True aneurysm of the superior gluteal artery: Case report and review of the literature

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Aneurysms of the gluteal arteries are rare and mostly are caused by pelvic fractures or penetrating injuries. As such these aneurysms are pseudoaneurysms. As an absolute rarity we report the case of a 43-year-old man with a histologically verified 5 cm–diameter, true saccular aneurysm of the left superior gluteal artery. The patient was admitted with 6-weeks ongoing sciatic pain without previous trauma. He was scheduled for surgery because an initial attempt of transcatheter embolization failed. By dividing the origin of the gluteus maximus muscle from the iliac crest, the aneurysm was exposed at the pelvic outlet by an extrapelvic approach and was excluded by endoaneurysmorrhaphy. Uncontrolled bleeding was prevented by temporary occlusion of the left iliac artery by a percutaneously inserted balloon catheter, thus avoiding an additional retroperitoneal approach. The postoperative course was uneventful, and sciatic pain had resolved completely. The chosen strategy provides safe and successful surgical management of gluteal artery aneurysms. (J VASC SURG 1995;21:851-4.)

Fig. 1. Selective angiography of left internal iliac artery shows saccular aneurysm of SGA. Multiple side branches originating from aneurysm can be seen.
symptoms. He complained of persistent pain and had noted a pulsating mass in his left buttock.

The patient was in good physical condition with no past medical or surgical history. He denied any trauma. On palpation a tender, ill-defined pulsating mass was found. Apart from pain radiating into the femoral region, no neurologic abnormalities were noted. White and red blood cell counts and blood chemistry were all within the normal range.

Ultrasound examination revealed a liquid-filled, smooth mass of 3 × 4.5 cm. With color-coded duplex scanning a pulsatile flow within the mass was detected. Transfemoral angiography showed normal aortoiliac anatomy without atherosclerotic lesions. Selective angiography of the left internal iliac artery showed a solitary, saccular aneurysm of the SGA without extravasation of contrast agent (Fig. 1). Superselective embolization of the feeding artery failed because very high flow made coil placement impossible.

The patient was therefore scheduled for surgical treatment. Beforehand the topographic relations of the aneurysm were determined with computed tomography (CT). As shown in Fig. 2 the aneurysm was clearly of extrapelvic origin. Ultrasound and CT examinations revealed no further aneurysms throughout the body.

For surgery the patient was placed in an oblique position at an angulation of 60 degrees so that, in case of uncontrolled bleeding, a retroperitoneal approach to the left iliac artery was always possible. The left pelvis was elevated. Via the left femoral artery a balloon catheter was placed percutaneously into the left common iliac artery for temporary occlusion of blood flow during aneurysmectomy. The aneurysm was exposed by a dorsal approach dividing the origin of the gluteus maximus muscle from the iliac crest. The gluteus medius muscle was displaced medially. Cranial to the piriform muscle a pulsating aneurysm of about 5 cm in diameter close to the sciatic nerve could be exposed (Fig. 3). After ligation and separation of the small vessels originating from the aneurysm, the feeding artery was exposed at the pelvic outlet. At this time the balloon catheter in the common iliac artery was inflated. After the SGA had been clamped, the aneurysm was opened and treated by endoaureysorrhaphy.

Histologic evaluation revealed the features of a typical true arterial arteriosclerotic aneurysm. Hematoxylin-eosin staining of the aneurysm wall showed atheromatous plaques and atrophy of smooth muscle cells in the media. There was an extensive loss of elastic fibers and replacement by collagenous tissue as demonstrated by elastica-van Gieson staining.

The postoperative course was uneventful, and the patient was completely ambulatory on the second postoperative day. He was discharged on the seventh postoperative day with a well-healed wound and no signs of neurologic deficits. The sciatic pain that he had been complaining of was completely resolved.

DISCUSSION

Incidence. The incidence of gluteal artery aneurysms (GAAs) is unknown because large patient or autopsy series do not exist. In the most recent review in 1977 only 103 cases were reported in the English-language literature. Since then 18 reports have described 19 new GAAs. Thus, including our
Fig. 3. Skin incision was begun at posterior superior iliac spine, paralleled first third of iliac crest, and was continued toward major trochanter. Exposure of SGA was accomplished by reflection of gluteus maximus and medius muscles after dissection of gluteus maximus muscle from iliac crest.

own case, there are a total of 123 cases reported up to now.

It was already noted in 1965 that the SGA is more often involved than the inferior gluteal artery. From 1977 on, 13 cases of aneurysms of the SGA have been reported as compared with only five cases of inferior gluteal artery aneurysms; in one case the aneurysm was not exactly defined by the author.

Cause. Almost all GAAs that have been reported so far are of traumatic origin and therefore are pseudoaneurysms by definition. Among the leading causes are pelvic fractures and perforating injuries. In recent years, there has also been an increasing number of reports of GAAs of iatrogenic origin.

The first true GAA was described in 1973 and was associated with polyarteritis nodosa. Grand reported a mycotic aneurysm in a patient with bacterial endocarditis that was, however, not histologically verified. Thus our case is the first description of a true atherosclerotic saccular aneurysm of the SGA.

Therapy. Treatment of GAAs is indicated in the presence of symptoms that arise from the displacement of adjacent structures if there is a risk of damage to the sciatic nerve and a risk of rupture. An emergency indication emerges in case of acute rupture of a GAA.

From 1977, five of the 19 cases were treated for acute rupture. Concerning the incidence of rupture no definite statements can be made as a result of a limited number of reported cases and the lack of follow-up studies.

Surgical therapy. Surgical treatment of aneurysms of the gluteal artery is technically demanding. The decision to operate on such aneurysms is usually based on the painful displacement of adjacent struc-
tures or because of acute bleeding complications. A standard retroperitoneal approach ligating the internal iliac artery is insufficient in most cases because extensive collateralization can further provide blood to the aneurysm.

On the other hand, transperitoneal or retroperitoneal control of the internal iliac artery is mandatory because, if bleeding occurs, it is almost impossible to control the feeding artery from an extrapelvic access only. Some authors therefore favor a primarily retroperitoneal approach. As such the patient should always be placed in a position that allows an immediate access to the internal iliac artery.

We chose the temporary occlusion of the iliac arteries by a balloon catheter that was placed percutaneously under fluoroscopy via the ipsilateral femoral artery. In our opinion, a complete dissection of the gluteal arteries is mandatory for a reliable control and to facilitate the identification and preservation of the sciatic nerve. This can be achieved best by separating the gluteus maximus muscle from the iliac crest rather than by transverse dissection of the muscle.

Minimal invasive techniques. Because in most cases the indication for treatment of a gluteal artery aneurysm is based on symptoms caused by the displacement of adjacent structures, surgical treatment such as aneurysmectomy, is the treatment of choice. In recent years, transcatheter embolization techniques have been developed and used also for the occlusion of gluteal artery aneurysms. From 1977, transcatheter embolization has been tried in seven of the 19 documented cases of gluteal artery aneurysms. In one case complete thrombosis of the aneurysm could be achieved by 48 hours of balloon occlusion. In five cases embolization was performed as the sole treatment and in one case it was used as an adjuvant therapy preceeding surgery of a great GAA. In three cases of ruptured aneurysms, control of bleeding could be achieved by superselective transcatheter embolization.

Aneurysms of the gluteal arteries are rare. Eventually surgical therapy is indicated and presents a challenge to the vascular surgeon. The described surgical approach provides easy access to the aneurysm and allows for safe repair.

REFERENCES