



Case Report

Bilateral iliac branch endografts with distal landing in the superior gluteal artery in a patient with prior aortic replacement: a case report and literature review

Uso de dispositivos bifurcados ilíacos bilaterales con sello distal en la arteria glútea superior en un paciente con reemplazo aórtico previo. Reporte de un caso y revisión de la literatura

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Abstract

Introduction: abdominal aortic aneurysms are associated with iliac aneurysms in up to 40% of cases. In patients with prior aortic surgery, preservation of hypogastric perfusion is recommended to reduce the risk of ischemic complications. Iliac branch devices (IBDs) may be used even when distal sealing is performed in branches of the hypogastric artery, ensuring an adequate seal.

Case report: we present a 68-year-old patient with a history of thoracoabdominal aortic replacement. During follow-up, bilateral common iliac aneurysms and a left internal iliac aneurysm were identified. Endovascular repair was performed using bilateral IBDs, with distal landing in the superior gluteal artery on one side.

Discussion: the use of unilateral or bilateral IBDs in patients with prior aortic replacement is a safe and effective strategy to preserve antegrade flow to one or both hypogastric arteries.

Keywords: Iliac branch device. Iliac branch endograft. Superior gluteal artery.

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Resumen

Introducción: los aneurismas aórticos abdominales se asocian a aneurismas ilíacos hasta en un 40 % de los casos. En pacientes con antecedentes de cirugía aórtica previa debe conservarse la irrigación hipogástrica para prevenir complicaciones isquémicas. Los DBI pueden utilizarse incluso cuando se planifique una zona de sello distal en ramas de la arteria hipogástrica, garantizando un sello adecuado.

Caso clínico: se presenta el caso de un paciente de 68 años de edad con antecedente de reemplazo aórtico por aneurisma abdominotorácico. En el seguimiento se constata desarrollo de aneurismas ilíacos comunes bilaterales e hipogástrico izquierdo. Se realizó una reparación endovascular con el uso de DBI bilaterales, realizando el aterrizaje distal en la arteria glútea superior en uno de los lados.

Discusión: el uso de DBI uni- o bilaterales en pacientes con antecedente de cirugía de reemplazo aórtico es una técnica segura que puede utilizarse para mantener la irrigación hacia una o ambas arterias hipogástricas.

Palabras clave:

Dispositivo bifurcado ilíaco. Dispositivo ramificado ilíaco. Arteria glútea superior.

INTRODUCTION

Abdominal aortic aneurysms are associated with iliac aneurysms in up to 40% of cases (1). Although embolization of the hypogastric arteries is generally well tolerated, cases of ischemic complications have been described. The latest *ESVS* guidelines recommend maintaining flow to at least one hypogastric artery and to both in patients with a past medical history of aortic replacement surgery (2). In cases without favorable anatomy for distal sealing in the hypogastric artery using iliac bifurcated devices (IBDs), successful distal sealing in terminal branches has been reported (3-5).

CASE REPORT

A 68-year-old man with a past medical history of hypertension and thoracoabdominal aortic replacement for Crawford II aneurysm via thoracophrenolaparotomy is presented. The procedure was performed using a Dacron graft with individual branches for visceral artery bypasses (Terumo Aortic, Glasgow, United Kingdom) and, distally, a bifurcated Dacron graft with distal anastomoses in both common iliac arteries. At 4-year follow-up, aneurysmal dilation of both common iliac arteries was observed, more pronounced on the left side (45 mm), as well as dilation of the left internal iliac artery up to 41 mm (Fig. 1A). Endovascular repair of the aneurysms was planned using bilateral IBDs to preserve antegrade flow to both internal iliac arteries due to the history of aortic replacement.

Bilateral femoral access was obtained using a percutaneous technique with Perclose Prostyle® devices (Abbott Vascular, Lake Bluff, IL, USA). Aortography was performed, followed by selective angiography of the left internal iliac artery (Fig. 1B and 1C), and embolization of its anterior trunk using 3 Nester® coils (Cook Medical, Bloomington, IN, USA) of 6 and 7 mm to ensure an adequate sealing zone in the superior gluteal artery. Subsequently, a bifurcated Zenith® Iliac Branch Device (ZBIS; Cook Medical, Bloomington, IN, USA) of 12 × 12 × 45 mm and 2 balloon-expandable covered stents (VBX, W.L. Gore & Associates, Flagstaff, Arizona, USA) of 8 × 59 mm were implanted, achieving distal sealing in the superior gluteal artery. This IBD was preferred on the left side due to its shorter body length, as the Gore IBD body would have been affected by the marked angulation (93°) between the Dacron graft and the native common iliac artery (Fig. 1A and 1B).

Subsequently, endovascular repair of the right iliac axis was performed using a GORE® EXCLUDER® Iliac Branch device (W.L. Gore & Associates, Flagstaff, Arizona, USA) measuring 23 × 13 × 14.5 mm. As the hypogastric component, a balloon-expandable covered stent (VBX, W.L. Gore & Associates, Flagstaff, Arizona, USA) of 11 × 79 mm was used, based on the diameter of the internal iliac artery.

Proximally, a 31 × 130 mm GORE® EXCLUDER® graft was deployed via right femoral access, with a bridging limb of 23 × 100 mm (W.L. Gore & Associates, Flagstaff, Arizona, USA), and on the left side, a 16 × 140 mm bridging limb (W.L. Gore & Associates, Flagstaff, Arizona, USA). Final angiography (Fig. 2A)

revealed a type II endoleak. The patient awoke from surgery without neurological deficits and was discharged 48 hours later. Computed tomography fol-

low-up at 30 days and 12 months (Fig. 2B) confirmed a reduction in aneurysm sac diameter from 41 to 31 mm and absence of endoleaks.

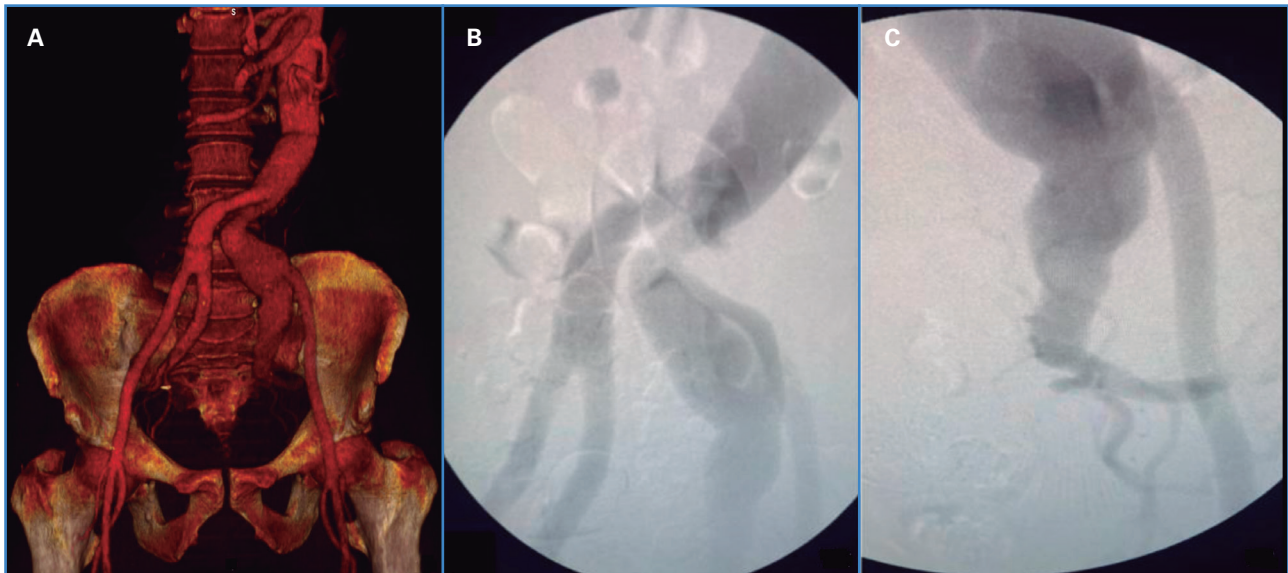


Figure 1. A. Three-dimensional reconstruction of preoperative cardiac computed tomography angiography. Note the aneurysms of the left common and internal iliac arteries, as well as the angulation between the Dacron graft and the left common iliac artery. B. Initial angiography performed during the procedure. C. Selective angiography of the left internal iliac artery showing the large aneurysm and the anterior and posterior trunks.

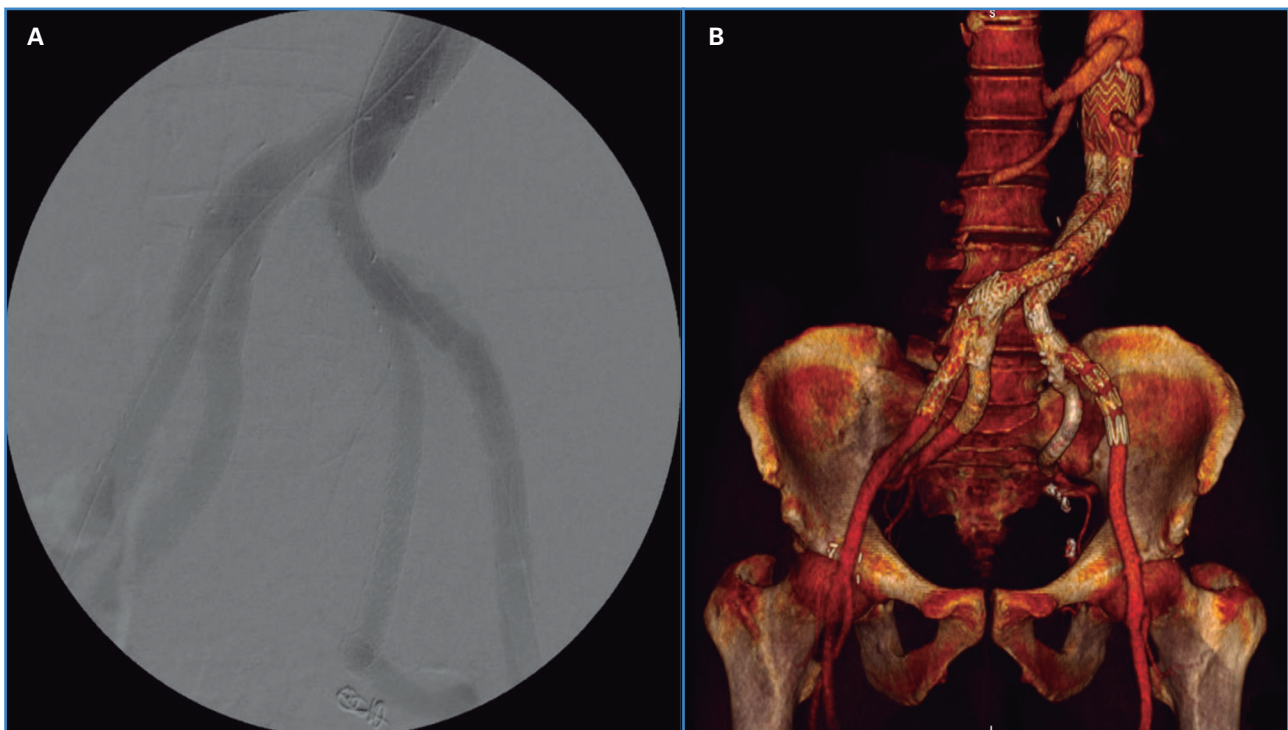


Figure 2. A. Final angiography of the procedure. B. Three-dimensional reconstruction of postoperative cardiac computed tomography angiography at 12 months. Note the coils in the anterior trunk of the left internal iliac artery.

DISCUSSION

Iliac aneurysms represent 0.4% to 1.9% of all aneurysms and are associated with concomitant aortic aneurysms in up to 40% of cases (1,2,6). Between 70% and 90% occur in the common iliac artery, whereas only 10% to 18% involve the internal iliac artery (1,2,6).

Embolization of hypogastric arteries is associated with morbidity rates of approximately 8% to 33%. Gluteal claudication is the most common complication. Although less frequent, mesenteric, pelvic, and spinal ischemia have also been reported, particularly in patients undergoing extensive aortic repairs (2,6).

The European Society for Vascular Surgery (ESVS) recommends, whenever technically feasible and without compromising distal sealing, maintaining antegrade flow to at least one internal iliac artery during endovascular repair of abdominal aortic aneurysms to reduce ischemic complications. Particular emphasis is placed on preserving perfusion to both internal iliac arteries in patients with a past medical history of prior aortic replacement (2).

In an analysis including 1251 cases of different types of aortic replacement over a 12-year period, risk factors for spinal cord ischemia were evaluated. This complication occurred in 2.9% of cases, with incidence varying according to the type of repair performed. The main risk factor for early neurological symptoms was occlusion of at least one collateral perfusion territory (vertebral and/or hypogastric arteries) during the procedure (7).

The largest published series demonstrating the safety and efficacy profile of IBDs in patients with prior aortic surgery includes 75 patients from multiple centers, in whom 88 IBDs were implanted, 13 of them bilaterally. Technical success was 100%, with a mean follow-up of 47 months and no aortic-related mortality. Eleven reinterventions were reported: 5 due to endoleaks, 4 due to IBD thrombosis, and 2 due to stenosis. It was concluded that IBD implantation in patients with prior aortic surgery is a safe procedure (8).

Several series have shown that the technical success and mid- to long-term patency of IBDs are

satisfactory, even when implanted as a secondary procedure in patients with previous aortic replacement (1,9). Multiple reports also describe bilateral use of these devices, maintaining effectiveness when distal sealing is performed in branches of the hypogastric artery due to anatomical constraints (8,10).

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