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Radical Nephrectomy with IVC Thrombectomy (Level-III) Conducted on Venovenous Bypass

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ABSTRACT

Introduction: We report a 43 year old man who was diagnosed with a level-I thrombus and was managed on oral sunitinib for two months by a community Urologist. The thrombus progressed to a level-III and he subsequently developed a pulmonary embolus, which required oral anticoagulation. He was then referred to our facility for definitive surgical care. A computed tomography scan demonstrated a 12 by 15 centimeter right renal mass and on magnetic resonance venography of the abdomen a tumor-thrombus extending into the infradiaphragmatic inferior vena cava was noted. Pre-operatively consults with hepatobiliary, vascular, and chest surgeons were obtained.

Methods: The patient's surgery was performed by means of an open right extended subcostal incision. Prior to incision, the venovenous access sites were obtained and an intraoperative transesophageal echocardiography was performed to rule out thrombus in the atria. The right kidney was dissected out and mobilized. The renal artery and vein were dissected, ligated and the en bloc kidney was removed. Control of the inferior vena cava (IVC) was maintained proximally and distally during thrombectomy while tissue perfusion was maintained on venovenous bypass, no circulatory arrest was required. The estimated blood loss was 2300 cc; the total bypass time was 25 minutes and the patient was discharged from the hospital after 7 days.

Conclusions: It is feasible to perform a radical nephrectomy and IVC thrombectomy while on venovenous bypass provided the appropriate multi-disciplinary team is standing by. Venovenous bypass offers the advantage of minimizing the large hemodynamic drops attributed with suprahepatic IVC clamping. Such high-risk operations requiring skilled surgical teams must only be performed at tertiary care referral centers with extensive experience in the surgical management of such patients.

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EDITORIAL COMMENT

The group of Spiess and colleagues has produced an eloquent and timely video. With a trend towards highlighting minimally invasive surgery, we should also try to maintain our skills with respect to the management of conditions requiring major surgery. The use of venous bypass, which was nicely demonstrated in this video, illustrates the advantage in terms of exposure and blood loss afforded by this technique. Furthermore, due to the controlled nature

of the ensuing dissection, there is a decreased risk of devastating complications such as emboli and damage to the contralateral kidney. The presence of an appropriate infrastructure with availability of a multidisciplinary team cannot be overemphasized. When done safely, as demonstrated in this video, the results have huge benefits as many patients with renal thrombi enjoy long-term survival.

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