resected, and a standard appendectomy was carried with care of not leaving surgical margins. The retroperitoneal cavity and renal fossa were accessed, and a 3.5 cm mass was removed (Fig. 2.).

Abdominal wall reconstruction and enterorrhaphy of the ascending colon was conducted by gastrointestinal surgery. Postoperative course was uneventful, and patient was discharged on postoperative day 7.

Surgical pathology of the renal fossa tumor, and all metastases revealed a ccRCC. The patient remains alive and asymptomatic, without radiological recurrence, at 6-months follow up.

Discussion

In recent years the use of minimally invasive surgery for the

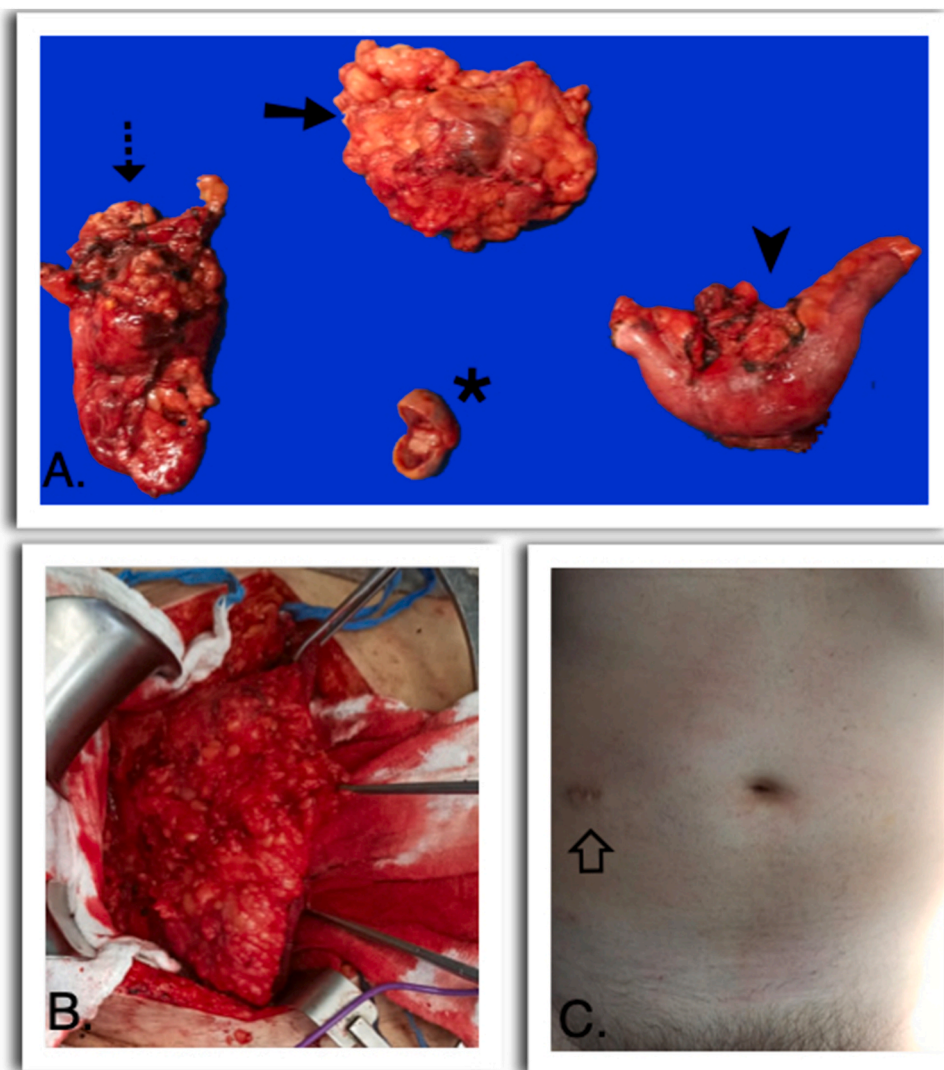


Fig. 2. A. Macroscopic surgical pathology showing, the renal fossa recurrence mass (Arrow) measuring 3 × 2x2 cm, the Appendix (Arrowhead) which is engorged and involved by tumor, measuring 5 × 4x2 cm, the ascending colon mesentery, intraperitoneal mass (Dotted arrow), measuring 4.5 × 3x2 mm, and a peritoneal solid nodule which was completely resected from the ascending colon mesentery measuring 2 × 2 cm (Asterix). B. abdominal wall mass at the port site, measuring 18 × 8 × 4 cm. C. Port site scar at the right lower quadrant before surgical excision of the recurrence.

Table 1
Renal fossa recurrences and port site metastasis in laparoscopic nephrectomy.

Clinical Studies	n	Renal Fossa recurrence		Port Site metastasis
		niRFR	iRFR	
Rassweiler <i>et al</i> (2003)	n = 57	0	1 (1.7%)	0
Romeo <i>et al</i> (2019)	n = 733	8 (1.4%)	19 (2.5%)	8 (1.4%)
Psutka <i>et al</i> (2017)	n = 2502	30 (1.2%)	33 (1.3%)	30 (1.2%)
Micali <i>et al</i> (2004)	n = 3159	4 (0.12%)	0	4 (0.12%)
Tanaka <i>et al</i> (2008)	n = 87	0	1 (1.1%)	0

niRFR = non-isolated renal fossa recurrence; iRFR = Isolated renal fossa recurrence.

treatment of RCC has become commonplace. Tumor seeding after LN is a potential risk, and significant concerns still exist regarding the induction of local recurrence and port site metastasis.¹⁻³ Rassweiler *et al.* reported a local recurrence rate of 1.42% and port site metastasis of 0.35% in more than 1000 operations.¹

The causes of local recurrence and port site metastasis after LN can be divided into four major groups, including tumor aggressiveness

(High-grade, and high-stage), local wound factors (direct wound implantation, tumor spillage), and laparoscopic-related factors such as gas ambience (aerosolization of tumor cells, through increased exfoliation or pneumoperitoneum), contamination of instruments, tumor manipulation, and specimen removal which could include free removal or entrapment, and have proved necessary to remove the tumor specimens using a bag, given that in most reported cases of port site metastasis, the retrieval of the specimen has been done without an extraction bag or with a bag that was torn.¹⁻³

Romeo *et al.* analyzed 733 radical nephrectomies, with a 3.74% RFR, of these, 2.3% with isolated RFR (iRFR), and 8 (1.4%) niRFR. Of the recurrences, 3 patients in the iRFR and 1 in the niRFR were treated with a laparoscopic approach. In this study all patients with synchronous metastatic disease were treated with salvage targeted therapy (TT) or with TT and palliative radiation. Four-year cancer-specific survival in patients without RFR, with iRFR and niRFR was 82.7% (CI 95% 70.2–95.2), 69.2% (IC 44.2–94.2) and 0%, respectively.⁵ (Table 1).

Psutka *et al.* retrospectively reviewed the records of 2,502 patients who underwent radical nephrectomy for RCC, they found 33 (1.3%) of the patients had an iRFR and 30 (1.2%) had a niRFR. After a median follow up of 9 years, the median time to recurrence was 1.4 years. Interestingly 56% of patients with niRFR with synchronous metastasis were managed expectantly, but 8 underwent surgical resection with

varying combinations of systemic therapy. Median cancer specific survival was 1.3 years in niRFR with synchronous metastasis.² (Table 1).

In this specific instance, local surgical resection, has removed evidence of local disease, but the patient remains at high risk and in need of continued monitoring, given the limitation of a short follow up period. Given the large burden of recurrence that happened so quickly, we decided that debulking surgery could benefit the patient, instead of TT by itself. We took that decision with the lack of solid evidence.

In conclusion, niRFR with synchronous metastases is a rare condition, independently associated with tumor-specific features, and surgical-related factors. Despite there is limited evidence, surgical resection, may provide a survival advantage in selected patients, and combination therapy with TT will probably be an integral part of the management of these patients.

Declarations

Ethics of approval and consent to participate

The patient in this manuscript has given his full written and verbal consent to publish photos and details of the case. The case report was approved by the ethics committee on human research of the Instituto Nacional de Cancerología, IRB #20200121-185.

Consent for publication

The patient in this manuscript has given his full written and verbal consent to publish anonymous photos and clinical and laboratory details

of the case.

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Abbreviations

RCC	Renal cell carcinoma
LN	Laparoscopic nephrectomy
niRFR	Non-isolated renal fossa recurrence
RFR	Renal fossa recurrences
SRM	Small renal mass
CT	Computerized tomography
iRFR	Isolated local renal fossa recurrence

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