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Original Research Article

Type 2 Endoleak Hybrid Repair with Open Approach and Endovascular Angioembolization on a 10 Centimeters Aortoiliac Aneurysm: Case Report and Literature Review

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Abstract: Type 2 endoleak after endovascular aneurysm repair of abdominal aortic aneurysms remains the most prevalent type of endoleak. Depending on the time of appearance, can be classified as primary, or secondary, those that appear after the first month after endoprosthesis implantation. Type II endoleaks, due to retrograde filling of the aneurysmal sac from a collateral artery, constitute the most frequent subgroup. Most of the type II endoleaks resolve spontaneously. Which is why they must be treated. The surgical treatment of type 2 endoleaks is through a transarterial approach, In this case, This technique is complicated even in expert hands, and migration of the coils proximally or distally is not uncommon. In general, EVAR is associated, for the moment, with a non-negligible risk of other postoperative complications, such as ischemic complications, those associated with rupture or mobilization of the endoprosthesis, and endoleaks. These complications can affect up to 35% Of the patients who undergo EVAR compared to 8% After CAC. Of cases, and in addition, in the long-term evolution, failures may occur due to material fatigue, with it, the pressurization of the sac and eventually the evolution towards rupture. Follow-up is something inherent to EVAR.

Keywords: Endoleak, abdominal aneurysm, vascular surgery, type 2 endoleak.

INTRODUCTION

Type 2 endoleak after endovascular aneurysm repair (EVAR) of abdominal aortic aneurysms (AAA) remains the most prevalent type of endoleak. Endoleaks, depending on the time of appearance, can be classified as primary (early), which are those that appear in the first 30 days after implantation of the endoprosthesis, or secondary (late), those that appear after the first month after endoprosthesis implantation. Type II endoleaks, due to retrograde filling of the aneurysmal sac from a collateral artery, constitute the most frequent subgroup. Most of the type II endoleaks resolve spontaneously. Only a small percentage of them all produce pressurization of the aneurysmal sac and carry a risk of rupture, which is why they must be treated. CT (computed tomography) angiography continues to be the most widely used follow-up method for patients undergoing endovascular repair of abdominal aortic aneurysms. The surgical treatment of type 2 endoleaks is through a transarterial approach, the permeable afferent artery must be selectively embolized at its entrance into the aneurysmal sac or through an open approach.

METHODS (Surgical Technique)

A 74-year-old male hospitalized with diagnosis of post-operated of EVAR in 2017 plus type 2 endoleak. In 2017 he was hospitalized with the diagnosis of infrarenal abdominal aneurysm with extension to common iliac with diameter of up to 8.1 millimeters (evidenced by contrast computed tomography). After, in 2018 he was diagnosed with type I endoleak of the same aneurysm with the presence of a leak to the aneurysmal

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sac towards the distal area of the stent, at the level of the right common iliac artery. Patient underwent reoperation in 2018 for the placement of a covered stent, 8 millimeters x 8 centimeters, performing a control angiography where the persistence of the leak was observed but with marked decrease, therefore they concluded intervention. In 2019 during his follow-up, he underwent surgery for the placement of an aortic endoprosthesis and reintervention due to the diagnosis of a type III endoleak (lack of seal between the main body and the stents in the right common iliac artery, 2 covered stents were placed, achieving a significant reduction in the flow to the aneurysmal sac of the right common iliac artery. In the follow-up the endoleak is not registered in USG doppler color, therefore the adequate seal of the prosthetic devices is concluded.

Lost follow-up and in March 2023 an Angio tomography was performed showing evidence of ABDOMINAL AORTIC ANEURYSM WITH TYPE II ENDOPRASTHESIS FROM THE RIGHT HYPOGASTRIC ARTERY, LEFT HYPOGASTRIC ARTERY WITHOUT FLOW, ANEURYSMAL SAC OF APPROXIMATELY 10 CENTIMETERS, then it is decided to go under surgery.

Patient in supine position under general anesthesia, patient is placed with slight flexion of 15° towards left lateral decubitus, Gibsson incision is enhanced in right flank, we proceed to sharply dissect subcutaneous tissue with electrocautery, external oblique muscle is identified then it is avulsed medially, the internal oblique muscle is identified, and cut with electrocautery, the retroperitoneum is entered, an 10 centimeters iliac aneurysm is identified, to which a 5-fr introducer is placed, a guide is passed with the help of an image with fluoroscopy. The aneurysm is entered and corroborated with contrast medium guided with fluoroscopy image, a 16-millimeter and 20-centimeter coil catheter is inserted, correct placement is corroborated with fluoroscopy image, later we proceed to place the coil-type catheter and so on until full embolization is completed. Finally contrast medium is introduced where absence of flow is evident with adequate embolization of the aneurysm.

RESULTS

The postoperative course is without complications. At the follow-up one month later, the patient remains asymptomatic, with no symptoms of pelvic ischemia and correct placement of the endoprosthesis in the absence of endoleaks.

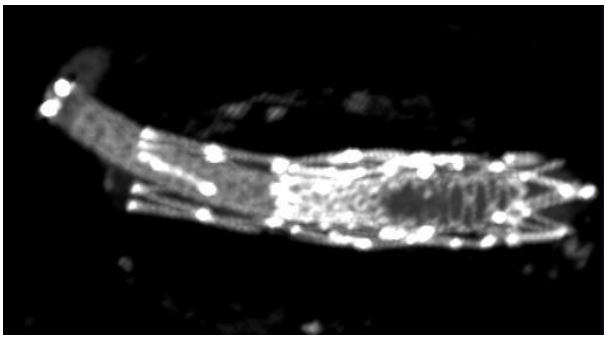

Figure 1: Preoperative angiotomography of the right iliac extension with balloon expandible stent

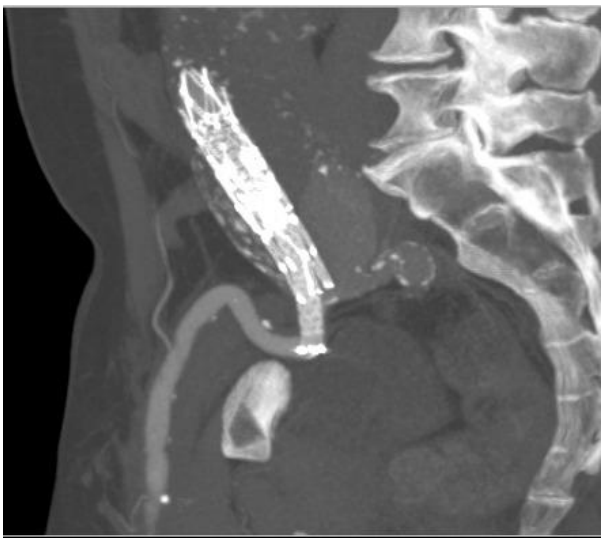

Figure 2: Preoperative angiotomography of endoleak type 2 of right iliac hypogastric artery

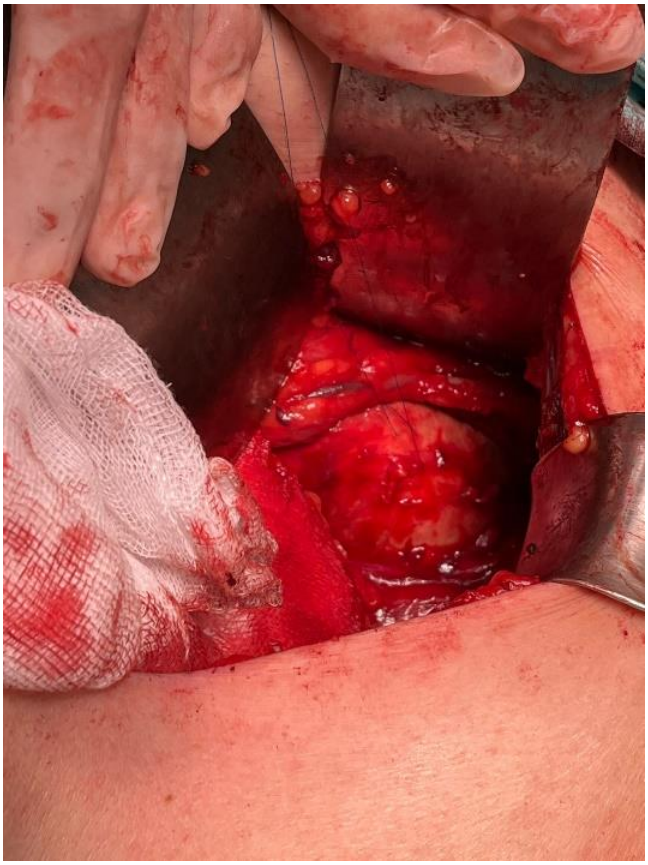

Figure 3: Retroperitoneal approach of right common iliac aneurysm sac

Figure 4: Angiography of aneurysm sac before coils

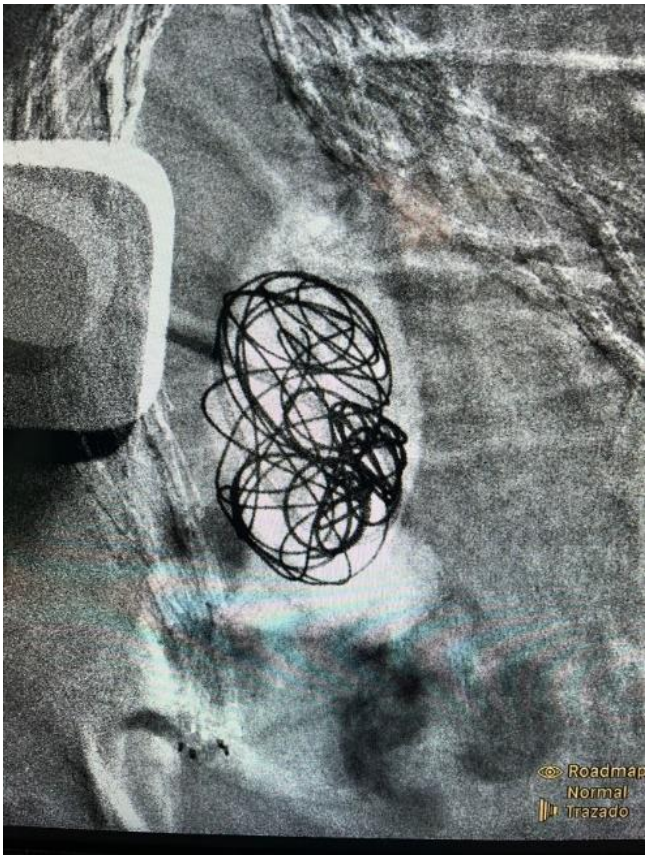

Figure 5: Angiography of introduction of coils to the aneurysm sac

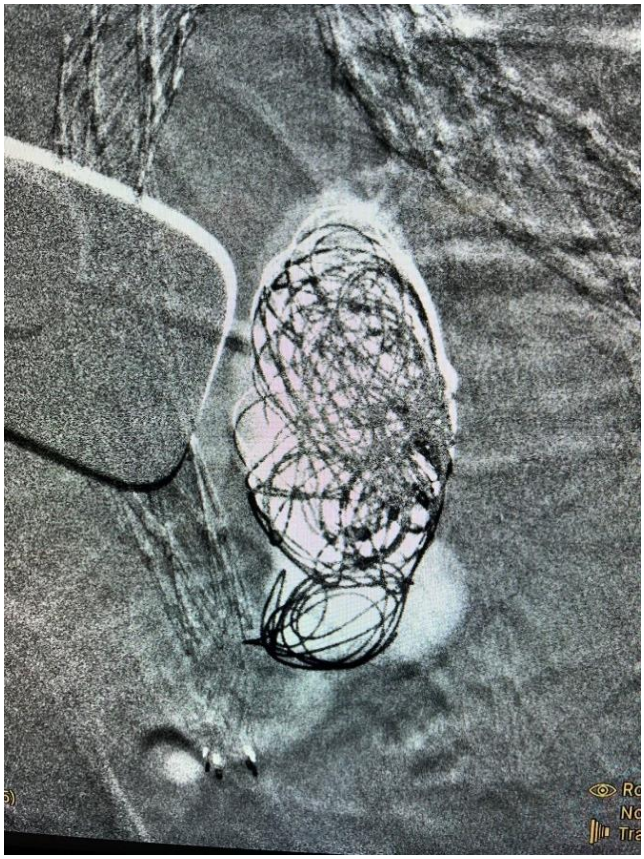

Figure 6: Coil embolization

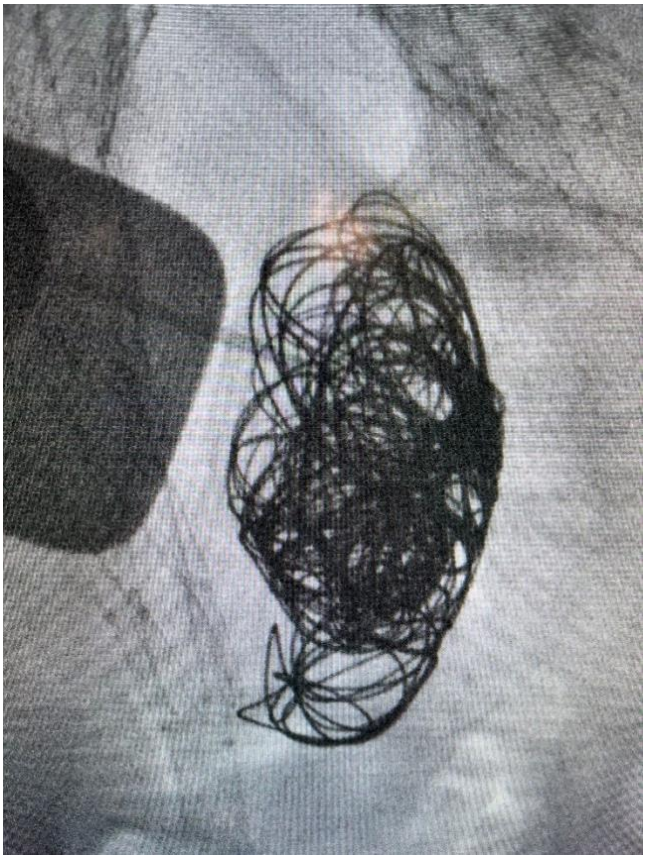

Figure 7: Final angiography with coil embolization

DISCUSSION

Currently the treatment of choice is angioembolization of the affected vessel in type 2 endoleak, however in selected cases the use of an open approach can be chosen. In this case, it is decided to use a hybrid approach where an open approach is performed with a subsequent direct endovascular approach in the abdominal aortic aneurysm.

The original technique of the trans arterial approach uses the origin of the internal iliac artery to preserve its bifurcation and thus maintain patent collateral circulation. This technique is complicated even in expert hands, and migration of the coils proximally or distally is not uncommon. Several authors conclude that the intervention with coils is a safe management for the patient.

CONCLUSION

In general, EVAR (endovascular aneurysm repair) competes favorably with respect to conventional open surgery (CAC) in relation to immediate systemic morbidity and mortality rates. However, EVAR is associated, for the moment, with a non-negligible risk of other postoperative complications, such as ischemic complications, those associated with rupture or mobilization of the endoprosthesis, and endoleaks. These complications can affect up to 35% of the patients who undergo EVAR compared to 8% after CAC.

Endovascular exclusion of an aortic aneurysm may not eliminate the risk of rupture in 100% of cases, and in addition, in the long-term evolution, failures may occur due to material fatigue, displacement of the endoprosthesis due to initial poor fixation or subsequent migration or due to changes with the remodeling of the aneurysm after exclusion that cause the uncoupling of pieces and, with it, the pressurization of the sac and eventually the evolution towards rupture. Although the safety and durability with respect to the initial experiences are increasing more and more, follow-up is something inherent to EVAR, if it is to offer durability of the result extended over time for all patients. The reduction of the aneurysmal sac can take up to 12 months to reduce by 50%.

CONFLICTS OF INTERESTS: The authors have no conflict of interest to declare

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