

Isolated internal iliac artery aneurysm: treatment with proximal ligation only

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ABSTRACT: Isolated aneurysms of the internal iliac artery are very rare and occur usually in male patients older than 60 years. The deep pelvic location of these lesions makes the clinical diagnosis with physical examination alone difficult. The greater availability and advanced sensitivity of the performed abdominal imaging techniques, probably for the investigation of other pelvic diseases, increases the possibility of «early» detection of these aneurysms. Surgical repair is recommended for aneurysms greater than 3 cm in diameter, since the reported incidence of rupture varies between 14 and 70% and the associated mortality is more than 50%.

We report a case of isolated hypogastric artery's aneurysm, which was treated successfully with proximal ligation only.

Key Words: Isolated internal iliac artery's aneurysm, Hypogastric artery.

INTRODUCTION

The prevalence of solitary iliac artery aneurysms has been estimated, from autopsy studies, to be 0.03% of population and represent 0.6% of all aortoiliac aneurysms^{1,2}. Isolated Internal Iliac Artery's Aneurysm (IIAA) occurs in 10 - 30% of these cases. There is a clear male predominance and the reported male/female ratio varies between 5 and 16/ 1, with most patients being at 6th and 7th decade of life. Usually II-IAs are atherosclerotic in origin and remain asymptomatic. The deep pelvic location of these aneurysms makes the clinical detection by physical examination alone, difficult. Clinical manifestation of IIIAA occurs usually due to local compression of adjacent pelvic structures¹.

Conventional surgical treatment of IIIAAs includes complete exclusion of the aneurysm's sac from

the circulation with proximal and distal neck's ligation³.

Case Report

A 65-year-old man with history of recurrent urinary tract infection underwent a contrast-enhanced CT scan, which revealed aneurysm of the right internal iliac artery, 37 x 29 mm in diameter and length (Figure 1). An MRI angiogram showed that the aneurysm had extensive saccular thrombus and the major peripheral internal iliac branches were occluded. The proximal neck was very short (< 5 mm), the External Iliac Artery (EIA) was elongated and extremely tortuous, and the Common Iliac Artery (CIA) was dilated with diameter at least twice the normal size (Figure 2a).

The patient was referred to the Vascular Unit. Physical examination revealed a small second aneu-



Figure 1. Preoperative CT scan shows the hypogastric artery's aneurysm.

rysm of the left popliteal artery which calculated at 11mm in diameter using Duplex Ultrasound. There was no evidence of further vascular lesions in any other abdominal or peripheral vessels.

The endovascular procedure, using a stent graft was excluded due to the «double» EIA's tortuosity and the severe size discrepancy between CIA and EIA. Under general anaesthesia, through right retroperitoneal approach, the iliac arterial axis and the short proximal aneurysmal's neck were dissected. The aneurysm had "inflammatory" dense adhesions with the major internal iliac vein branches and ureter. Under these circumstances, the complete exposure of distal aneurysmal's neck was considered dangerous and risky. The proximal neck was ligated using silk/0 suture, the aneurysm wasn't pulsative any more and after that we decided that the proximal ligation only was safe and sufficient enough for adequate treatment (Figure 2c, 2d).

The patient was mobilized the second and discharged the fifth postoperative day. Postoperative angiogram showed complete thrombosis of the IIIAA (Figure 2b) and the patient 18 months later showed no evidence of ureteric obstruction or urinary tract infection.

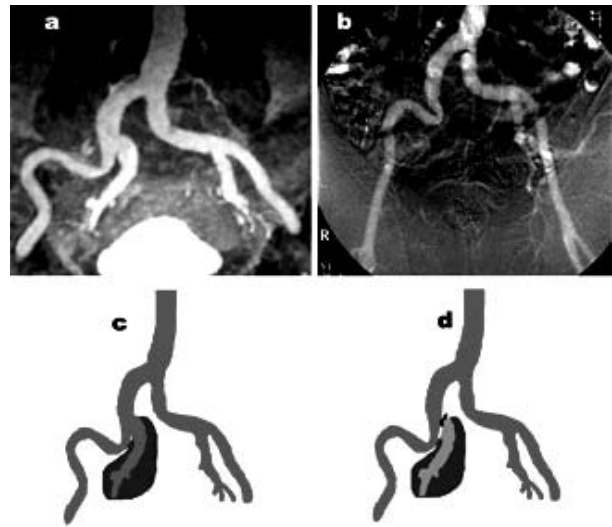


Figure 2. a) preoperative MRI Angiogram, b) postoperative DSA angiogram, c & d) schematic depiction of the technique.

DISCUSSION

Solitary internal iliac artery aneurysms are very rare vascular lesions that count 0.04 – 0.4% of all intra-abdominal aneurysms. Atherosclerosis has been reported to be the prevalent etiologic factor and other uncommon causes may be arterial degenerative diseases or mycotic infection^{1,2,4,5}. In the majority of cases, patients are asymptomatic or have nonspecific symptoms. Clinical manifestation of IIIAA occurs usually due to local compression of adjacent pelvic structures or erosion into surrounding organs (urinary bladder, ureter, rectum, iliac vein or sciatic vein/nerve). They can also become symptomatic through distal embolization, thrombosis or rupture^{1,5,6}.

Ultrasonography, contrast-enhanced computerized tomography, or M.R.I can easily identify II-IAs. Although angiography is less accurate for initial diagnosis, it is necessary for the operative plan, as it provides valuable information for the patency of peripheral branches, the adequacy of collateral circulation and especially for the possibility of treatment with the less invasive endovascular procedures^{7,8,9}.

The reported incidence of rupture varies between 14 -70%, but the correlation between aneurysmal size and risk of rupture has not been well defined. Diameter less than 2 cm eliminate the risk of rupture, but in 36% of diagnosed cases the aneurysm may expand

with a mean rate of 4 mm yearly. In asymptomatic patients with aneurysm smaller than 3 cm, any intervention is discouraged, because of the high morbidity and mortality rate of 5 - 11%^{1,3,5}. Surgical intervention is recommended for IIIAA size greater than 3cm, since the mortality rate when ruptured, is as high as 50-75%¹.

Conventional «open» surgical repair includes complete exclusion of the aneurysm's sac from the circulation. In most cases the retroperitoneal approach offers complete and unencumbered exposure, which is mandatory for a safe and successful repair with proximal and distal ligation^{8,9}. Alternatively, proximal ligation and aneurysmorrhaphy could be performed¹⁰. Most serious complications of «open» repair are massive hemorrhage due to pelvic veins injury and postoperative pelvic ischemia results in rectal, spinal cord or urinary bladder ischemia/necrosis. In cases of compromised contralateral internal iliac perfusion, the pelvic revascularization is necessary^{8,11,12}.

Recently, various endovascular techniques have been reported for the less invasive elective or urgent IIIAA's repair, with or without prior embolization of the sac using coils, thrombin or even tissue adhesive factors¹³⁻⁸. However, ischemic injuries to the lumbosacral plexus, buttock and colon, due to distal ath-

eroembolism, have been noted and the embolization procedures must be performed with caution¹⁹⁻²¹.

Our preoperative surgical plan included the attempt of both proximal and distal ligation and the complete exclusion of the aneurysm. Intraoperatively, we found that the «inflammatory» aneurysmal wall was dense adherent to the major internal iliac vein branches and the ureter, probably due to the recurrent urinary tract infection and the subsequent perianeurysmal inflammations. The complete exposure of distal neck was considered as hazardous and extremely risky. Furthermore, the exclusion of the arterial inflow, with proximal ligation only, resulted in complete elimination of pulses. Since the MRI Angiogram was indicative that the major distal branches were occluded from the large aneurysmatic thrombus, we decided that proximal ligation only was enough for the IIIAA's treatment and this was confirmed with the postoperative angiogram.

This technique, although theoretically incomplete, offered a good result and reduced the intraoperative risks. In cases of «inflammatory» hypogastric artery aneurysms with large thrombus and compromised patency of distal branches, the proximal ligation only might be effective and safe for the surgical repair of these lesions.

Μονήρες ανεύρυσμα της έσω λαγονίου αρτηρίας: Αντιμετώπιση με κεντρική απολίνωσή του.

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ΠΕΡΙΛΗΨΗ: Τα μονήρη ανευρύσματα της έσω λαγονίου αρτηρίας είναι ιδιαίτερα σπάνια και εμφανίζονται συνήθως σε άρρηνες μεγαλύτερους των 60 ετών. Η πυελική εντόπισή τους καθιστά την κλινική διάγνωση με τη φυσική εξέταση δύσκολη. Η μεγαλύτερη διαθεσιμότητα και η αυξημένη ευαισθησία των απεικονιστικών εξετάσεων που πραγματοποιούνται συνήθως για τη διερεύνηση άλλων παθήσεων της πύελου αυξάνει την πιθανότητα πρόωμης διάγνωσης τέτοιων ανευρυσμάτων. Η χειρουργική αντιμετώπισή τους συνιστάται για ανευρύσματα μεγαλύτερα από 3 εκ. σε διάμετρο διότι η αναφερόμενη πιθανότητα ρήξης για τέτοια ανευρύσματα είναι από 14 έως 70% με σχετική θνησιμότητα περισσότερο από 50%.

Αναφέρουμε μια περίπτωση μας μονήρους ανευρύσματος της υπογαστρίου αρτηρίας που αντιμετωπίστηκε επιτυχώς με κεντρική απολίνωσή του.

Λέξεις Κλειδιά: Μονήρη ανευρύσματα έσω λαγονίου αρτηρίας, Υπογαστρικός αρτηρία.

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