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Surgical Management of a Chemorefractory Retroperitoneal Germ Cell Tumor with Inferior Vena Cava Invasion: A Case Report of Ligation without Reconstruction

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01 Introduction

This case report outlines the management of a chemorefractory retroperitoneal germ cell tumor invading the inferior vena cava. Although venous reconstruction with grafts is typically preferred, complete resection was achieved through IVC ligation without reconstruction, addressing extensive vascular involvement while maintaining stability and offering a justified alternative in this complex setting.

02 Case study

27-year-old male patient with no prior medical history.

01/2022 Right orchiectomy for postpubertal-type teratoma with somatic-type malignancy (neuroblastoma). Tumor markers were normal, imaging showed no disease, and the patient entered surveillance.

11/2024 New abdominal distention; AFP 276 ng/ml. CT showed a retroperitoneal mass (12.2 × 7.3 × 6.9 cm) encasing and infiltrating the IVC with intraluminal thrombus.

14/11/2024 Biopsy: immature teratoma with somatic-type malignancy (rhabdomyosarcoma).

11/2024–02/2025 Four BEP cycles, AFP decreased to 16 ng/ml.

03/2025 CT: mass progression (17 × 13.2 × 10.8 cm), worsening IVC thrombosis reaching the right renal vein, and peritoneal nodules.

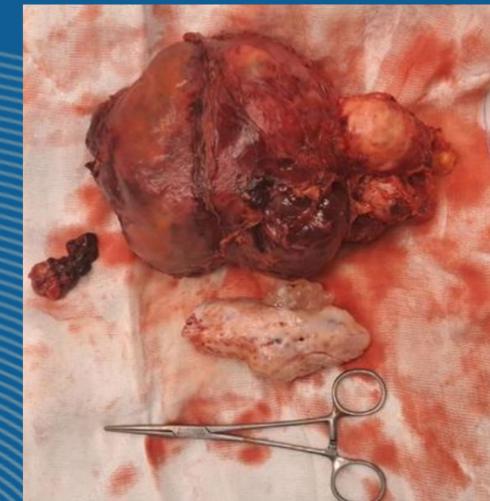
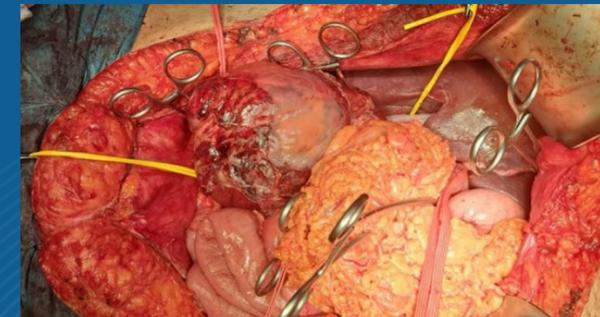
10/04/2025 CT angiography: complete diversion of IVC drainage through azygos and lumbar veins.

04/2025 Multidisciplinary decision for surgery. Combined general-vascular approach: Mercedes incision, extensive mobilization of colon, ureter, and renal veins; dissection from aorta; transhepatic IVC exposure; vertical cavotomy; removal of thrombus and 3-cm IVC segment; IVC ligation below renal veins due to robust collateral circulation. Uneventful recovery; discharged on postoperative day 6.

04/07/2025 Imaging showed complete resection; markers normalized. Histopathology: postpubertal-type teratoma with somatic malignancy (neuroblastoma, rhabdomyosarcoma; 40%). Patient received two adjuvant VIP cycles.

03 Conclusion

In conclusion, the decision to proceed with inferior vena cava ligation without reconstruction was guided by several key factors. The patient's young age and preserved physiological reserve allowed this option to be safely tolerated. The tumor's biology and chemorefractory nature reinforced the need for an aggressive surgical solution with uncompromised oncologic clearance. Additionally, an extensive collateral venous network had already been established, effectively rerouting circulation and minimizing the hemodynamic impact of permanent IVC interruption. Taken together, these elements supported the application of this approach as a practical and justified strategy in a highly complex vascular scenario.



04 References

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