

Video can be found at <https://ceju.online/journal/2023/robotic-tumour-thrombus-cavotomy-nephrectomy-and-IVC-thrombectomy-2313.php>

Robotic left nephrectomy with level IV inferior vena cava thrombectomy using the AngioVac system

Jacopo Durante¹, Michele Santarsieri¹, Francesca Manassero¹, Girolamo Fiorini¹, Claudia Cariello², Piero Lippolis³, Andrea Colli⁴, Giorgio Pomara¹

¹Department of Urology (Urologia II SSN), Cisanello Hospital, University of Pisa, Pisa, Italy

²Department of Anaesthesia and Critical Care Medicine, Cardiothoracic Anaesthesia and Intensive Care, University Hospital of Pisa, Pisa, Italy

³General and Peritoneal Surgery Unit, Azienda Ospedaliero Universitaria Pisana, Pisa, Italy.

⁴Section of Cardiac Surgery, University of Pisa, Pisa, Italy

Article history

Submitted: Nov. 5, 2023

Accepted: Dec. 3, 2023

Published online: Jan. 6, 2024

Citation: Durante J, Santarsieri M, Manassero F, et al. Robotic left nephrectomy with level IV inferior vena cava thrombectomy using the AngioVac system. Cent European J Urol. 2024; 77: 159-160.

Key Words: robotic ↔ tumour thrombus ↔ cavotomy ↔ nephrectomy and IVC thrombectomy ↔ AngioVac system

We report the first successful elective procedure of atrial thrombus aspiration with the AngioVac System (AVS) and robotic-assisted level IV inferior vena cava (IVC) tumour thrombectomy in a left renal carcinoma.

A 75-year-old male presented with 7.2 cm left renal tumour and a level IV IVC tumour thrombus (13.4 cm length) extending into the right atrium for 3.8 cm without distant metastasis.

We decided to combine AVS of aspiration (for the intra-atrial thrombus component treatment) with robotic surgery (for the left nephrectomy and IVC thrombectomy). VV-ECMO (right jugular – right femoral vein) was performed with mild heparinization (ACT target 190), and the AngioVAC catheter was inserted from the right jugular vein to the right atrium, targeting the thrombus. Atrial thrombus aspiration was performed under transoesophageal echocardiography (TEE) control. An intraoperative cavography and a total body CT scan, performed 2 days after the AngioVac procedure, confirmed the absence of the thrombus in the atrium, showing a level IIIa IVC-thrombus.

After one week, the two-step robotic procedure started with the left radical nephrectomy and subsequently concluded with cavotomy and complete removal of the tumour thrombus (confirmed by ECD-sonography). The AngioVAC system aspiration operative time was 210 minutes. The Robotic Nephrectomy and IVC thrombus removal operative time was 560 minutes with 300 cc of blood loss. The patient's hospital stay after the nephrectomy and cavotomy was 9 days. The definitive pathology showed a stage pT3b clear cell carcinoma, Fuhrman grade III, with 8 cm neoplastic thrombus. The length of the neoplastic thrombus aspirated with the AngioVAC system was not evaluable. The use of the AngioVac system transformed the IVC thrombus from level 4 to level 3, thereby avoiding the need for a sternotomy. This approach ensures a highly multidisciplinary and complex surgery in a procedure that is as minimally invasive as possible.

AngioVAC aspiration of intra-atrial thrombus combined with robotic surgery as an elective indication is a safe procedure for minimally invasive

left nephrectomy with level IV inferior vena cava thrombectomy.

Corresponding author

Jacopo Durante
jacopodurante@live.it

CONFLICTS OF INTEREST

The authors declare no conflicts of interest.