

Short Report

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Interventional coiling of a constant-sized left hepatic artery aneurysm in a patient with prior octopus surgeryThomas J Vogl, MD¹; Kyriakos Oikonomou, MD²; Ibrahim Al Haj Ibrahim^{1*}; Julieta Gronda¹¹Department of Diagnostic and Interventional Radiology, University Hospital Frankfurt, Goethe University Frankfurtam Main, 60590, Germany.²Department of Vascular Surgery, University Hospital Frankfurt, Goethe University Frankfurtam Main, 60590, Germany.***Corresponding Author: Ibrahim Al Haj Ibrahim**

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Abstract

This case report demonstrates the successful use of endovascular intervention in managing a stable-sized left hepatic artery aneurysm in an 83-year-old female patient with a complex medical history, notably the Octopus operation. The report emphasizes the importance of previous surgical interventions and provides compelling evidence of the safety and effectiveness of endovascular coiling.

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Introduction

Vascular pathologies, including those involving the hepatic artery, present intricate challenges for interventional radiologists, necessitating innovative therapeutic approaches [1]. Hepatic artery aneurysms, though rare, hold clinical significance, especially in patients with prior complex vascular procedures. This case report serves two main objectives: to outline the patient's complex medical history, including the Octopus procedure, and to illustrate the successful application of endovascular treatment for hepatic artery aneurysm management. The report underscores the importance of meticulous patient evaluation, precision in interventions, and effective techniques in interventional radiology.

Case presentation

The patient, an 83-year-old woman, underwent multiple complex vascular procedures, notably the Octopus operation, for thoracoabdominal aortic aneurysm and aortic dissection. Additional interventions included TEVAR, EVAR, and the placement of a juxtarenal aortoiliac Y-prosthesis. These procedures

reshaped her vascular anatomy, complicating her medical history. Notable concurrent medical conditions included arterial hypertension, hypothyroidism, a history of breast cancer, and a left inguinal hernia. A recent CT angiography confirmed the stability of the left hepatic artery aneurysm size at 1.7 cm (Figure 1).

Treatment and outcome

On September 20, 2023, an endovascular coiling procedure was performed successfully to address the hepatic artery aneurysm, resulting in a remarkable outcome. The patient experienced post-interventional stability without complications, confirmed by imaging studies. Duplex sonography showed no pseudoaneurysm. The patient adhered to prescribed medications and achieved significant postinterventional recovery milestones, including independent mobility beyond the ward level.

Interventional radiology procedure

The endovascular coiling procedure commenced with a precise femoral artery puncture, followed by meticulous cath-

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eterization of the hepatic arteries. Super selective catheterization of both A. hepatica communis and A. hepatica dextra was achieved using a microcatheter (Figure 2), ensuring precise delivery of embolic agents. The procedure involved deploying a combination of coils with varying diameters (4 mm, 8 mm, 10 mm, and 20 mm) (Figure 3) and controlled injection of Lipiodol. This method initiated the embolization of the aneurysm sac, culminating in the formation of a bird's nest configuration, and ultimately achieving definitive vessel occlusion. The entire procedure was executed with unwavering dedication to ensuring its success.

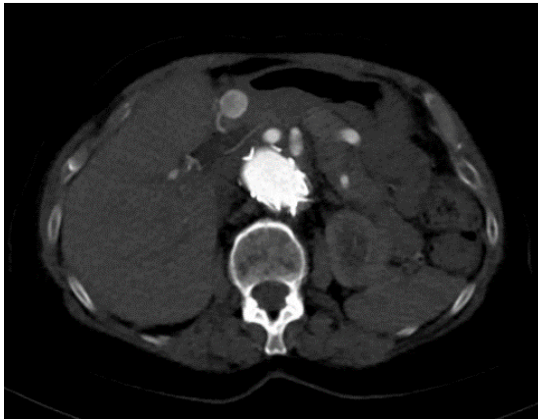


Figure 1: CT abdomen shows left hepatic artery aneurysm (1,7 cm).

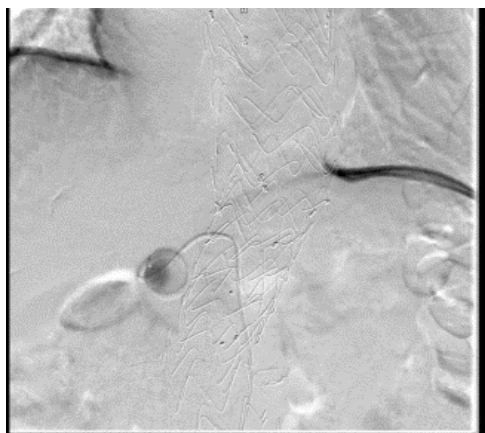


Figure 2: (Left image) Angiography before coiling shows microcatheter.



Figure 3: (Right image) Angiography after coiling of the left hepatic artery.

Discussion

This section offers an in-depth analysis of the patient's intricate medical history, placing particular emphasis on the pivotal role of the Octopus procedure in addressing her complex vascular condition. The patient, an 83-year-old woman, presented with a medical history characterized by complexity, marked by a series of substantial interventions and underlying medical conditions. A notable juncture in her medical journey was the Octopus procedure in 2013, performed within the context of a hybrid procedure, which warrants meticulous examination. This intricate procedure encompassed visceral debranching and endovascular intervention for a thoracoabdominal aortic aneurysm and aortic dissection. Additionally, she underwent a series of other vascular interventions, including TEVAR (Thoracic Endovascular Aortic Repair), EVAR (Endovascular Aortic Repair), the placement of a juxtarenal aortoiliac Y-prosthesis, and intricate visceral debranching, all of which further enriched her medical history. It is paramount to underscore her concurrent medical conditions, including arterial hypertension, hypothyroidism, a history of left breast cancer, and a left inguinal hernia. The 2013 Octopus procedure, an integral component of the Hybrid procedure, played a central role in addressing thoracoabdominal aortic aneurysms and aortic dissections. This multifaceted surgical approach involved meticulous visceral debranching and endovascular intervention, aimed at restoring normal blood flow and mitigating the risks associated with aortic dissection.

Furthermore, in October 2013, the patient underwent a highly complex series of surgical interventions. This encompassed the placement of a juxtarenal aortoiliac Y-prosthesis (silver-coated Dacron, dimensions 18x9x9 mm), necessitating the reattachment of the left internal iliac artery and the reimplantation of the inferior mesenteric artery.

Subsequently, a complex 4-vessel visceral debranching procedure was meticulously executed. This intricate procedure entailed the establishment of protheso-mesenteric and -truncular bypasses, placement of hybrid prostheses in both renal arteries, and central ligation of all visceral vessels, including the celiac trunk, superior mesenteric artery, and bilateral renal arteries. These collective interventions underscore the intricacies of the patient's medical history and emphasize the necessity for a coordinated and comprehensive approach to vascular care.

Conclusion

The proficient management of this patient's intricate vascular condition underscores the pivotal role of advanced surgical techniques, particularly in light of the Octopus operation performed in 2013, which significantly altered her vascular anatomy within the context of the Hybrid procedure. This case distinctly highlights the paramount importance of meticulous pre-operative evaluation and diligent postinterventional care, especially when dealing with patients whose medical histories are marked by complex vascular procedures and a myriad of health considerations. The successful outcome of the recent endovascular treatment further underscores its efficacy in addressing multifaceted vascular pathologies, enhancing the patient's overall well-being, and mitigating the inherent risks associated with aortic dissections and aneurysms. Notably, this holds true even in cases characterized by altered vascular anatomy resulting from prior Octopus surgery, reaffirming the

enduring adaptability and effectiveness of advanced interventional approaches within the realm of vascular medicine.

Declarations

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Ethical approval: All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed consent: Consent for publication was obtained for every individual person's data included in the study.

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