

## SHORT REPORT

## Leiomyosarcoma of the Inferior Vena Cava: Segment II

R. Pinjala

Nizam's Institute of Medical Sciences, Hyderabad 500082, India

**Introduction:** A case of leiomyosarcoma from segment II of the inferior vena cava (IVC) treated by excision is presented.

**Case report:** A 45-year-old woman was admitted with mass and pain in the right upper abdomen. Before surgery, different types of tumors from IVC and right kidney were considered. During surgery tumor arising from the supra renal IVC was noted. The aorta was clamped to reduce flows, the tumor was excised and the IVC repaired. Postoperative recovery was uneventful.

**Discussion:** This case shows lateral venorrhaphy of IVC after complete excision of the tumor with cross clamping of the aorta.

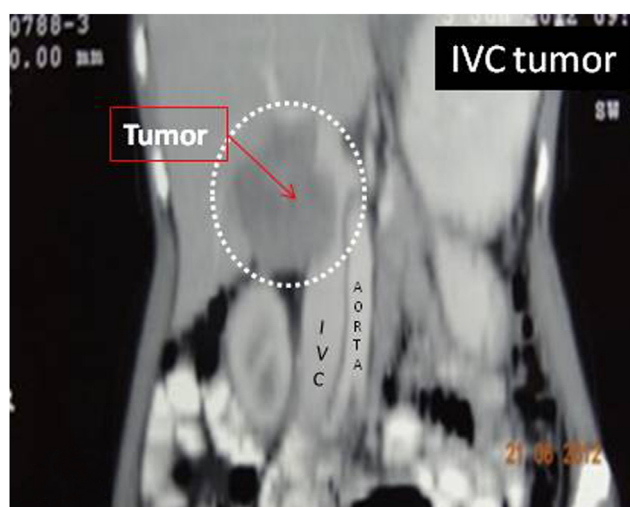
© 2013 European Society for Vascular Surgery. Published by Elsevier Ltd. Open access under [CC BY-NC-ND license](http://creativecommons.org/licenses/by-nc-nd/3.0/).  
Article history: Received 20 November 2012, Accepted 24 April 2013

**Keywords:** Leiomyosarcoma, Inferior vena cava, IVC tumor, Lateral venorrhaphy, Supra renal IVC

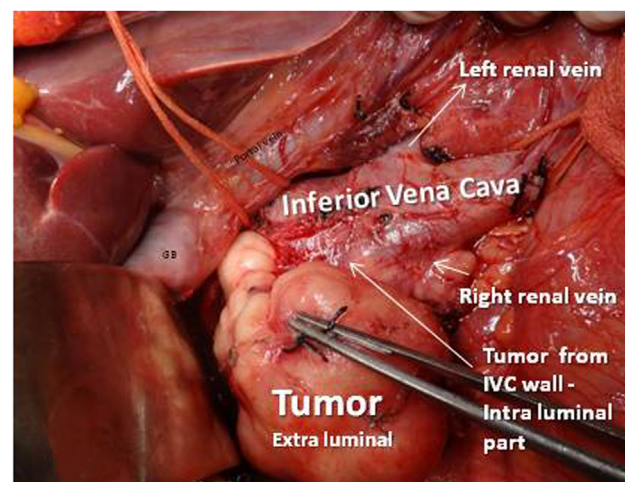
Leiomyosarcoma is the most common primary malignancy of the inferior vena cava (IVC) with poor prognosis. The 5- and 10-year actuarial malignancy-free survival rates after wide surgical resection are 31.4% and 7.4%, respectively, in the international registry of IVC leiomyosarcoma.<sup>1</sup> Surgical excision of these tumors is difficult if they arise from the IVC above the renal veins. Here we report a case of successful excision of the leiomyosarcoma arising from the supra renal part of the IVC.

## CASE REPORT

A woman aged 45 years was admitted with history of upper abdominal discomfort and pain which had progressed over a period of one year. Ultrasound scan and CT scan of the abdomen showed a tumor in the supra renal region adjacent to the IVC (Fig. 1). Many types of tumors were considered in the differential diagnosis but IVC tumor was not mentioned in that list. During surgery, tumor was dissected and separated from duodenum, liver, kidney, retroperitoneal tissues and portal vein. Surprisingly it was found to arise from the right lateral wall of the supra renal IVC. The IVC was taped above and below the tumor (Fig. 2). It was difficult to place a side clamp on the IVC without significantly occluding the lumen as the tumor was also growing into the lumen of IVC. Cross clamping of the IVC increased the distal venous pressures and congestion of blood. A temporary clamp was placed over the infra renal abdominal aorta to reduce blood flows and pressure. Then clamps were placed across the IVC above and below the tumor. The tumor was excised and rent in the IVC was repaired by lateral venorrhaphy with minimal narrowing (Fig. 3). The clamps were removed and flows returned.



**Figure 1.** Spiral CT scan of the abdomen showing the tumor adjacent to the liver, kidney and inferior vena cava (marked with a circle).



**Figure 2.** Intra-operative photograph showing the inferior vena cava (IVC) tumor after dissection, isolation and taping of the IVC above and below the tumor.

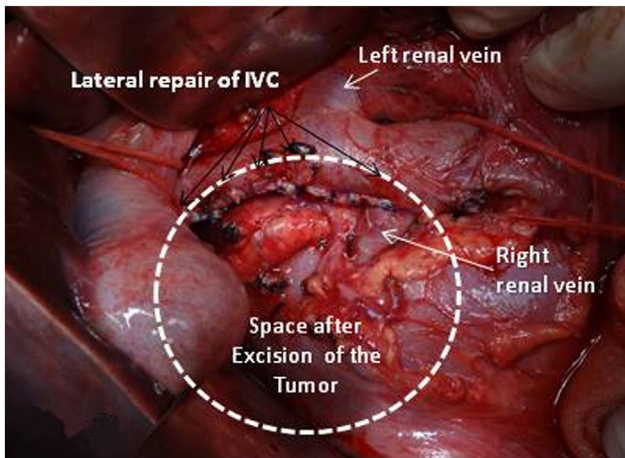
DOI of original article: <http://dx.doi.org/10.1016/j.ejvs.2013.05.003>

E-mail address: [pinjala@hotmail.com](mailto:pinjala@hotmail.com) (R. Pinjala).

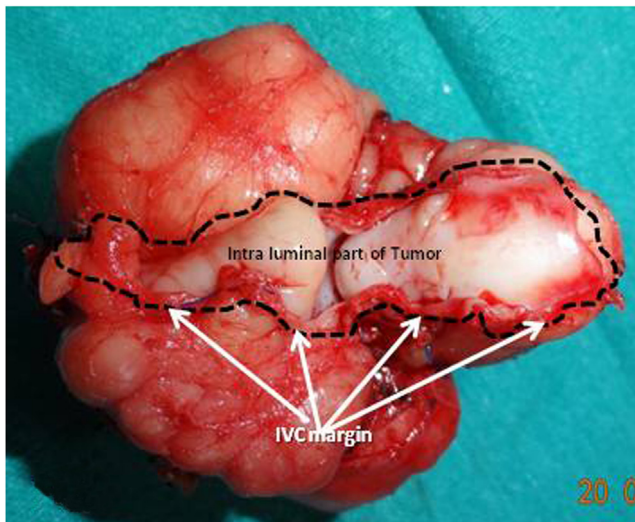
1533-3167 © 2013 European Society for Vascular Surgery.

Published by Elsevier Ltd. Open access under [CC BY-NC-ND license](http://creativecommons.org/licenses/by-nc-nd/3.0/).

<http://dx.doi.org/10.1016/j.ejvs.2013.04.002>



**Figure 3.** Intra-operative photograph after complete removal of tumor showing lateral venorrhaphy of the supra renal inferior vena cava (IVC). The left and right renal veins are marked with white arrows. The white circle shows the location of the tumor removed.



**Figure 4.** Photograph of the excised tumor specimen showing margins of the inferior vena cava (IVC) and intra luminal extension of the tumor into IVC.

Postoperative recovery was uneventful. Histology of the excised specimen confirmed it as a leiomyosarcoma (Fig. 4).

## DISCUSSION

The tumors of the IVC are divided into three segments of IVC. They are infra renal, supra renal and retro hepatic

segments.<sup>2</sup> The supra renal IVC segment tumors pose special challenges for operative treatment. Some consider that partial excision of IVC along with the tumor is rarely sufficient to be curable as the 5-year and 10-year malignancy-free survival rates are poor. The infra renal portion of the IVC was ligated in some cases after radical excision of IVC tumor. If the IVC pressure is  $>30$  mmHg, then one has to consider reconstruction of IVC to avoid edema of legs. In some cases ringed PTFE graft with controlled AV fistula was used to reconstruct IVC.<sup>3</sup> In our case the cut margins of IVC are clear from the tumor. Transient clamping of infra renal aorta was helpful, although we were prepared to replace the segment of IVC with a PTFE graft. We could avoid the synthetic graft-related complications such as thrombosis, infection and bleeding with anticoagulation by the lateral venorrhaphy. Adjuvant therapies (radiation, chemotherapy) may improve the outcome results.<sup>4,5</sup> Aggressive surgical management with vascular reconstruction will remain as the mainstay of treatment for IVC tumors.

## CONFLICT OF INTEREST

None.

## FUNDING

None.

## REFERENCES

- Mingoli A, Cavallaro A, Sapienza P, Di Marzo L, Feldhaus RJ, Cavallari N. International registry of inferior vena cava leiomyosarcoma: analysis of a world series on 218 patients. *Anticancer Res* 1996;**16**:3201–5.
- Hollenbeck ST, Grobmyer SR, Kent KC, Brennan MF. Surgical treatment and outcomes of patients with primary inferior vena cava leiomyosarcoma. *J Am Coll Surg* 2003;**197**:575–9.
- Bower TC, Nagorney DM, Cherry Jr KJ, Toomey BJ, Hallett JW, Panneton JM, et al. Replacement of the inferior vena cava for malignancy: an update. *J Vasc Surg* 2003;**31**:270–81.
- Hines OJ, Nelson S, Quinones-Baldrich WJ, Eilber FR. Leiomyosarcoma of the inferior vena cava – prognosis and comparison with leiomyosarcoma of other anatomic sites. *Cancer* 1999;**85**(5):1077–83.
- Kyriazi MA, Stafyla VK, Chatzinikolaou I, Koureas A, Chatziioannou A, Kondi-Paphiti A, et al. Surgical challenges in the treatment of leiomyosarcoma of the inferior vena cava: analysis of two cases and brief review of the literature. *Ann Vasc Surg* 2010;**24**(6):826.e13–7.