How to do it? Nasıl yapılır?

A different approach in the treatment of left renal cell carcinoma with tumor thrombus extension into the vena cava inferior

Vena kava inferior uzantılı tümör trombüsü olan sol renal hücreli karsinomun tedavisinde farklı bir yaklaşım

Hikmet Selçuk Gedik,[1] İbrahim Alp,[1] Gökhan Arslan,[1] Yüksel Dereli,[1] Kemal Korkmaz,[2] Ahmet Turan Yılmaz[1]

[1]Department of Cardiovascular Surgery, GATA Haydarpaşa Training Hospital, İstanbul, Turkey;
[2]Department of Cardiovascular Surgery, Gülhane Military Medical Faculty, Ankara, Turkey

In this article, we report a case of advanced renal tumor with intracaval neoplastic extension, known as tumor thrombus treated with left subcostal (hemi-Chevron) abdominal incision instead of bilateral subcostal incision (Chevron technique), which is used for radical nefrectomy and tumor extirpation.

Key words: Renal cell carcinoma; subcostal incision; tumor thrombus.

Bu yazıda, tümör trombüsü adı verilen intrakaval neoplastik uzantıya sahip ve iki taraflı subkostal insizyon (Chevron tekniği) yerine, radikal nefrektomi ve tümör ekstirpasyonunda kullanılan sol subkostal (hemi-Chevron) abdominal insizyon ile tedavi edilmiş ilerlemiş bir renal tümör olgusu sunuldu.

Anahtar sözcükler: Renal hücreli karsinom; subkostal kesi; tümör trombüsü.

A specific form of a locally advanced renal tumor is the tumor with intracaval neoplastic extension, the so-called 'tumor thrombus'. Of renal tumors, 4-10% show such an intracaval neoplastic extension, with 10-25% of these patients presenting with an extension above the hepatic vein up to the right atrium or even into the right ventricle. We report here a case of an advanced renal tumor with intracaval neoplastic extension which was successfully treated with a left subcostal (hemi-Chevron) abdominal incision.

CASE REPORT AND SURGICAL TECHNIQUE

A 63-year-old male patient was admitted to the outpatient clinic with complaints of fatigue and leg edema. Physical examination revealed hepatosplenomegaly and moderate pretibial edema. Abdominal ultrasonography examination showed a mass in the left kidney and an extending thrombus in the inferior vena cava (IVC). Echocardiography revealed a 3x9.5 cm mass in the right atrium extending and filling the IVC. Abdominal computed tomography and magnetic resonance imaging revealed a 6x6x6 cm mass invading the kidney capsule and a tumor thrombus extending through the IVC reaching up to the right atrium.

Tumor excision started with a subcostal laparotomy. The colon was medially mobilized with a hot compress. A left radical nephrectomy was performed after transperitoneal ligation of the left renal artery and vein. The abdominal aorta was anteriorly deviated, and the IVC was reached. The caudal segment of the IVC with normal venous flow was clamped. The abdominal aorta was cross-clamped at the same level for hemodynamic stability. A cavatomy was performed starting from the cul-de-sac of the renal vein, and the distal segment of the tumor thrombus was fixed with a prolene suture. The cavatomy was closed, and the clamps were removed. A median sternotomy was done without combining the laparotomic incision, and the diaphragm was protected.

Received: April 6, 2011 *Accepted:* November 13, 2011

Correspondence: Hikmet Selçuk Gedik, M.D. GATA Haydarpaşa Eğitim Hastanesi Kalp ve Damar Cerrahisi Kliniği, 34668 Üsküdar, İstanbul, Turkey. Tel: +90 216 - 542 20 20 e-mail: drselcukg@hotmail.com

The aorta and right atrium were cannulated with arterial and superior vena cava (SVC) cannulas, respectively. The IVC cannula was inserted from the right femoral vein, placing the tip distal to the renal vein. Snares were placed around the SVC and IVC. Extracorporeal circulation was maintained during cardiac arrest with cardiopulmonary bypass (CPB), and the ascending aorta was cross-clamped. A right atriotomy was performed after squeezing of the SVC snare, and the right atrium, now free of blood, was investigated. The proximal part of the tumor thrombus extending to the right atrium from the IVC was mobilized at the atriocaval junction. The patient's body temperature was decreased to 20 °C, and CPB was stopped. All of the tumor thrombus was everted and extracted by blunt dissection without liver deviation and cavatomy on the IVC body under complete circulatory arrest. The tumor was totally extirpated with gradual blunt dissection towards the cranium, and the tumor was removed from the right atrium with a prolene marker suture. The total duration of arrest was 13 minutes. The femoral vein cannula was again clamped, and CPB was started. Virtual channel identifier (VCI) flow to the right atrium was inspected carefully to ensure good flow. The aortic cross-clamp was then removed. The total cross-clamp time was 23 minutes. Next, the clamp on the femoral vein cannula was removed. Transesophageal echocardiography was performed to ensure that there was no air or thrombus inside the heart chambers. The atrial and caval incisions were closed. Cardiopulmonary bypass was stopped after normal temperature and pressure was maintained. The total CPB duration was 61 minutes. The heparin was then neutralized. The thoracic and abdominal incisions were closed after the bleeding was under control. The patient was extubated six hours after surgery in the cardiovascular intensive care unit (ICU). The mediastinal drains were removed at 48 hours postoperatively with a total of 650 mL drainage. Hemodynamic and renal functions were at normal limits, and the patient was discharged from the ICU on the third postoperative day. Pathological examination of the tumor mass revealed the origin of the tumor to be clear cell renal carcinoma. The patient's hospital follow-up was uneventful, and he was discharged on the 18th postoperative day. A follow-up visit after one month was normal.

DISCUSSION

Renal cell carcinoma (RCC) constitutes 1-3% of all visceral malignancies and 85-90% of all kidney malignancies. Involvement of the renal vein or IVC

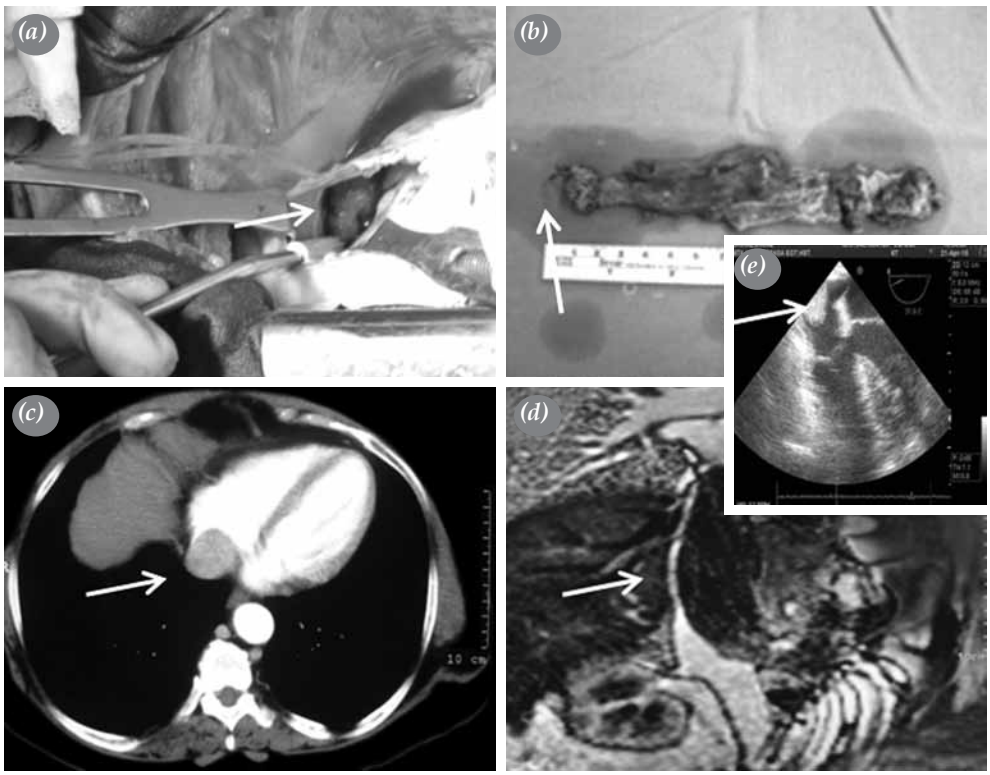

Figure 1. (a) Intraoperative right atrial tumor thrombus. **(b)** Total resection of tumor thrombus mass with prolene marker suture. **(c)** Computer tomography view. **(d)** Magnetic resonance view. **(e)** Trans thoracic echocardiography view.

occurs in approximately 5-10% of RCC patients and represents an adverse prognostic feature that impacts patient outcome.

Renal cell carcinoma with tumor thrombus is classified according to the extension level of the mass in the IVC starting from the infrahepatic renal vein (stage 1) to the right atrium (stage 4). The coexistence of the right atrial thrombus (stage 4) is less than 1%.[1-3] Complete removal of the malignant renal tissue is the only curative option for the individual patient since medical therapy is not curative.[4]

In general, the prognosis for patients with metastatic renal tumors is poor. Hatcher et al.[5] showed a mean five-year survival of 69% after complete resection. On the other hand, Skinner et al.[6] found mean one, three, and five year survival rates of 56%, 34% and 25%, respectively. Kaplan et al.[7] found a 10-year survival rate of 71% in patients with a tumor thrombus.

Respiratory and heart failure, sepsis, renal failure, bleeding, acute dementia, and pulmonary emboli were the most frequently seen complications after surgery.[1-8] These factors are also determinants of the mortality and morbidity in the early postoperative period. An abdominal bilateral subcostal incision and thoracotomy are needed, especially in left renal tumors reaching up to the atrium. A combination of thoracic and abdominal surgery is the treatment of choice in cases of tumor thrombus, which leads to altered respiratory functions and infection. Smaller incisions and less invasive techniques may decrease these complications and effect morbidity positively.

For cavoatrial thromboses arising from renal tumors, a sternotomy is usually performed, and a chevron incision (bilateral subcostal) is frequently applied. However, a left ”hemi-chevron” (unilateral subcostal) incision with a prolene marker suture and blunt dissection procedure, as in this case, may be suitable for removing the tumor and for caval approach. A limited incision aids in the control of pain and infection while also preserving respiratory functions.

Declaration of conflicting interests

The authors declared no conflicts of interest with respect to the authorship and/or publication of this article.

Funding

The authors received no financial support for the research and/or authorship of this article.

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