



Internal iliac artery pseudoaneurysm: a rare presentation with foot drop and sciatica

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Abstract

Internal iliac artery pseudoaneurysm is rare in incidence with most of them being asymptomatic. It may present with neurologic symptoms like paraesthesia, sciatica, weakness of lower limb, foot drop, etc., and in such scenario, high index of suspicion is needed to diagnose. Early intervention should be the strategy in all symptomatic and in asymptomatic cases with size > 4 cm diameter. We present a case of a 40-year-old female with left internal iliac artery pseudoaneurysm who presented with foot drop and sciatica, which is a very rare presentation, and was managed successfully by resection and interposition grafting.

Keywords Internal iliac artery · Pseudoaneurysm · Foot drop

Introduction

Isolated iliac artery aneurysms have an incidence of around 2% and of 0.4% in case of isolated internal iliac artery aneurysm (IIA) [1]. Pseudoaneurysm of internal iliac artery is even more rare in incidence. Pseudoaneurysm means a localised hematoma, differing from a true aneurysm which involves all layers of vessel wall. Usually, they are asymptomatic with incidental detection on imaging for other causes. If symptomatic, they usually present with pressure symptoms because of compression of surrounding structures. Common symptoms are nonspecific abdominal discomfort, urological symptoms, gastrointestinal bleeding and neurological symptoms like back pain, leg pain, sciatic neuralgia or leg weakness. Rarely, they may present with hemodynamic instability with rupture of the aneurysm, which carries a high mortality

[2]. Because of the unusual presentation, diagnosis usually gets delayed and needs high index of suspicion. Here, we present a case of internal iliac artery pseudoaneurysm (IIAP) with unusual presentation of foot drop and sciatica.

Case report

A 40-year-old female, mother of two children with no comorbidities, developed sciatica since 2 months and developed foot drop in left lower limb of 1-month duration. On physical examination of left lower limb, there was no sensory loss. On motor examination, dorsiflexion of the foot and great toe was lost suggestive of weakness of tibialis anterior and extensor hallucis longus respectively. Neurologic examination was suggestive of L4, L5 segment involvement. Abdominal examination was normal. X-ray lumbosacral spine was unremarkable. Abdominal X-ray showed a rim of calcification at the level of sacral bone. Computerised tomogram (CT) of lumbosacral spine showed large expansile eccentric subarticular lytic lesion with soft tissue component and peripheral rim calcification involving the sacrum with possible involvement of neural foramina in left side. With this constellation of findings, a differential diagnosis of pelvic collection or tumour was made. But as part of workup, ultrasound (USG) examination was done which showed a mass of 10 × 7 cm in the pelvis with areas of calcification opposite sacrum and Doppler showed

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turbulent bidirectional flow with yin-yang sign in the central region and peripheral hypoechoic rim which was seen arising from internal iliac artery. CT angiogram was suggestive of large internal iliac artery pseudoaneurysm of size 11×7 cm with peripheral calcification and thrombus causing erosion of L5 and S1 with extension into left sacral foramen (Figs. 1 and 2). As the interventional radiology team referred the patient back to us, we prepared to go for open surgical repair. Intraoperatively, there was a 12×8 cm calcified mass in the pelvis which was displacing the ureter anteriorly (Fig. 3). Ureter was dissected and preserved as well proximal control of common iliac artery was taken and distal control of the internal iliac artery was also taken care of. Pseudoaneurysm was opened and the rent was seen clearly from where the bleed was appreciated. Since the surrounding structures were not healthy, excision of the anterior wall of aneurysm with end to end graft anastomosis of internal iliac artery using no. 4 mm polytetrafluoroethylene (PTFE) conduit was done. Intraoperative as well postoperative course was uneventful. Histopathological examination of the specimen showed pseudoaneurysmal arterial wall with hematoma, calcium deposition, hyalinisation and minimal lymphocyte infiltrates with no evidence of atherosclerosis. Patient was discharged 4 days after surgery and was taught limb physiotherapy. She has been put on antiplatelets and on short-term oral anticoagulation for 6 weeks with therapeutic prothrombin time international normalised ratio (PT INR) between 2 and 2.5. On first month follow-up, sciatica has disappeared and left foot drop has partially improved.

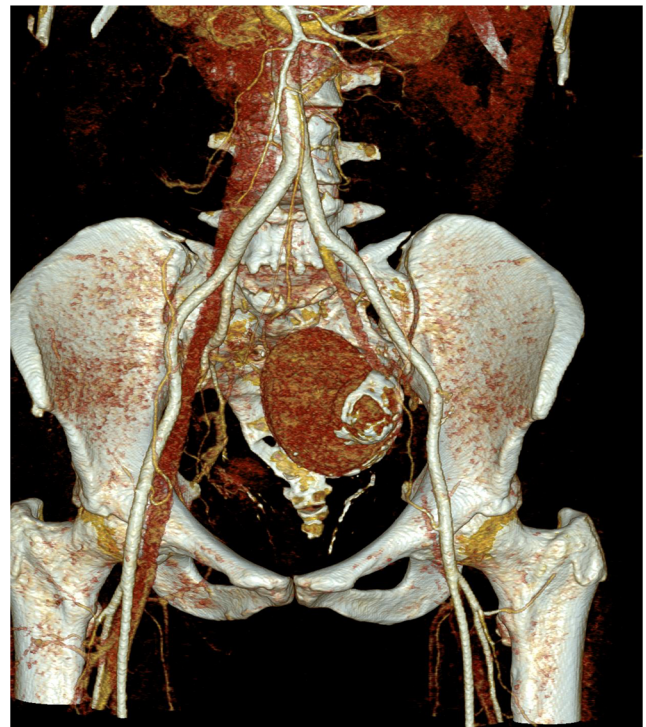


Fig. 2 Volume rendering technique image of the same showing the pseudoaneurysm with calcification and thrombus

Discussion

IIAA are defined as two fold increase in size of the iliac artery without aneurysm at any other location [3]. Society of vascular

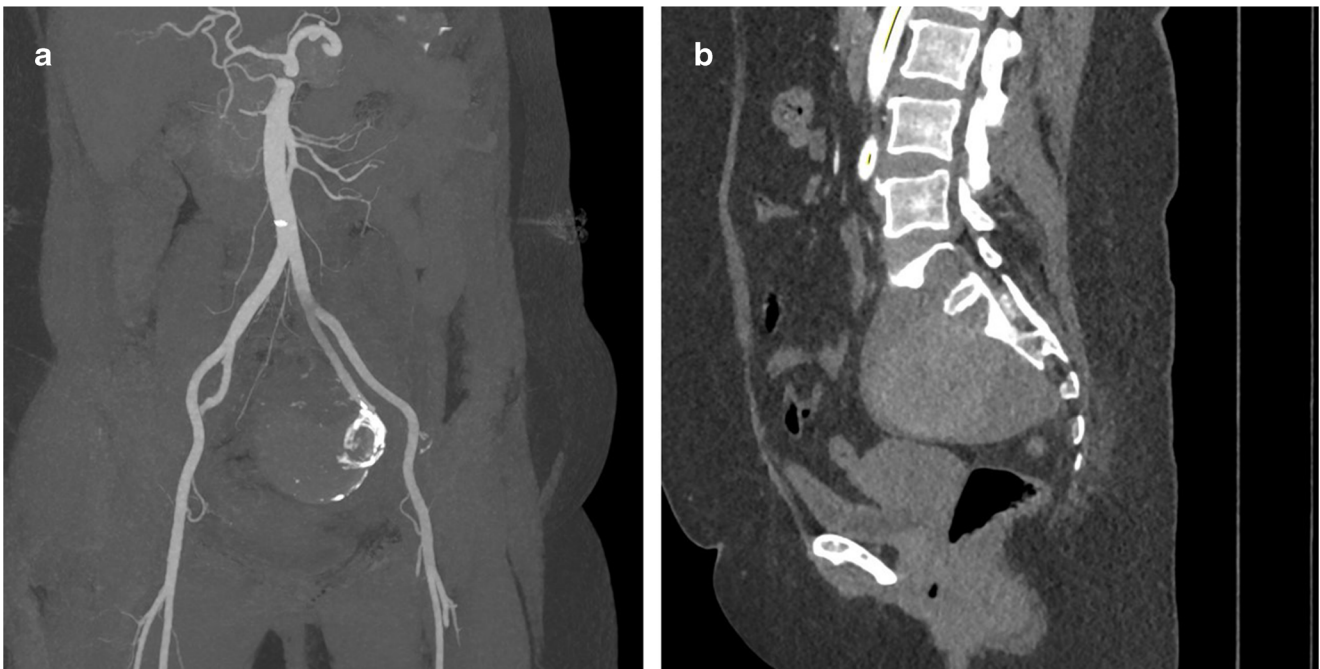


Fig. 1 **a** CT angiogram of abdominal aorta and iliac arteries coronal view maximum intensity projection showing a large pseudoaneurysm of left internal iliac artery with areas of calcification and **b** sagittal view multiplanar reconstruction showing the pseudoaneurysm opposite L5, S1 level

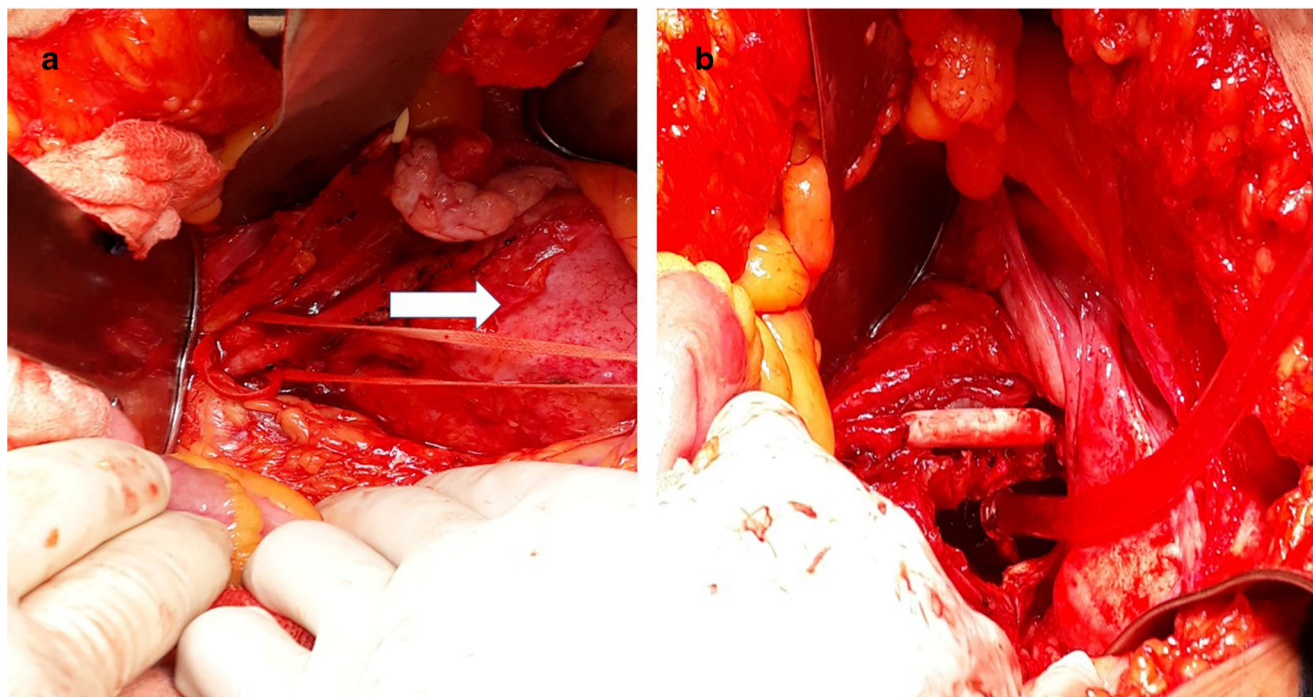


Fig. 3 **a** Intraoperative picture of the left internal iliac artery pseudoaneurysm (arrow) and **b** after resection and interposition grafting of the left internal iliac artery

surgery has defined iliac artery aneurysm as localised permanent dilatation of more than 1.5 cm in diameter [4]. IIIA being rare, as well with its subtle symptoms, many a times the diagnosis gets delayed. Because of improved imaging modality nowadays, many of them are incidentally detected. Compared to true aneurysm, pseudoaneurysm of internal iliac artery is extremely rare. Unlike true aneurysm, pseudoaneurysm does not have all three layers of vessel wall. Essentially being a contained rupture, they have either adventitia or some media with adventitia only. As such, they have high risk of getting ruptured, and if so, the mortality is as high as 50%.

Causes of IIAP are trauma, including both penetrating and blunt, infection, connective tissue disorders, inflammation, tumours eroding the arterial wall and rarely atherosclerosis with penetrating ulcer leading to pseudoaneurysm. Trauma also includes iatrogenic injury because of increasing interventional procedures requiring vascular access. In this patient, workup for connective tissue disorders and atherosclerosis turned out to be negative. There was no history or any evidence of infection. So the most probable cause is trauma, either during parturition or accidental trauma which she may not remember. Around 50% of cases of IIIA are asymptomatic. Symptoms may arise because of surrounding structures getting compressed. Anteriorly lies the ureter, posteriorly lumbosacral trunk and internal iliac vein, medially colon and small intestines, laterally lies the obturator nerve and external iliac vein. Urologic presentations include ureteric colic, haematuria because of compression as well as rupture, hydronephrosis, pyelonephritis and renal failure. IIIA displaces the ureter more anteriorly making it prone to injury

during surgery; hence, care must be taken to preserve it. Intestinal involvement presents with constipation, tenesmus, pain and rarely ileorectal fistula. External iliac vein involvement presents with oedema of lower limb, as also deep venous thrombosis. They can present as pain abdomen with palpable mass in the abdomen. Neurologic involvement presents as lumbosacral pain, sciatica, proximal leg weakness, paraesthesia and occasionally obturator neuralgia. Very rarely, cases of IIIA presenting with foot drop have been reported [5]. A case of IIIA and IIAP presenting with foot drop and sciatica has been reported before [6, 7]. This is a rare presentation of IIAP because of lumbosacral plexus involvement.

Usual causes of sciatica and foot drop include degenerative disc disease, lumbar canal stenosis, spinal tumours, cauda equina syndrome and infection. Extraplural causes include masses in proximity to spinal cord like soft tissue tumours, aneurysm or pseudoaneurysm of internal iliac artery, inferior gluteal artery or abdominal aorta and entrapment neuropathy. For diagnosis of IIAP, USG Doppler has pivotal role. After X-ray, CT lumbosacral spine is the usual imaging modality in cases of neurological presentation. As in this case, IIAP may be misdiagnosed as neural or soft tissue tumour in plain CT so high index of suspicion is needed. If vascular cause is not suspected, it may end in a CT-guided biopsy ending in a catastrophe, which however can be avoided by an USG examination, which would show turbulent bidirectional flow in cases of aneurysm or pseudoaneurysm. Magnetic resonance imaging is a better alternative to CT angiogram which could give the best details of the lesion.

Intervention is indicated in all symptomatic patients. In asymptomatic patients, aneurysms >4 cm in diameter need intervention as risk of rupture is more in this scenario [8]. Intervention options include endovascular approach or open surgical options. Even though surgery is the gold standard, endovascular procedure is preferred because of less procedural risk. If pressure symptoms are predominant, endovascular treatment compared to open method takes more time for resolving of symptoms. In this patient, endovascular intervention was not done because of large size and its pressure-related symptoms. Surgical options include proximal and distal ligation, endoaneurysmorrhaphy with interposition grafting and resection with interposition grafting. Proximal and distal ligation with ligation of all tributaries has advantage of less dissection but pressure symptoms are not relieved. Endoaneurysmorrhaphy is opening of the sac with oversewing of the ostial branches followed by interposition graft preferably to establish continuity. It cannot be done in bilateral cases as it may lead to buttock ischemia, paralysis, impotence in males, bladder sphincter dysfunction and colitis. Resection and interposition grafting relieves best from the pressure symptoms at the cost of bleeding risk. Here, we did anterior resection of aneurysm leaving the posterior layer intact to avoid the bleeding followed by interposition graft. Graft was preferred since it was a huge pseudoaneurysm and calcified, nearby arterial wall was unhealthy so interposition grafting was done. The size of the graft was decided by the preoperative CT angiogram which showed the diameter of normal left IIA around 5 mm, but intraoperatively, the lumen visualised was around 4 mm so the same sized PTFE graft was used. The common complications are bleeding from accidental injury of vascular structures like internal and external iliac artery, iliac veins, ureteric injury lumbosacral plexus injury, colonic injury, obturator nerve injury, etc. These complications can be avoided by proximal and distal control of vascular structures, preoperative ureteric stenting and identifying neural structures. Postoperative antiplatelets and short-term oral anticoagulation is essential as synthetic graft is justified to avoid graft occlusion and to maintain therapeutic PT-INR between 2 and 2.5.

Conclusion

Internal iliac artery pseudoaneurysm is rare and high index of suspicion is needed when patient presents with neurological

symptoms like foot drop and sciatica. If indicated, early intervention should be the strategy because of increased mortality with rupture of the pseudoaneurysm.

Compliance with ethical standards

Conflict of interest The authors declare that they have no conflict of interest.

Ethical approval All procedures performed in this study were in accordance with the ethical standards of the institutional and national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards.

Informed consent Informed consent was obtained from parents of the patient in this report.

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