

Radical nephrectomy via epidural-only anesthesia

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We present what we believe is, to the best of our knowledge, the first report of open radical nephrectomy performed under epidural-only anesthesia. Our patient

had localized renal cell carcinoma requiring open nephrectomy, but he also had comorbid emphysema that precluded general anesthesia. Epidural anesthesia, which bypassed the pulmonary system, allowed us to perform the surgery.

Key Words: nephrectomy, cancer, epidural

Introduction

Renal cell carcinoma (RCC) is the twelfth most common malignancy.¹⁻⁴ Despite promising new therapies, surgery remains the only cure for localized RCC.^{2,5,6} While nephrectomy is the standard care for localized RCC, it is not without risk, including traditional risks such as risk of infection and mortality. These risks are increased by comorbidities. One significant comorbidity is chronic obstructive pulmonary disease (COPD), a chronic, progressive disease with a worldwide prevalence of approximately 10%, which varies depending on the population and risk factors such as smoking.¹ Bronchial instability and destruction of bronchial cartilage in COPD may increase the risk of perioperative morbidity and mortality.² Due to this increased risk, studies have begun investigating the possibility of using regional anesthesia instead of general anesthesia for patients with lung disease.²⁻⁴

We present a report of a case that involved the use of epidural anesthesia during an open nephrectomy for surgical management of localized RCC.

Case description

An 80-year-old man with debilitating, severe emphysema and no history of abdominal surgery presented for nephrectomy of an endophytic 2.5 cm left renal mass, Figure 1. While the patient received cardiac clearance, his pulmonologist could not clear him for endotracheal anesthesia. Additionally, efforts to refer the patient to a center specializing in probe ablative therapy were unsuccessful due to financial reasons. Consultation with the patient, as well as a pulmonologist, urologist, and anesthesiologist led to the decision to avoid endotracheal intubation and proceed with open radical nephrectomy under epidural anesthesia.

After the patient provided informed consent, a thoracic epidural was placed in the T5-6 interspace and secured 5 cm within the epidural space. A dose of 20 cc of 0.5% plain Marcaine was given prior to incision, and an additional 11 cc were administered intraoperatively. The patient received a total of 100 mcg of Fentanyl and was maintained on facemask oxygen at 4 L/min. The open radical nephrectomy began with an extraperitoneal transverse incision off the tip of the twelfth rib and proceeded normally without any complication. During manipulation of the kidney in a caudal direction, the patient felt of a tugging sensation, but he did not mention feeling

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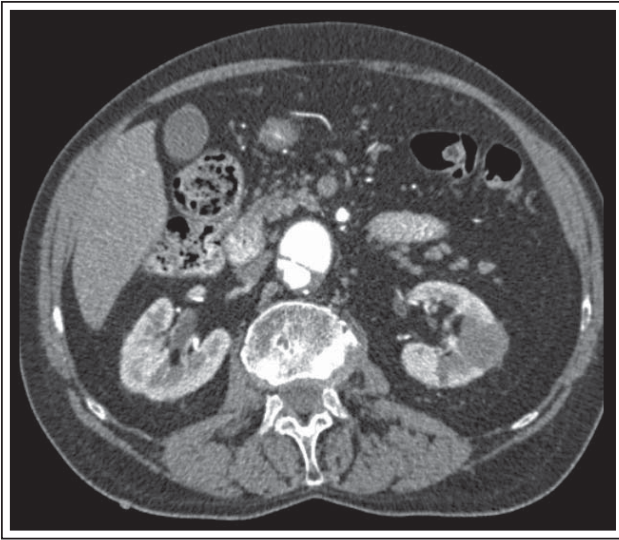


Figure 1. Computerized tomography scan of the renal mass.

any pain. The patient was able to hold a conversation during the entire case. No additional anesthetic therapy was given. The epidural catheter was used for postoperative analgesia until postoperative day 7. Following the surgery, the patient required additional oxygen while he was in hospital and after he was discharged. At his 4 week follow up checkup, the patient exhibited no complications and did not require oxygen. The patient provided written consent to report this case.

Discussion

An estimated 109,500 people in the United States have RCC, and each year, over 58,000 people in the United States and 200,000 people worldwide are diagnosed with RCC.⁵⁻⁸ Due to the high malignancy of RCC and an overall 5 year survival rate of less than 10% among patients with RCC metastases, aggressive efforts are made to employ curative measures for patients with localized disease.⁹ Despite promising new therapies and novel molecular surveillance of metastasis, currently, surgery remains the only curative therapy for localized RCC.^{6,10,11} While the past two decades have seen a rapid trend away from open surgery towards minimally invasive, laparoscopic removal of RCC masses, management of localized RCC in the near future will still involve the operating room.¹²

Regional anesthesia avoids manipulation of the airway system and reduces the “stress response” from major surgery, a response that is unaffected by general anesthesia.¹³ This method of anesthesia,

however, includes risks of its own, including paralysis of respiratory muscles or reduced expiratory reserve volume.^{13,14}

To the best of our knowledge, this case represents the first use of epidural anesthesia during an open nephrectomy for surgical management of localized RCC. Given the high incidence and prevalence of both RCC and COPD, this use of epidural anesthesia is likely to become more common in the future. This case suggests that it is important to consult with a pulmonary specialist and an anesthesiologist prior to surgery for RCC in patients who have COPD, given the potential complications from general and epidural anesthesia in such patients. □

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