

## An inferior mesenteric artery aneurysm in a patient with renal cell carcinoma

*Renal hücreli karsinomlu bir hastada inferior mezenterik arter anevrizması*

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### ABSTRACT

An inferior mesenteric artery aneurysm is considered one of the visceral artery aneurysms, which is extremely rare, although its incidence of detection has been increasing in recent years. A 59-year-old male patient with a renal cell carcinoma in the left kidney was diagnosed with an inferior mesenteric artery aneurysm and treated surgically. Computed tomography revealed atrophy of the right kidney and occlusion of the celiac trunk, superior mesenteric artery, and left renal artery. There were no complications during the hospital stay and no mortality or morbidity was observed at three months of follow-up. In conclusion, the treatment of inferior mesenteric artery aneurysms is usually recommended, due to possible complications such as rupture and thromboembolism with high mortality and morbidity rates.

**Keywords:** Aneurysm, inferior mesenteric artery, jet disorder phenomenon.

### ÖZ

İnferior mezenterik arter anevrizması, visceral arter anevrizmalarından biri olup, oldukça nadirdir; ancak, son yıllarda saptanma oranı artmaktadır. Sol böbreğinde renal hücreli karsinomu olan 59 yaşında erkek hastaya inferior mezenterik arter anevrizması tanısı kondu ve cerrahi olarak tedavi edildi. Bilgisayarlı tomografide sağ böbrek atrofisi, çölyak trunkus, superior mezenterik arter ve sol renal arterlerde oklüzyon izlendi. Hastane yatışında komplikasyon yoktu ve takibin üçüncü ayında mortalite veya morbidite gözlenmedi. Sonuç olarak, inferior mezenterik arter anevrizmalarının tedavisi, yüksek mortalite ve morbidite oranları ile rüptür ve tromboemboli gibi muhtemel komplikasyonlar nedeniyle genellikle önerilmektedir.

**Anahtar sözcükler:** Anevrizma, inferior mezenterik arter, jet bozukluğu fenomeni.

An inferior mesenteric artery (IMA) aneurysm is considered one of the visceral artery aneurysms, which is extremely rare; however, its incidence of detection has been increasing in recent years.<sup>[1]</sup>

In this article, we describe a case of an IMA aneurysm along with superior mesenteric artery (SMA), celiac trunk artery (CA), and right renal artery (RRA) occlusion accompanied by renal cell carcinoma (RCC).

### CASE REPORT

A 59-year-old male patient was admitted to the hospital for an inguinal hernia operation. During

preoperative examination, a mass in the left kidney was found incidentally. Biopsy of the mass revealed a chromophobe RCC. There was no abdominal angina or other systemic symptoms. On computed tomography (CT), an IMA aneurysm along with the SMA, CA, and RRA occlusion were detected. The IMA was totally enlarged, and the aneurysm diameter was 38.5 mm at its widest point. Mesenteric vascularization was provided by the IMA and its branches, and the right kidney was atrophic (Figure 1). Laboratory test results were normal, except for the blood urea nitrogen, creatinine, and glomerular filtration rate (33.1 mg/dL, 1.81 mg/dL, and 40 mL/min/1.73 m<sup>2</sup>, respectively). The Surgery Council decided to perform renal and vascular

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surgery in a single session. A written informed consent was obtained from the patient.

After median laparotomy, the IMA aneurysm was explored in the retroperitoneal field. The aneurysm was excised by placing a side clamp on the abdominal aorta and a cross-clamp distal to the aneurysm. A 6-mm Dacron® tube graft was anastomosed proximally to the abdominal aorta in an end-to-side fashion and distally to the post-aneurysmatic IMA in an end-to-end fashion (Figure 2). Subsequently, the retroperitoneum was closed over the aorta and the graft, and its connection with the intraperitoneal organs was discontinued. Then, the urology team took over the case and left partial nephrectomy was performed.

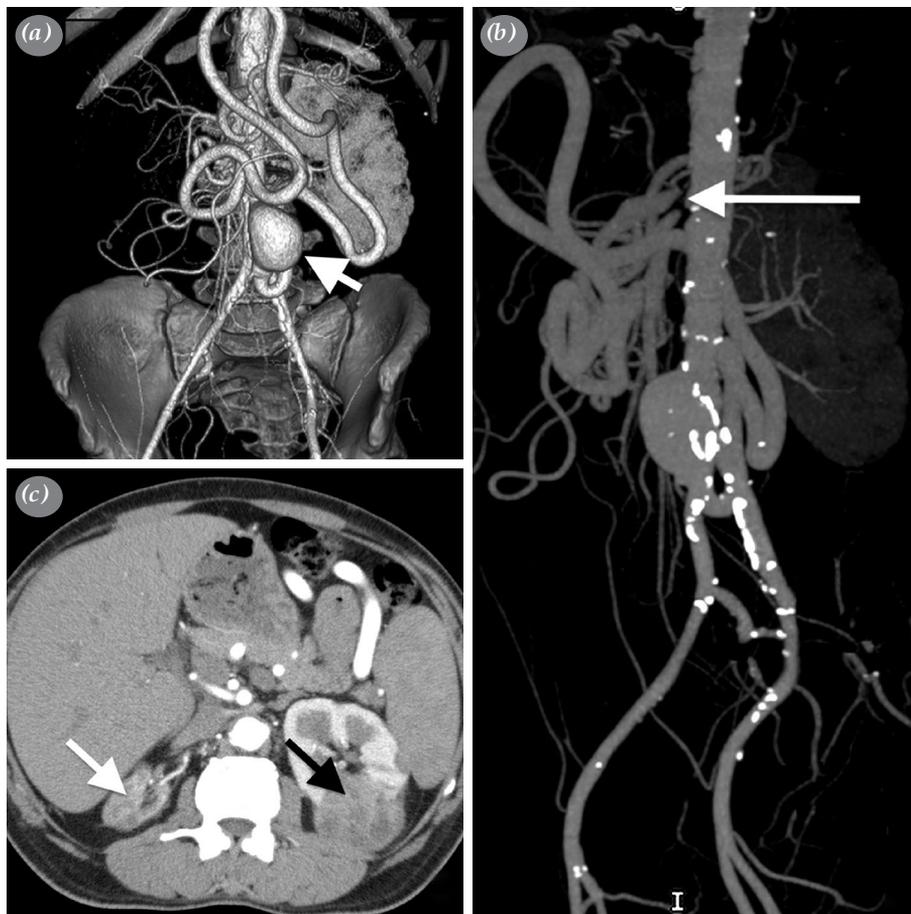
The patient was followed in the intensive care unit for one day and was discharged on postoperative Day 11. There was no complication during hospitalization and no mortality or morbidity was observed at three months of follow-up.

## DISCUSSION

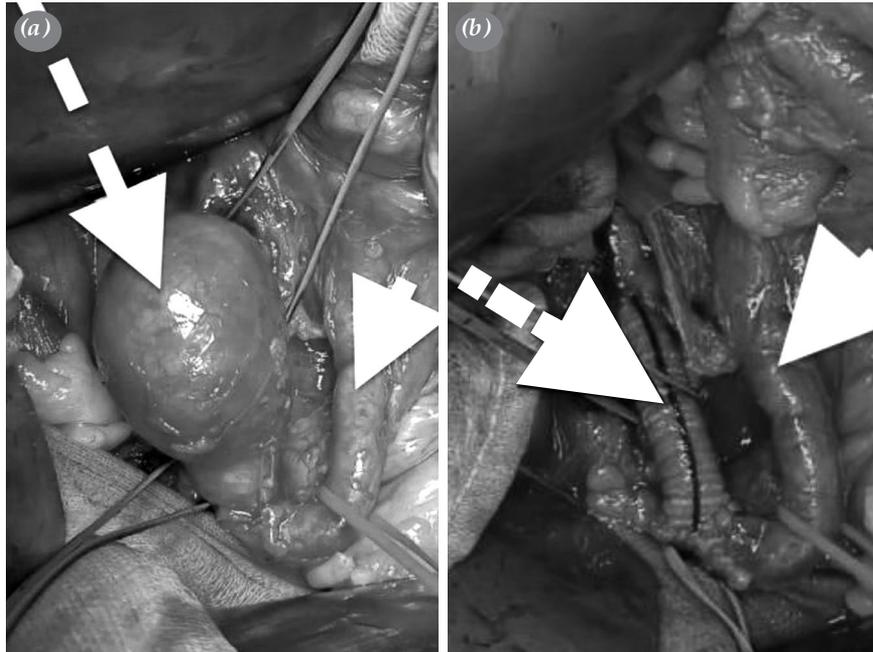
In recent years, visceral artery aneurysms have been diagnosed more frequently with the development of imaging methods and increasing frequency of use of these methods in daily practice.<sup>[2]</sup>

The incidence of visceral artery aneurysms is about 1% in the general population and varies between 0.1 and 10% in the autopsy series.<sup>[1]</sup> The most common aneurysms of the visceral arteries are splenic artery aneurysms in 60% and hepatic artery aneurysms in 20%.<sup>[1]</sup> Less common sites are SMA (5.5%), CA and gastric artery (4%), gastroepiploic, jejunal, ileal and colonic arteries (3%), and inferior mesenteric, pancreaticoduodenal, and pancreatic arteries (1%).<sup>[1]</sup>

Atherosclerotic disease is the most common cause of IMA aneurysms, while the other causes are mycotic, polyarteritis nodosa, a dissecting hematoma, Takayasu's disease, a false iatrogenic



**Figure 1.** (a) An inferior mesenteric artery aneurysm (arrow). (b) Occlusion of celiac trunk artery, and superior mesenteric artery (arrow). (c) A left renal mass (black arrow) and atrophic right kidney (white arrow).



**Figure 2.** (a) An intraoperative view of inferior mesenteric artery aneurysm (dotted arrow) and IMA branch (arrow head). (b) Repaired aneurysm with Dacron® graft (dotted arrow) and IMA branch (arrow head).

postoperative aneurysm, aortitis, segmental mediolytic arteritis, tuberculosis, Behçet's disease, and neurofibromatosis.<sup>[3]</sup> The IMA aneurysms, which are more common in males, are usually asymptomatic, until rupture which clinically presents with hemorrhagic shock.<sup>[3]</sup> Similar to the literature data, our case was male and asymptomatic.

In our case, the IMA aneurysm was associated with occlusion of the SMA, CA, and RRA. The splanchnic blood flow was provided only by the tortuous marginal arteries originating from the IMA. As discussed in previous studies, the greatly increased and possibly turbulent blood flow may create dilatation of the IMA and small collateral arteries, due to the "jet disorder" phenomenon.<sup>[1,3,4,5]</sup> The IMA aneurysm with SMA and CA occlusions have been described in many cases in the literature. Sacar et al.<sup>[6]</sup> found an IMA aneurysm in a neurofibromatosis case accompanied by RRA stenosis. Mandevile et al.<sup>[4]</sup> repaired an IMA aneurysm with SMA, CA, and RRA occlusion. In our case diagnosed with RCC, we detected an IMA aneurysm accompanied by SMA, CA, and RRA occlusion and treated surgically.

Aneurysmectomy and reimplantation or graft interposition, as well as revascularization of mesenteric arteries, are used in the surgical treatment.<sup>[3,4,5]</sup> In our case, we performed interposition with a Dacron®

graft instead of reimplantation to avoid kinking, anastomotic tension, and mesenteric malperfusion. Revascularization was not applied to the occluded visceral artery branches, due to simultaneous nephrectomy and not to make the procedure more complicated.

In conclusion, the incidental detection of asymptomatic visceral artery aneurysms has been increasing thanks to the development of diagnostic methods in recent years. Thus, the chance of treatment without catastrophic complications is likely to increase. However, patient-based multidisciplinary treatment decisions should be made for each individual patient, and the procedure-related risks such as mesenteric malperfusion, aneurysm formation, or prosthetic graft infection should be taken into consideration while tailoring the treatment strategy. We believe that novel treatment algorithms would be developed, as the literature is expanded beyond the current data.

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