

## Original Research Article

# Surgical Treatment of a Large Isolated Aneurysm of the Right Primary Iliac Artery: About A Case

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**Abstract:** Isolated iliac artery aneurysms are extremely rare, accounting for less than 2% of all aneurysmal diseases. These aneurysms are usually seen in older men. Very mildly symptomatic but carries a significant risk of rupture when the aneurysms have reached a large size. Their operative mortality is significantly higher when undertaken as an urgent or elective procedure, highlighting the importance of early diagnosis and appropriate management. The development of radiological exploration methods has facilitated the discovery and diagnosis of these aneurysms. The emergence of endovascular techniques constitutes an alternative to traditional surgical treatment. We report our surgical management of an aneurysm of the primary iliac artery isolated in a 71-year-old man, who benefited in our department from a resection of the aneurysm with restoration of continuity by a prosthetic bypass. The objective of this article is to present and describe the diagnostic assessment; imaging data, treatment methods as well as a review of the literature concerning the history of iliac artery aneurysms.

**Keywords:** Aneurysm, Iliac Artery, Surgery, Vascular Prosthesis.

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## INTRODUCTION

An iliac artery aneurysm is a localized and permanent abnormal dilatation of one of the iliac arteries (common, internal or external). Generally, we speak of an aneurysm when the caliber of the iliac artery is greater than 1.5cm. An intervention is planned as soon as the dilation of the iliac artery reaches 3 cm because the risk of rupture becomes great [1].

The vast majority of iliac artery aneurysms are of atherosclerotic origin. Other causes (Marfan syndrome, Behcet's disease) are much rarer [1-4].

Most often, the common iliac artery aneurysm is associated (or in continuity) with an abdominal artery aneurysm in approximately 10 to 20% of cases [1], however, isolated aneurysms of the iliac arteries are rare, with a prevalence of approximately 0.4 to 1.9% of all aneurysmal diseases [5, 6]. This discrepancy is partly explained by the different definitions of iliac aneurysm, by the inconsistency in the delineation of the anatomical characteristics [4-6].

The pathogenesis of isolated iliac artery aneurysms is not well understood. Mechanisms relevant to abdominal aortic aneurysm (AAA) formation that may contribute to iliac aneurysm disease include proteolytic degradation of aortic wall connective tissue, inflammation, biomechanical wall stress, and genetics. Molecular [1]. Other less common causes of iliac artery aneurysm include infections [10, 11], trauma, arteritis, collagen-related vascular diseases [12].

Most iliac artery aneurysms are currently discovered incidentally during abdominal/pelvic imaging for a different indication. However, they can be symptomatic in 50% of patients, with most symptoms resulting from compression or erosion of surrounding structures and rupture [5]. Lower abdominal and flank pain are quite common. Sometimes compression of surrounding anatomical structures. (Urological and Intestinal)

Unlike the well-documented progression of aortic aneurysms, there are no prospective studies on the natural history of iliac artery aneurysms (IAA). In the most comprehensive retrospective review of the natural history of IAA, expansion rates were found to be slow

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for those aneurysms less than 3 cm (0.11 mm/year) and significantly higher and similar to the rate of expansion of AAAs in this size range for AIAs. 3 to 5 cm (26 mm/year) [17].

The main goal of surgical intervention is to exclude aneurysmal flow and remove wall tension to prevent further dilation and rupture [16].

The objective of this article is to present the diagnostic methods and management of this aneurysmal pathology in our department.

## MATERIALS AND METHODS

Patient aged 71, he was hospitalized for pelvic pain of sudden onset and in whom, the clinical examination found a sensitive, pulsatile and blowing right pelvic mass on auscultation suggesting a vascular origin, the rest of the examination is unremarkable apart from a supra-umbilical laparotomy scar (cholecystectomy at the age of 30). The biological assessment revealed an inflammatory syndrome with CRP at 80 mg/l, the serologies were negative, the pelvic Doppler ultrasound was in favor of an aneurysm of the right primary iliac artery and the arteriography confirmed the diagnosis of a large aneurysm. 06 cm in diameter partially thrombosed and which arrives at the

internal and external iliac bifurcation without occlusion (Fig. 1. 2 and 3), The atheromatous origin was retained.

Operative decision after general preparation. The treatment included surgical excision of the aneurysm, under general anesthesia by median laparotomy above and below umbilical followed by prosthetic bypass. (Fig: 4)

## RESULTS

Our patient was operated on and surgical exploration found a large aneurysm developed at the expense of 80% of the primary iliac artery from 02 cm from the aortic bifurcation to the iliac bifurcation. (Fig: 5-6). We proceed to control the primary iliac artery and the internal and external iliac followed by clamping and excision of the entire aneurysm after extraction of a large intra-aneurysmal thrombus (Fig: 7). Arterial continuity is restored by making a prosthetic bypass (Dacron prosthesis n: 08) end -to-end between the primary iliac artery and the external iliac after ligation of the internal iliac artery. (Fig: 8-9)

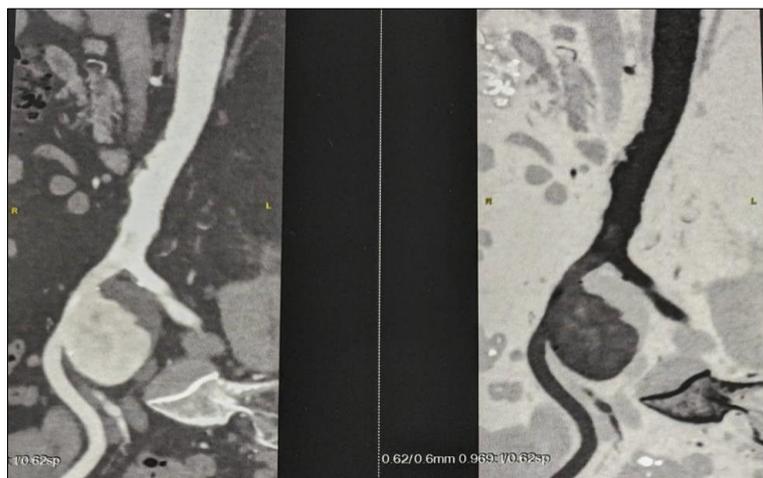
The surgical outcomes were very favorable and the patient left the hospital on the 6th postoperative day. Control duplex ultrasound at 3 months and 6 months post-operative without abnormalities.



Fig. 1: CT angiogram of the aorto -iliac and lower limbs



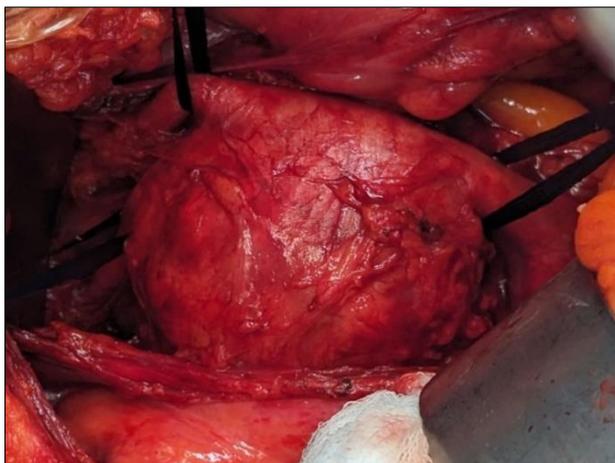
**Fig. 2: Aneurysm of the right primary iliac artery**



**Fig. 3: Aneurysm of the right primary iliac artery partially thrombosed (Angioscanner)**



**Fig. 4: Median laparotomy above and below umbilical (K.MESKOURI collection)**



**Fig. 5: Dissection of the aneurysm and control of the iliac artery upstream and downstream (K..MESKOURI collection)**



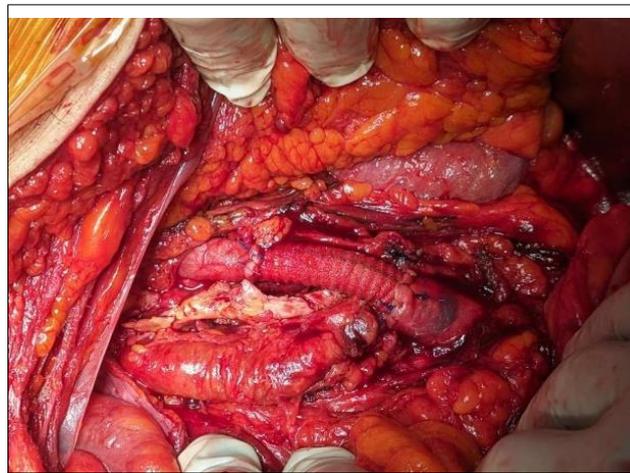
**Fig. 6: Internal and external iliac bifurcation (K.MESKOURI collection)**



**Fig. 7: Intra- aneurysmal thrombus**



**Fig. 8: Resection of the aneurysm and preparation of the stumps of the primary iliac artery and the external iliac (K.MESKOURI collection)**



**Fig. 9: External ilio-iliac bypass by interposition of a Dacron prosthesis. (K. MESKOURI collection)**

## DISCUSSION

Isolated iliac artery aneurysms are rare. The development of radiological exploration methods has facilitated the discovery and diagnosis of these aneurysms. The appearance of endovascular techniques has revolutionized the management of this pathology by offering several alternatives to traditional surgical treatment.

Iliac aneurysms often escape detection, primarily due to their recessed position in the pelvis. However, the incidence of this entity is increasing as radiographic techniques improve and population longevity increases. Early reports showed that the frequency of iliac aneurysms was 0.3% to 0.6% [3, 20] and the incidence remains low. The rarity of iliac aneurysms also contributes to a low index of suspicion for a vascular emergency [14, 15].

Aneurysms of the common iliac artery (ICA) can be isolated or associated with AAA. (Abdominal Aortic Aneurysm) An AIC is defined by a diameter of 15 to 24 mm and the risk of rupture is greater beyond 35 to

40 mm. Aneurysms of the external iliac artery and the hypogastric artery are exceptional: cases of rupture in the bladder and rectum have been described as well as cases simulating compression of the sciatic nerve [14, 15].

In general, given their deep location in the small pelvis, iliac aneurysms are difficult to detect on clinical examination. In addition, they are often clinically silent and can manifest as a mass effect compressing the organs of the small pelvis: dilation of the ureters, digestive repercussions (constipation), nervous irritation [13].

The diagnosis of iliac artery aneurysms has been improved with improvements in imaging modalities. Ultrasound is a relatively inexpensive diagnostic approach that can identify AIA quite accurately. Computed tomography and magnetic resonance imaging are very accurate [11, 12].

The main goal of surgical intervention is to exclude aneurysmal flow and remove wall tension to prevent further dilation and rupture [19]. Current recommendations generally favor elective repair of

aneurysms measuring larger than 3.5 cm in healthy patients. For patients with AIAs smaller than 3.5 cm, serial follow-up with CT imaging is recommended. In patients with AIAs larger than 3.5 cm, determination of surgical intervention should involve an assessment of the patient's condition [14].

The treatment is surgical or endovascular (or even a combination of the two). For patients undergoing elective repair, preoperative imaging with computed tomography or magnetic resonance is recommended. Repair is recommended for good risk patients with aneurysms larger than 3.5 cm based on aneurysm anatomy and an overview of suggested open and endovascular surgical options is provided [2].

Emergency open surgical management of IAA ruptures is associated with a mortality rate that varies over a wide range (0% to 60%). The mortality rate is significantly reduced to 5% following elective management of asymptomatic IAA. Early diagnosis and rapid referral should therefore be prioritized. The literature reports a number of postoperative complications directly related to the performance of an open surgical repair [3].

At the time of initial presentation of an AIA, patients should be screened for an AAA by CT scan. After open repair of an isolated IAA, follow-up should include a thorough vascular examination annually. If no other aneurysms have been identified at the time of repair, CT scans of the chest, abdomen, and pelvis should be performed at 5-year intervals. More frequent follow-up may be considered for patients with documented arterial disease from the first operation [10].

Immediate elective surgical treatment after the diagnosis of our elderly patient who presented with a primary iliac aneurysm of atherosclerotic origin and who benefited from a resection followed by a prosthetic bypass made it possible to reduce the morbidity rate - mortality in the event of rupture.

In often elderly and fragile patients, percutaneous treatment of iliac aneurysms encompassing the hypogastric artery may be an alternative to surgery. The contribution of volume scanning is essential to the study of the endo and extraluminal characteristics of the aneurysm to ensure optimal results for this type of treatment and to screen for possible complications [8, 9].

## CONCLUSION

Isolated iliac aneurysms are a rare situation. They remain asymptomatic for a long time and are discovered incidentally. The development of radiological exploration methods has facilitated the discovery and diagnosis of these aneurysms.

The appearance of endovascular techniques has revolutionized the management of this pathology by the

exclusion of the aneurysm by a covered endoprosthesis and embolization are the main techniques but conventional surgery by flattening the aneurysm and restoring Vascular continuity is the standard treatment for these aneurysms.

This article demonstrates the effectiveness of prophylactic, elective surgery which is recommended for all iliac aneurysms in order to reduce the rate of deaths during emergency operations.

**Conflict of Interest:** The authors declare no conflict of interest.

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