RUPTURED ILIAC ARTERY ANEURYSM AFTER ABDOMINAL AORTIC ANEURYSM RESECTION: A CASE REPORT

PLYŠUSI KLUBO ARTERIJOS ANEURIZMA PO BUVUSIOS PILVO AORTOS ANEURIZMOS REZEKCIJOS (KLINIKINIO ATVEJO PRISTATYMAS)

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SANTRAUKA
Reikšminiai žodžiai: pilvo aortos aneurizma, plyšusi klubo arterijos aneurizma.

Tikslas. Pristatyti plyšusios klubinės arterijos aneurizmos klinikinį atvejį po buvusios pilvo aortos aneurizmos rezekcijos.

Metodas. Straipsnyje pristatomas 62 metų paciento, hospitalizuoto dėl ūmaus pilvo skausmo ir šoko, plyšusios klubo arterijos aneurizmos klinikinis atvejis. Šiam pacientui prieš septynis mėnesius buvo atlikta pilvo aortos aneurizmos rezekcija ir aortos rekonstrukcija bifurkaciniu protezu. Abipus bendrosios klubo arterijos buvo persiuotos, tačiau vidinės klubo arterijos liko funkcionuojančios. Pilvo aortos ir bendrųjų klubo arterijų aneurizmos diagnozavotos planinio pilvo ultragarsinio tyrimo metu penkeri metai iki operacijos. Plyšusios kairės bendrosios klubo arterijos aneurizmos dydis ir hematemos vieta patikslinta kompiuterine tomografiš.

Rezultatai. Ligonis skubiai operuotas atliekant abipus klubo arterijų aneurizmų rezekciją ir persiuodant klubo arterijas. Pacientas mirė praėjus dviem valandomis po operacijos dėl šoko sukeltų komplikacijų.

ABSTRACT
Key words: Abdominal aortic aneurysm, ruptured iliac artery aneurysm.

Objective. To present a case of ruptured iliac artery aneurysm after abdominal aortic aneurysm resection.

Methods. We report a case of ruptured iliac artery aneurysm in 62 year old man with acute pain of abdomen and shock. Abdominal aortic aneurysm resection and aortic reconstruction with bifurcated vascular graft was performed seven months previously. Both common iliac arteries were ligatured, but internal iliac arteries were left functional. Abdominal aortic aneurysm and aneurysms of both common iliac arteries were detected on a routine ultrasound scan five years before the reconstruction. The size of the aneurysm and the location of a haematoma after rupture were specified on CT.

Results. The treatment involved the urgent open resection of ruptured left common iliac artery aneurysm and right common iliac artery aneurysm and ligation of iliac arteries. The patient died two hours after the operation due to shock complications.

INTRODUCTION
We report a case of iliac artery aneurysm rupture seven months after aortobifemoral graft implantation for aortic and both common iliac arteries aneurysms. The rupture occurred because of persisted circulation in the left iliac artery aneurysm. The tactics of open surgery used in the case is critically evaluated.

CASE REPORT
An abrupt onset of severe abdominal pain and weakness developed in a 62 years old man. The pain and progressive faintness have been persisting for 48 hours. On admission to the Vascular Surgery Department of Vilnius University City Hospital the patient was somnolent and his blood pressure reading was of 100/60 mm Hg and a heart rate of 100 beats/min. Physical examination revealed that the abdomen was soft with some tenderness. A painful pulsatile abdominal mass was felt by palpation. Blood test included a white blood cell count of 6.8x10⁹/l, haemoglobin level of 72 g/l, hematocrit level of 22 % and serum creatinine level of 680 µmol/l. The patient had a low urine output. A ten year history of arterial hypertension was noted. No other significant comorbidities were found. Five years ago the patient has passed routine examination and the abdominal...
aortic aneurysm and aneurysms of both common iliac arteries were detected by ultrasound scan and specified by CT. The sizes of the aneurysms on CT have been as follows: the abdominal aortic aneurysm 52 mm, the left common iliac artery aneurysm 71 mm, the right common iliac artery aneurysm 56 mm. Then the patient did not consent to open aortic repair and was lost to follow-up. The back pain forced the patient to see a vascular surgeon repeatedly. Ultrasound and CT scan examination concluded that the size of the abdominal aorta was 80 mm, the left and the right iliac arteries were 70 mm. and 85 mm. respectively. No intravascular thrombus was observed (Fig. 1). This time abdominal aortic aneurysm resection and aortic reconstruction with bifurcated vascular graft to both common femoral arteries was performed. Both common iliac arteries and common femoral arteries were ligatured. The inferior mesenteric artery was implanted into vascular graft (Fig. 2). The surgeon was not sure of its capability to supply with blood the large bowel. Internal iliac arteries were not ligatured and their orifices were not closed by endorrhaphy. The patient was discharged on tenth day after operation without in-hospital complications.

Seven months have elapsed from the abdominal aortic aneurysm repair to the time of this admission. Having in mind the present signs of hemorrhagic shock and the previous reconstructive aortic surgery intraabdominal or retroperitoneal bleeding related to the aortoiliac pathology or graft implantation was suspected. The suspicion was
confirmed by CT scan and the location and size of haematoma was determined. The haematoma was spread in the left retroperitoneal space. The rupture of the left common iliac artery was revealed. Aneurysm of the left common iliac artery as measured by CT appeared to be 105 mm and the right common iliac artery was 76 mm in size (Fig. 3).

The urgent open iliac aneurysm repair was performed. Both aneurysm sacs were opened. Common, internal and external iliac arteries were ligatured. The strong blood flow from both internal iliac arteries was observed. The blood loss was ca 4500 ml. During the operation 1500 ml of erythrocytes, 2000 ml of plasma and crystalloids were infused. After operation arterial pressure was maintained with increasing doses of adrenalin. Two hours after surgery the patient died due to progressing haemorrhagic shock and cardiac failure.

DISCUSSION

There are several methods of open operations on aortoiliac or associated iliac aneurysms. The most common technique is aneurysmorrhaphy and interposition of bifurcated vascular graft the point of landing being iliac arteries at the bifurcation of the common iliac or the external iliac arteries. Attachment of graft limbs to the common femoral artery appears to be infrequent [1–3]. The combined endovascular stent placement to treat iliac artery aneurysms following open straight aortic graft implantation also takes a proper place [4, 5]. Crossover femorofemoral bypass with ligature of all iliac arteries and endorrhaphy is applied mostly in cases of isolated iliac artery aneurysm for patients with heavy comorbidities. Excluding the internal iliac artery of circulation is an important point of all these techniques. Taking into consideration the results of previously conducted physiological and biomechanical investigations of aneurysm wall the rupture of the iliac artery aneurysm in our patient was predetermined by several factors. The systolic pressure in the internal iliac artery supplied by collateral circulation can reach 0.45–0.65 of systemic arterial blood pressure [6]. In view of the patient who had been hypertensive, the systolic pressure in the aneurysm could reach 120–130 mm Hg. The internal iliac artery has a very rich collateral blood supply which is secured by four routes: the mesenteric route, the lumbar route, the contralateral route and the external iliac route which consists of deep circumflex iliac artery, medial circumflex femoral artery, inferior gluteal artery [6]. In our case the common femoral artery was ligatured not interrupting the blood flow to the deep circumflex iliac artery and the inferior epigastric artery (Fig. 2). Supposedly both of them took part in the circulation inside the aneurysm. They could serve as runoff arteries impeding intraluminal thrombus formation. The large diameter of the aneurysm and no intraluminal thrombus conditioned the progressing weakness of the aneurysm wall because of significant wall stress maintained by rather high systolic blood pressure [7]. Excluding the internal iliac artery from circulation is an important point of all techniques used for aortoiliac aneurysm repair as well as for isolated iliac artery aneurysm surgery.

REFERENCES


Figure 3. CT scan of the ruptured aneurysm of the left iliac artery (1) and retroperitoneal haematoma (2)