



(CASE REPORT)



MANAGEMENT OF A RUPTURED GIANT ISOLATED ILIAC ANEURYSM; A RARE ENTITY: A CASE REPORT

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ABSTRACT

Isolated iliac artery aneurysms are rare and usually asymptomatic until rupture, which carries a high mortality. Their deep pelvic location makes clinical detection difficult, and diagnosis is often incidental. We report the case of a 75-year-old man with insulin-treated type 2 diabetes and benign prostatic hyperplasia, in whom a pelvic CT scan incidentally revealed a giant iliac aneurysm. Initial examination found no pulsatile mass. During hospitalization, he developed abdominal pain, hematuria and hemorrhagic shock. Emergency CT angiography showed a partially thrombosed 60 × 50 mm saccular aneurysm of the common iliac artery with signs of rupture. He underwent emergency aortoiliac bypass with aneurysm exclusion and internal iliac artery ligation, but died in intensive care from refractory shock and multiorgan failure. This case highlights the high mortality of emergency repair compared with elective repair. Early detection and elective treatment of aneurysms larger than 3.5 to 4 cm, preserving internal iliac flow when feasible, are essential to improve outcomes.

Keywords: Iliac artery aneurysm; Aneurysm rupture; Aortoiliac bypass; Hemorrhagic shock

1 INTRODUCTION

Iliac artery aneurysms are generally associated with an abdominal aortic aneurysm. Isolated iliac artery aneurysm constitutes a rare entity, with an estimated incidence between 0.4 and 1.9% in the general population.[1]

Iliac artery aneurysms are defined as aneurysmal when their diameter exceeds 1.5 times the expected normal diameter. On clinical examination, isolated asymptomatic iliac aneurysms are difficult to detect due to their deep anatomical location within the pelvis. In the majority of cases, iliac artery aneurysms are discovered incidentally during imaging performed for screening of an aortic aneurysm or investigation of another pathology. This late presentation is associated with high mortality, primarily due to diagnostic delay and technical difficulties in surgical management.[1], [2]

2 CASE PRESENTATION

This is a patient Y, aged 75 years.

2.1 Medical History

Type 2 diabetes mellitus (T2DM) treated with insulin

Benign prostatic hyperplasia treated with alpha-blocker

Circumstances of Discovery: During follow-up of his prostatic pathology, the patient underwent pelvic CT scanning which revealed an asymptomatic giant iliac aneurysm. The patient was admitted to our institution for surgical management.

Initial Clinical Examination: The abdomen was soft, without pulsatile mass. Peripheral pulses were present and symmetric.

During hospitalization, the patient presented with abdominal pain and hematuria plus signs of hemorrhagic shock. An emergency abdominopelvic angiographic CT scan revealed worsening of the saccular aneurysmal dilatation, measuring 60×50 mm at the level of the common iliac artery, located 12 mm from the bifurcation. The aneurysm was partially thrombosed with indirect signs of rupture: irregularity of the aneurysmal wall calcifications, perivascular fat infiltration, draped aorta sign at the level of L5, and crescent-shaped hyperdense appearance on the aneurysmal wall.

Surgical Management: The patient was emergently transferred to the operating room where he underwent aortoiliac bypass with aneurysm exclusion and ligation of the internal iliac artery.

Post-operative Course: The outcome was unfavorable. The patient developed refractory shock with multiorgan failure, leading to his death in the intensive care unit.

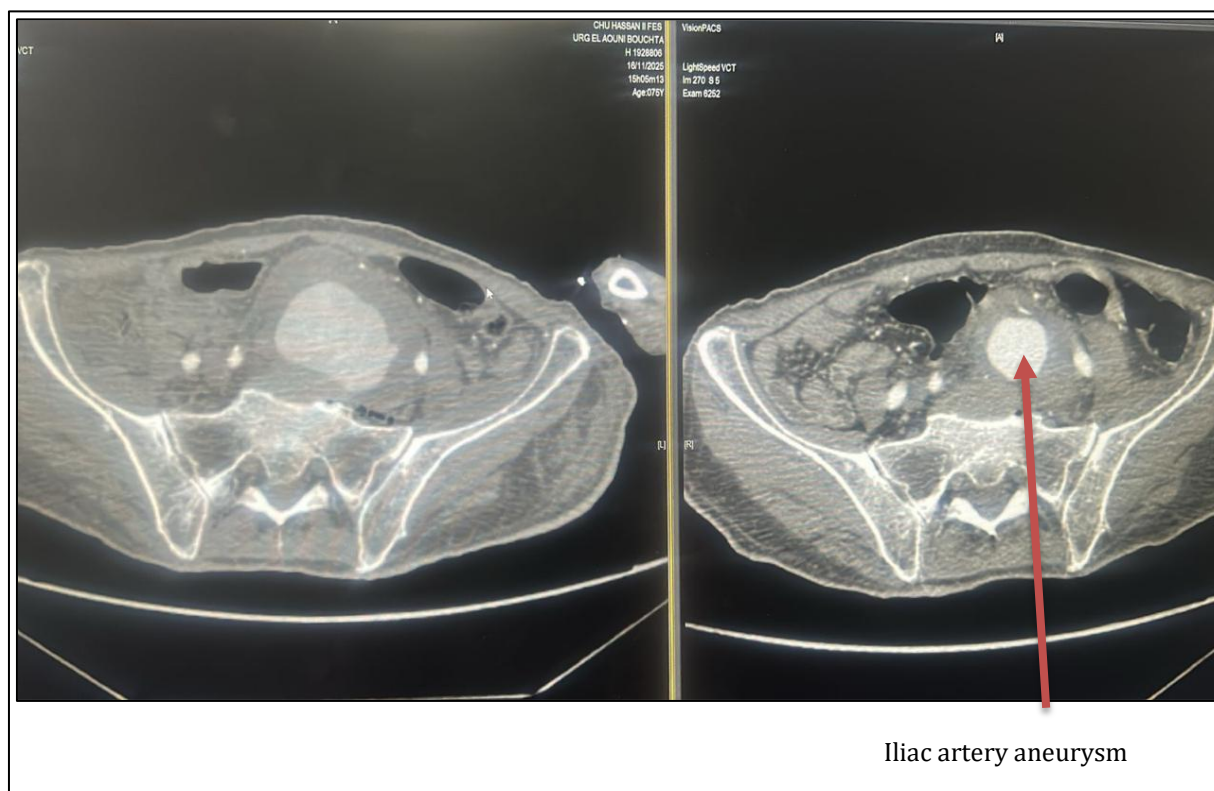


Figure 1: CTA images of Iliac artery aneurysm



Figure 2: Intraoperative image demonstrating aortoiliac bypass graft with successful aneurysm exclusion

3 DISCUSSION

Isolated iliac aneurysms are a rare entity, often associated with high morbidity and mortality, with male predominance and hypertension and smoking as the principal risk factors.

The etiologies of aneurysms are dominated by atherosclerotic pathology (degenerative), while other less frequent etiologies include prior trauma, iatrogenic injury, arteritis, connective tissue disorders, and infection. It is also noteworthy that iliac aneurysms predominantly occur at the level of the common iliac artery in 60-70%, the internal iliac artery in 10-30%, and involvement of the external iliac artery is extremely rare. Bilateral iliac aneurysms are found in 50%. [3]

Reber et al. proposed a straightforward classification system (Types I–IV) based entirely on the anatomical location and the specific involvement of the iliac arterial branches. It is widely used to evaluate surgical outcomes and complexities:

- Type I: The aneurysm is isolated strictly to the Common Iliac Artery (CIA), without extending into the bifurcation.
- Type II: The aneurysm is isolated strictly to the Internal Iliac Artery (IIA) (hypogastric artery).
- Type III: The aneurysm involves the Common Iliac Artery bifurcation and extends into the internal.
- Type IV: The aneurysm involves the Common Iliac Artery bifurcation and extends into both the internal and external iliac arteries

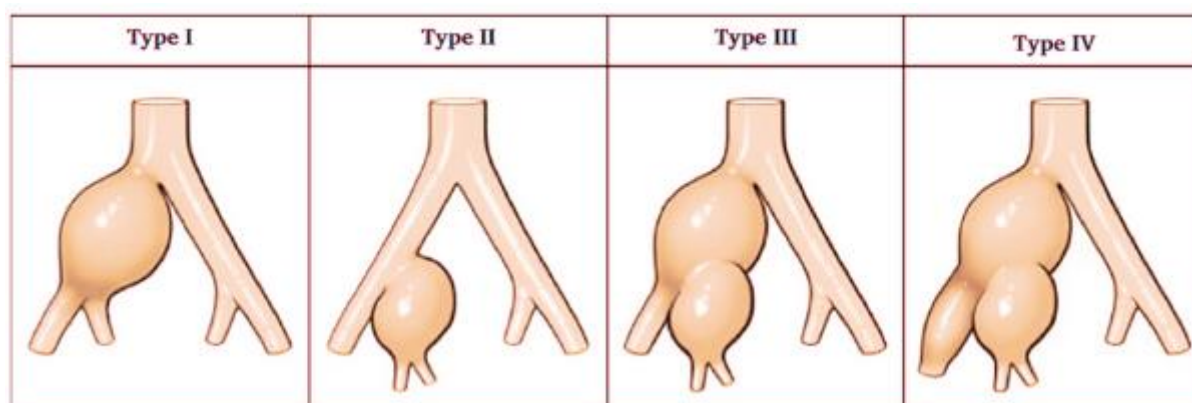


Figure 3: Reber's Isolated iliac aneurysm classification (From [4])

Iliac artery aneurysms are prone to rupture and enlarge gradually, often remaining asymptomatic until rupture occurs. Approximately 42% of patients present with ruptured IAAs, which carries mortality rates of 0–56%. Emergency repair of rupture has a mean mortality of 28% (range 0–60%), compared with only 5% for elective repair (range 0–50%). Mean diameter at rupture is typically 6–6.8 cm. Uncomplicated iliac aneurysms smaller than 4 cm diameter have a low rupture rate, supporting the widely accepted threshold of 3.5–4 cm for elective repair of asymptomatic cases. The optimal treatment strategy must be individualized based on anatomical location and complexity, enlargement rate, symptomatology, and patient comorbidities. Conversely, symptomatic aneurysms should be repaired urgently at any diameter.[5]

The clinical presentation of iliac artery aneurysms is largely determined by their anatomical location and proximity to adjacent structures including the bladder, bowel, pelvic veins, and nerve roots. Symptomatic presentations are heterogeneous and may include vague abdominal pain, claudication, lower extremity pain from embolic phenomena, sciatic neuralgia, ureteral obstruction, compression-related deep vein thrombosis, or gastrointestinal symptoms such as constipation. Conversely, many patients remain asymptomatic until an incidental finding, as observed in our case. The sudden onset of severe abdominal pain accompanied by hemodynamic instability (signs of shock) typically indicates aneurysm rupture, as evidenced in our patient's clinical course.

Because of deep location of the iliac artery, clinical examination is often inadequate for detecting even large iliac artery aneurysms. Ultrasound serves as the primary diagnostic and screening modality, particularly in asymptomatic patients. However, its utility is limited by operator-dependent variability and image quality degradation related to patient body habitus and intestinal gas artifacts. Computed tomographic angiography (CTA) and magnetic resonance angiography (MRA) provide superior anatomical detail of the aortoiliac system and substantially improve diagnostic accuracy in technically challenging cases.[5], [6]

In the management of iliac artery aneurysms, the most current European society of vascular surgery guidelines of 2024 have a threshold for repair to 4 cm or greater.

IAA Diameter (mm)	Recommended Imaging Surveillance Using Ultrasound
20–25	Every 3 years
25–29	Every 2 years
≥30	Annually

IAA, Iliac artery aneurysm.

Figure 4: From Rutherford's Vascular Surgery and Endovascular Therapy Eleventh Edition , Summarized from Wanhainen A, Van Herzele I, Bastos Goncalves F et al. Editor's Choice– European Society for Vascular Surgery (ESVS) 2024 Clinical Practice Guidelines on the Management of Abdominal Aorto-Iliac Artery Aneurysms. *Eur J Vasc Endovasc Surg* . 2024;67(2):192–331

Although the endovascular approach is currently endorsed as first-line therapy for iliac artery aneurysms, this technique presents multiple technical challenges and is associated with considerable cost. The European Society for

Vascular Surgery (ESVS) has updated its guidelines from an endovascular-first strategy to an approach that should be individualized based on specific lesion characteristics and anatomical factors and whenever feasible, preservation of antegrade flow in at least one internal iliac artery should be prioritized to optimize long-term outcomes.

However the surgical management can provide excellent long-term results ; the surgical repair of iliac aneurysms is technically demanding due to their deep pelvic location, dense adherent pelvic venous structures, and frequent association with calcific occlusive disease, all increasing the risk of intraoperative hemorrhage. The primary surgical objective is to preserve distal perfusion while excluding the aneurysm and preventing further expansion or rupture.

The iliac artery may be accessed via midline, retroperitoneal, or transplant-type incisions, with the choice depending on aneurysm size and extent, unilateral versus bilateral disease, and surgeon preference and experience. The quality of the artery determines the extent of exposure needed for proximal vascular control. Distally, the graft can typically be anastomosed at the bifurcation of the external and internal iliac arteries, thereby preserving pelvic perfusion. In selected cases with significant arterial splaying or aneurysmal involvement of the internal iliac artery, the distal anastomosis may need to be placed on more distal, normal internal iliac branches or the external iliac artery.

Perioperative complications occur in up to 22% of cases [5] and include lower extremity ischemia from distal embolization or anastomotic stenosis, visceral and pelvic ischemia from hypogastric flow disruption, aneurysm reperfusion with rupture, arterio-enteric fistula, graft infection, and ureteral, neural, and venous injuries. Both early and late graft-related complications are rare, with primary graft patency approaching 100% at 5 years.

4 CONCLUSION

Isolated iliac aneurysms are rare (<2% population prevalence) but present with rupture in nearly 40% of cases. Most asymptomatic cases are discovered incidentally. Symptomatic or large aneurysms (>3.5–4 cm) are suitable for elective repair using open, endovascular, or hybrid approaches, with the goal of excluding the aneurysm while trying to preserve internal iliac flow to prevent pelvic ischemia.

STATEMENTS ON COMPLIANCE WITH ETHICAL STANDARDS

Disclosure of conflict of interest

The authors declare no conflicts of interest regarding this manuscript.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

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