Common Iliac Aneurysm Rupture after Previous Aortic Aneurysm Resection

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Introduction: Ruptured common iliac aneurysms present with diagnostic and therapeutic challenges. This case describes the successful outcome in a patient with complex vascular surgical history.

Case presentation: An elderly patient presented with abdominal pain confirmed by CT as leaking iliac aneurysm. He had previously undergone an aorto-bifemoral bypass graft for ruptured abdominal aortic aneurysm. The iliac aneurysm was treated by simple ligation of the external iliac artery.

Discussion: Aorto-bifemoral bypass graft may be required for aortic aneurysm repair in severe iliac calcification. Iliac artery fed by retrograde blood flow from the aorto-bifemoral bypass graft contributed to aneurysm development here.

Key words: aorto-bifemoral bypass graft, common iliac aneurysm, rupture

INTRODUCTION

Iliac artery aneurysms pose diagnostic difficulties as they are relatively asymptomatic and hence difficult to detect and treat.1 In addition, rupture of common iliac artery aneurysm is associated with a higher mortality rate despite modern surgical and anaesthetic care.2 They are commonly seen in patients with abdominal aortic aneurysms although there is no association between the diameter of the iliac aneurysm and abdominal aortic aneurysm.3 There are reports of common iliac aneurysm developing in patients operated for infra-renal aortic aneurysms with non-bifurcating grafts.4 In addition, there is recent evidence to suggest that in patients with abdominal aortic aneurysms, common iliac arteries measuring over 1.6 cm are prone to aneurysmal degeneration in later life and this is of relevance particularly when considering endovascular interventions.5

The development and subsequent rupture of a common iliac artery aneurysm, which has been excluded from high-pressure direct flow from the aorta has not been previously reported. We report such a case of rupture of the common iliac artery aneurysm eight years after an aorto-bifemoral bypass graft repair for ruptured infra-renal abdominal aortic aneurysm and discuss relevant management issues.

CASE PRESENTATION

An 84-year-old man with significant past medical history of cardio-respiratory co-morbidities presented with acute onset left iliac fossa pain. He had undergone an aorto-bifemoral bypass graft eight years ago for a ruptured infra-renal abdominal aortic aneurysm. A prosthetic aorto-bifemoral bypass graft was performed as the iliac arteries were severely calcified and unsuitable for anastomosis. The origins of the common iliac arteries were ligated to allow for retrograde perfusion of the internal iliac vessels via the graft. The iliac arteries were noted to be of normal calibre with no aneurysmal changes at the initial repair of the aortic aneurysm. On the current admission, an urgent contrast enhanced CT scan demon-
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eurysm dimensions over 3 cm warrant surgical intervention.6) Twenty percent of patients with abdominal aortic aneurysms have aneurysmal common iliac arteries with diameters over 2.4 cm.3) However in this patient the iliac arteries were noted to be of normal calibre at the initial aortic aneurysm repair.

With advances in endovascular techniques, more complex iliac diseases are managed this way and hence open surgical interventions such as aorto-bifemoral bypass procedures are becoming less common. However there are instances such as aortoiliac occlusive disease where an aorto-bifemoral bypass is still the procedure of choice due to the extensive calcification of the aorta and iliac arteries which precludes endovascular options. For widespread aneurysmal degeneration of the iliac arteries, one may resort to the above procedure to avoid distal anastomosis onto poor quality tissues. However one must exercise caution in ligating both distal external iliac arteries to exclude the iliac aneurysms here as this can render the pelvis and buttock ischemic. There is evidence to suggest that retrograde perfusion of the iliac arteries by aorto-bifemoral bypass graft is a safe technique in aortic aneurysm surgery and atherosclerotic or ectatic iliac arteries are not a contraindication to this technique.7) In this case, both common iliac artery origins were ligated at the initial surgery and circulation was maintained in these vessels by the retrograde perfusion from the aorto-bifemoral graft. This case illustrates that aneurysmal degeneration of the iliac artery can be propagated by retrograde blood flow in the absence of direct flow via the native aorta.

A groin incision to expose the left external iliac artery avoided a second laparotomy with its associated morbidity. The novel use of the ultrasound in this case to detect any flow within the iliac aneurysm lumen after ligation of the left external iliac artery. In view of the significant medical comorbidities any intra-abdominal surgery was deemed dangerous to the patient’s life and unnecessary with ultrasound confirmation of an excluded left common iliac artery aneurysm. A repeat CT scan in 48 hours confirmed absence of contrast enhancement within the aneurysm lumen. The patient was discharged home on the eighth postoperative day, after having made a full recovery.

**DISCUSSION**

Isolated rupture of common iliac artery aneurysm is associated with a high morbidity and mortality.2) Risk of spontaneous rupture is greater among common iliac artery aneurysms exceeding 5 cm in diameter although aneurysm dimensions over 3 cm warrant surgical intervention.6) Twenty percent of patients with abdominal aortic aneurysms have aneurysmal common iliac arteries with diameters over 2.4 cm.3) However in this patient the iliac arteries were noted to be of normal calibre at the initial aortic aneurysm repair.

With advances in endovascular techniques, more complex iliac diseases are managed this way and hence open surgical interventions such as aorto-bifemoral bypass procedures are becoming less common. However there are instances such as aortoiliac occlusive disease where an aorto-bifemoral bypass is still the procedure of choice due to the extensive calcification of the aorta and iliac arteries which precludes endovascular options. For widespread aneurysmal degeneration of the iliac arteries, one may resort to the above procedure to avoid distal anastomosis onto poor quality tissues. However one must exercise caution in ligating both distal external iliac arteries to exclude the iliac aneurysms here as this can render the pelvis and buttock ischemic. There is evidence to suggest that retrograde perfusion of the iliac arteries by aorto-bifemoral bypass graft is a safe technique in aortic aneurysm surgery and atherosclerotic or ectatic iliac arteries are not a contraindication to this technique.7) In this case, both common iliac artery origins were ligated at the initial surgery and circulation was maintained in these vessels by the retrograde perfusion from the aorto-bifemoral graft. This case illustrates that aneurysmal degeneration of the iliac artery can be propagated by retrograde blood flow in the absence of direct flow via the native aorta.

A groin incision to expose the left external iliac artery avoided a second laparotomy with its associated morbidity. The novel use of the ultrasound in this case to detect any flow within the aneurysm helped avoid major intra-abdominal arterial surgery and ligation of the internal iliac system. The right iliac aneurysm was left undisturbed at this presentation as it was asymptomatic but will require intervention in the near future.

There are endovascular options available to exclude this aneurysm. The successful use of vascular plugs has been reported in similar scenarios.8) However this is dependent on favourable aneurysm morphology and access. In addition factors such as experience of the interventional team and case volume load of acute presentations have been identified from trials on ruptured aortic aneurysm as a major determinant of a successful outcome.9) A combination of difficult aneurysm morphology with a conical neck and lack of local expertise precluded the endovascular management option in this case.
CONCLUSION

Although this case is a rare occurrence, it highlights that retrograde blood flow can contribute to iliac aneurysm formation following aorto-bifemoral bypass graft. Mortality risks from an acute rupture of common iliac artery aneurysm remains high despite surgical intervention and endovascular advances. The survival of this patient after rupture of two major intra abdominal aneurysms, albeit 8 years apart; remains unique.

REFERENCES


