

P01

Fistula aorto-esofágica secundária após tevar: celeridade da abordagem cirúrgica multidisciplinar e suas implicações prognósticas

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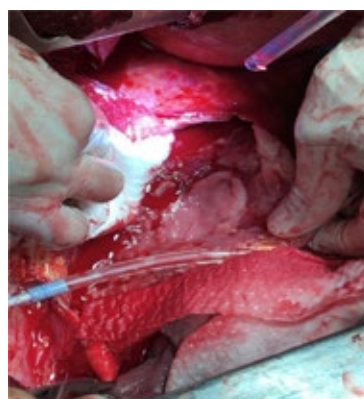
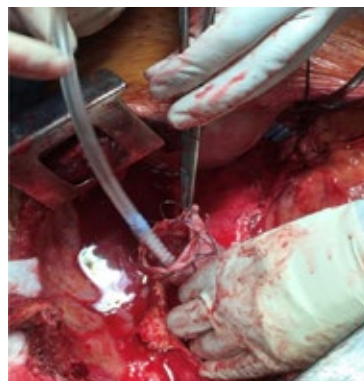
INTRODUÇÃO: Uma fístula aorto-esofágica (FAE) é uma condição clínica associada a elevada mortalidade e péssimo prognóstico. Apresenta-se habitualmente com hemorragia digestiva massiva, estando associada a aneurisma da aorta torácica em metade dos casos primários. A FAE secundária após TEVAR é ainda mais rara com frequência estimada em 0,5%-1,7%.

O diagnóstico é usualmente clínico. A identificação de uma hemorragia digestiva massiva, caracterizada pela presença de sangue arterial, deve elevar a sua suspeita e a sua celeridade exclusão através de estudos endoscópicos. Em último caso pode estar associada à tríade de Chiari, caracterizada por dor torácica, hemorragias sentinela e exsanguinação. Os doentes sintomáticos e hemodinamicamente instáveis devem ser submetidos a intervenção cirúrgica imediata.

CASO CLÍNICO: Doente de 62 anos de idade, fumador, recorreu a urgência por quadro de disfagia para líquidos e sólidos com um mês de evolução. Em angio-TC foi diagnosticado aneurisma sacular da aorta torácica descendente com compressão esofágica, tendo sido submetido a TEVAR, com exclusão do mesmo com sucesso e resolução do quadro de disfagia. Aproximadamente um mês após a intervenção, recorre novamente ao SU por quadro clínico caracterizado por hematemese, sem instabilidade hemodinâmica. Em angio-TC não se objectivou evidência de hemorragia activa para o tracto gastrointestinal, contudo a presença de ar dentro do saco aneurismático e dilatação das zonas de selagem proximal e distal do TEVAR levantou a suspeita de infecção protésica concomitante. Após novo episódio de hemorragia digestiva com melenas foi repetida EDA, visualizando-se a endoprótese mas ausência de foco hemorrágico identificável. Em reunião multidisciplinar optou-se, em primeiro tempo operatório pela Cirurgia Geral, por desfuncionalização do esófago com agrafagem cervical, gastrostomia de drenagem e jejunostomia de nutrição. Após 2 semanas de antibioterapia procedeu-se ao tratamento definitivo por toracotomia lateral esquerda, com remoção da endoprótese (Fig.1), desbridamento do tecido aórtico infectado e reconstrução in situ da aorta torácica descendente com interposição com prótese de Dacron impregnada com prata e ticlosan (Fig. 2). Foi ainda realizada esofagectomia da zona da fístula (Fig. 2) e esofagogastrostomia termino-terminal complementada com plastia com músculo intercostal. O pós-operatório decorreu sem intercorrências major, contudo manteve necessidade de realização de três dilatações endoscópicas ao nível da região da agrafagem cervical esofágica.

Após quatro anos de follow-up mantém-se assintomático, com boa tolerância alimentar e trânsito gastrointestinal mantido. Em angio-TC de controlo com permeabilidade da revascularização efectuada, sem evidência de infecção ou de novo trajecto fistuloso.

CONCLUSÃO: As fistulas aorto-esofágicas, primárias ou secundárias a TEVAR, são tipicamente fatais e o seu rápido reconhecimento e tratamento definitivo são imperativos, por vezes associado a boa sobrevida. Estudos endoscópicos podem ser úteis na sua localização, contudo devem ser usados para exclusão de outras causas mais frequentes de hemorragia gastrointestinal. O prognóstico habitual é reservado pelo que a intervenção cirúrgica célere é mandatória e exige planeamento multidisciplinar.



P02

Redefining late renal artery revascularization – splenorenal bypass in the treatment of acute renal artery occlusion

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INTRODUCTION: The kidney is a metabolically active organ with terminal circulation, so the rapid development of renal infarction after acute renal artery occlusion is expected. Recent evidence suggests preferentially percutaneous revascularization in fewer than 6 hours. However, significant controversy exists regarding the time of ischemia that the kidney can tolerate. Patients present with different clinical manifestations, making it difficult to categorize the occlusion's pathophysiology and time of evolution by the clinical history alone. Some reports in the literature demonstrate benefits in late renal artery revascularization in patients with acute presentations requiring dialysis, so there is still doubt regarding managing these patients.

CONCLUSION: Our case highlights the benefit of late renal artery revascularization in cases of acute occlusion to avoid renal replacement therapy. This dogma is not consensual in vascular surgery. We believe that in this case, collateral arteries allowed perfusion of the renal parenchyma due to previous atherosclerotic disease despite the proximal occlusion of both renal arteries. We consider that aggressive late renal revascularization may benefit selected patients with acute renal artery occlusion who maintain some perfusion and residual tubular function. More extensive studies would be essential to corroborate our observation.

CASE REPORT: 64-year-old male with a clinical background of smoking and high blood (HBP) leading to heart failure with reduced ejection fraction was admitted to the emergency department for an oliguric acute kidney injury (AKI). The patient previously had chronic kidney disease with a serum creatinine of 1.26mg/dL, estimating a glomerular filtration rate of 47ml/min.

At the emergency department, serum creatinine was 6.56mg/dL. Unfavorable evolution demanded the initiation of hemodialysis due to refractory hypervolemia and resistant HBP, which required the titration of multiple antihypertensive drugs. A computed tomography angiography showed aortoiliac occlusion starting below the superior mesenteric artery, conditioning the occlusion of the proximal segment of both renal arteries. The patient did not develop clinical manifestations of ischemia of the lower limbs due to previous aortoiliac obstructive disease. A renal scintigraphy study showed decreased overall renal function more relevant in the left kidney.

The case was discussed multidisciplinary, and right renal artery revascularization was proposed. Due to the patient's high surgical risk, it was decided not to revascularize both kidneys and avoid aortic clamping. A splenorenal retrocaval bypass was done uneventfully, 21 days after the initial presentation. The postoperative period was completed in an intermediate care unit. After surgery, the patient showed marked improvement of diuresis with decreased nitrogen retention parameters, allowing definitive suspension of the dialysis technique in the first week and controlled blood pressure. Serum creatinine dropped to baseline and remained stable at one year of follow-up. Chronic limb-threatening ischemia complaints developed in the left lower limb. The patient underwent an axillobifemoral bypass and is currently asymptomatic.

P03

Surgeon-modified stent-graft and iliac-visceral debranching: a hybrid solution for a life threatening contained aortic rupture

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CHVNG/E

INTRODUCTION: Inflammatory aortic disease is a rare and potentially life threatening disease. The etiology of the inflammatory changes is still poorly understood, with some authors advocating an auto-immune response while others postulate an infectious etiology.

CASE REPORT: We are reporting a case of a 76-year-old male patient who presented to the emergency room with fever, left lumbar pain and constipation. Previous medical history included active smoking, malaria and typhoid fever infections and an appendectomy 30 years before. For two weeks the patient came back three times to the emergency with recurrent symptoms. Repeated CTA scans showed a dilated colon with no apparent focal occlusion, probably related to a dysfunctional status and a finding of a fusiform infra-renal AAA (30 mm) with no signs of instability. There was a remarkable finding on imagiologic evaluation that required our special attention: at the level of the celiac trunk it was evident an aortic wall thickening and ulcer (6 mm) on the posterior aortic wall that considerably increased (23x23 mm) in last CTA scan and appeared to have a contained aortic rupture. Laboratory evaluation revealed elevated sedimentation rate, leukocytosis and neutrophilia and blood and urine cultures were negative. Large spectrum antibiotic coverage (piperacillin/tazobactam plus vancomycin) was initiated.

Due to increasing abdominal pain and hemodynamic instability we planned an urgent hybrid intervention. The bypass to the superior mesenteric artery and left renal artery originated from the distal common right iliac artery. An Intergard Synergy™ graft (14x7 mm, Getinge®) was used for that procedure. We therefore modified a commercially available stent-graft (28x28x49 mm, Medtronic®). Following back-table deployment of the stent-graft, a fenestration was performed for the right renal artery (RRA) 25 mm from the top of the graft, and its position was reinforced with a sutured microcoil in a semi-oval configuration around the hole to create a radio-opaque mark. Additionally, a chimney to the celiac trunk was performed with a covered balloon-expandable stent (11x79 mm, VBX™, Gore®) and coil embolization to a polar artery from RRA. The graft was then re-sheathed and the procedure was performed.

Final angiographic control and post-operative CTA showed patency of all visceral revascularizations. At the time this abstract is being written, the patient is still in-hospital, on the 30th post-operative day with a stable renal function and favorable evolution, despite a paralytic ileus still under resolution. A *klebsiella pneumoniae* carbapenemase was isolated in hemocultures and large spectrum antibiotics remain prescribed.

CONCLUSION: Para-visceral aortic infections are surgically challenging. ESVS guidelines recommend surgical repair, with endovascular repair being an acceptable alternative associated with long-term antibiotics. In this case, several treatment options were contemplated: t-branch stent-graft was ruled-out due to anatomic considerations; three chimney grafts were also excluded given the higher complications rate. Our open surgical approach did not require aortic clamping, thereby decreasing surgical risk. Although data on surgeon-modified stent-grafts remain limited, retrospective studies have reported encouraging short/midterm results. In urgent cases such as the described one, creative hybrid techniques can be patient-tailored, life-saving options, and are readily available.

P04

Hybrid treatment for a complex bevar type IIIc endoleak – kidney autotransplantation and aortic stent graft relining

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INTRODUCTION: Late endoleaks in the case of FEVAR or BEVAR can be problematic given the difficulty associated with endovascular treatment in an aorta already with complex vascular reconstruction. Since these endoprotheses include multiple modular components, the endoleaks related to branches are more frequent. Target vessel endoleaks arise due to poor material integrity, inadequate sealing in the target vessel, and separation between the bridging stent and the fenestration ring or the directional branch. This last case, recently categorized as type IIIc endoleak, is one of the most common. Endovascular treatment with stent relining is generally satisfactory; however, endovascular alternatives may not be possible when complete separation and misalignment of the modules exist.

CASE REPORT: A 60-year-old man previously submitted to BEVAR presents with a type IIIc endoleak. The patient had a history of multiple vascular risk factors, developed bilateral critical limb ischemia, and was revascularized to both lower limbs at 48 years. The procedure consisted of a right femoral endarterectomy with supraarticular femoropopliteal bypass using the great saphenous vein (GSV) in the right lower limb and a femoral endarterectomy using a GSV patch on the left. Total resolution of the complaints was observed.

A thoracoabdominal aortic aneurysm (Crawford type III classification) was identified. Ten years after lower limb revascularization, the patient underwent treatment because the aneurysm had reached a maximum diameter greater than 6 cm. The aneurysm was excluded with a custom-made branched endoprosthesis, and the patient was discharged on postoperative day five. After about a week, the patient recurred to the emergency department for right lumbar pain. A computed tomography angiography (CTA) revealed occlusion of the right renal artery branch with complete exclusion of the right kidney. Considering the impossibility of recovering functioning parenchyma, conservative treatment was decided. The patient maintained a good evolution with the recovery of serum creatinine to values within the normal range.

Four years after implantation of the endoprosthesis, the presence of an endoleak with the growth of the aneurysmal sac to about 7cm was identified. Imaging findings of CTA showed a complete disintegration between the covered stent of the left renal artery and the directional branch of the aortic endoprosthesis, precluding endovascular relining. After considering multiple alternatives, we decided to carry out a hybrid treatment in two stages. In the first phase, autotransplantation of the left kidney was performed with laparoscopic harvest and implantation of the graft in the left iliac fossa. Subsequently, the aneurysm was excluded with a tubular endoprosthesis deployed immediately below the

SMA's ostium, occluding both renal directional branches. CTA at one month of follow-up showed no endoleaks.

CONCLUSION: Increased complications with FEVAR and BEVAR are expected. The extent of aortic disease and the complexity of the procedure are risk factors for the development of late endoleaks. Target vessel endoleaks are usually resolved by an endovascular approach with stent relining. However, such treatment is not possible in certain situations, and good outcomes are possible using hybrid strategies. Kidney autotransplantation may be an excellent solution in selected cases.

P05

Looks like a DVT, walks like a DVT... And it's not a DVT

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CHVNG/E

INTRODUCTION: Deep vein thrombosis (DVT) is one of the main pathologies diagnosed by vascular surgeons in the emergency department (ED). It's fundamental to be aware of its differential diagnosis, as some patients may present with identical symptoms.

Cystic adventitial disease (CAD) is a condition that mainly affects the arterial system but rarely involves the venous system. The current study reports on a case of CAD involving the femoral vein.

CASE REPORT: A 45-year-old female patient comes to the ED due to oedema of the left lower limb for about 5 months. She was anticoagulated with rivaroxaban for a probably misdiagnosed femoral DVT, with no improvement of symptoms. Objectively there was a clear asymmetric swelling of the left lower limb.

Doppler ultrasound (DUS) showed an encapsulated hypoechoic mass protruding to the posteromedial wall of the femoral vein, leading to abnormal blood drainage of the vessel. Calf compression and Valsalva manoeuvres showed a patent vein with a severely constricted lumen. CT-venography confirmed a hypodense and well-defined mass appearing to have a compressive effect on the femoral vein.

Patient was submitted to surgical resection of the mass, in which a cystic structure was identified in continuity with the femoral vein's wall. Reconstruction of the vein wall was done using direct suture without the need of prosthetic material to maintain its integrity. Postoperative histological examination confirmed that the mass was a venous cyst.

Patient was discharged three days after the procedure, asymptomatic, maintaining anticoagulation with rivaroxaban. She started an DUS screening program given the elevated risk of recurrence.

CONCLUSION: Cystic adventitial disease (CAD) is most frequent in men and predominantly located in the popliteal artery. CAD of the venous system is a rare entity with few cases described in literature. The most affected vessel is the femoral vein.

The etiology of this pathology remains unclear, although there are some possible explanations such as repeated microtrauma, connective tissue diseases, or even the implant of synovial or mesenchymal cells of the joint closest to the affected vessel, during embryogenesis.

The diagnosis can be suspected through clinical and imaging findings, however, given its rarity, it's often made during or after surgery.

The first imaging method should probably be doppler ultrasound due to its availability, low cost, and absence of radiation. The DUS typically shows an anechoic mass. CT-

venography seems to be a good imaging method for the evaluation of this pathology as it can help in the surgical strategy, and even allow the percutaneous drainage of the lesion.

Given the small number of cases described, the ideal treatment is still unknown, but most authors advocate resection of the cyst and its wall to prevent recurrence (which is higher when minimally invasive treatments are used).

CAD of the venous system is a rare entity, but it should be suspected in patients with symptoms of DVT, and especially when the diagnostic investigation indicates an extrinsic mass. Close follow-up of the patient is necessary to prevent recurrence.

P06

Venous bypass for iliofemoral venous occlusion: could this be an answer for patients with no endovascular solution?

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INTRODUCTION: Percutaneous endovenous treatment has been established as the first-line modality for chronic nonmalignant ilio caval venous obstruction (ICVO) due to its low morbidity and suitable medium and long-term results. Conventional surgical procedures are only used as last resort therapy due to their morbidity. However, limited data about open venous iliofemoral reconstruction outcomes exists.

We present two cases of surgical venous bypasses to treat ICVO using ePTFE grafts. Informed consent was obtained from the patient for the use of clinical data.

for patients with benign ICVO with debilitating symptoms not amenable to endovascular treatment. The creation of AVF seems to decrease the risk of thrombosis. However, published data are scarce, and more extensive studies are needed to validate these observations.

CASE-SERIES:

Case 1: A 69-year-old male presented to our institution with a post-thrombotic syndrome of the left lower limb manifesting chronic malleolar ulceration. After failed conservative treatment, the patient underwent lower limb phlebography, transluminal venoplasty, and stenting of a total occlusion of the left iliac venous segment. The patient presented a complete resolution of the complaints and the healing of the ulceration. However, stent thrombosis occurred two years later, and ulceration recurred. Endovascular recanalization was unsuccessful. So, a surgical bypass between the common femoral vein and inferior vena cava was constructed using a 10mm ringed ePTFE vascular prosthesis. An arteriovenous fistula (AVF) was done to increase the flow and patency of the bypass. After three months, complete healing of the lesion was observed. Venous bypass remains patent at one year of follow-up.

Case 2: A 63-year-old female was observed for disabling chronic edema of the right lower limb and complaints consistent with venous claudication. The patient had a history of section and ligation of the right common femoral vein to control an iatrogenic lesion during orthopedic surgery. A phlebography revealed occlusion of the common femoral and femoral veins with the permeability and ectasia of the deep femoral vein. The patient underwent venous bypass between the deep femoral vein and the ipsilateral common iliac vein with a 12mm ringed ePTFE vascular prosthesis and an AVF creation. The patient maintained a marked improvement in her complaints. Computed tomography venography (CTV) revealed an ePTFE-iliac vein anastomotic stenosis one year after the procedure. She was treated by percutaneous transluminal venoplasty with a 14mm balloon and placement of a venous stent of the same diameter. She presented the venous bypass patent and no symptoms at one-year follow-up.

CONCLUSION: Although far from conclusive, our experience supports open venous reconstruction as a viable option

P07

Uma disseção muito complicada

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INTRODUÇÃO: A disseção aórtica tipo B (DAB) é uma síndrome aórtica aguda que apresenta elevada taxa de mortalidade. Atualmente, na fase aguda, preconiza-se o tratamento médico nos casos de DAB não complicada, ficando a cirurgia reservada para os casos de DAB complicada (rutura, síndrome de má perfusão, dor/hipertensão refratária, expansão rápida ou progressão proximal/distal).

CONCLUSÃO: A DAB complicada tem elevada taxa de mortalidade estando recomendado o tratamento cirúrgico. A cirurgia endovascular apresenta taxas de morbimortalidade francamente inferiores à cirurgia aberta, estando recomendada quando possível.

CASO CLÍNICO: Apresentamos o caso de uma mulher de 70 anos, com antecedentes de hipertensão e dislipidémia que recorreu ao serviço de urgência em Novembro de 2021 por quadro de dor abdominal e hematemese. À admissão, apresentava hipotensão, taquicardia e dor à palpação abdominal. A endoscopia digestiva alta não identificou hemorragia ativa nem lesões estruturais. A angio-TC mostrou DAB com origem após a emergência da artéria subclávia esquerda, com extensão até à ilíaca primitiva esquerda. As artérias viscerais, com exceção da artéria renal direita, emergiam do verdadeiro lúmen (VL), que se encontrava colapsado a este nível; a artéria renal direita, apesar de emergir do falso lúmen (FL), mantinha-se permeável. Destacava-se ainda dilatação aneurismática (6 cm) da aorta torácica descendente proximal e volumoso hemotórax esquerdo.

RESULTADOS: Por se tratar de um caso de DAB complicada de falso aneurisma/rotura e de má perfusão visceral, no contexto de colapso do VL, a doente foi submetida a cirurgia urgente: implantação de endoprótese torácica (TEVAR) na aorta torácica descendente, de stent descoberto na aorta toracoabdominal (PETTICOAT) e angioplastia com implantação de stent coberto nas artérias renal direita, ilíacas primitivas ("kissing stent") e ilíaca externa direita. No final da cirurgia foi colocado dreno torácico, com saída imediata de 600cc de conteúdo hemático.

O pós-operatório, na unidade de cuidados intensivos, foi complicado de AVC isquémico do hemisfério direito (plegia do membro superior esquerdo e paresia do membro inferior esquerdo, sem tradução imagiológica), detetado às 48h de pós-operatório, após extubação. Durante o internamento recuperou francamente dos défices motores, tendo alta ao 21º dia pós operatório, após resolução social, sem mais intercorrências.

A angio-TC de controlo aos 2 meses mostrou expansão do verdadeiro lúmen com adequada perfusão das artérias viscerais, exclusão do falso lúmen exceto em zonas focais de realce extraluminal em relação com endoleak tipo II, à custa das artérias intercostais, mantendo derrame pleural residual.

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CHVNG/E

INTRODUCTION: The development of a uretero-arterial fistula (UAF) is a rare and life-threatening condition. Owing to its low prevalence, diagnosis and management remains a challenge for both urologists and vascular surgeons and its high mortality rates (7-23%) may be at least partially attributed to delayed diagnosis.

We present a case of UAF in a patient with previous pelvic surgery and indwelling ureter catheter.

CLINICAL CASE: An 82-year-old male presented to the emergency department (ED) with haemodynamic instability and gross haematuria that started one hour prior to admission.

The patient had a medical history of hypertension, atrial fibrillation, and aortic valve stenosis, and he had been submitted to a radical cystoprostatectomy and cutaneous ureterostomy for a vesical neoplasm 4-month prior to admission.

Analytic study in the ED revealed an acute anaemia of 7.5g/dl and contrast enhanced angiography (CTA) revealed an ureteral fistula between the stented left ureter and the common iliac artery.

Patient was taken to the angiography suit and a balloon expandable stent-graft (GORE® VIABAHN® VBX – 11mm diameter and 59mm in length) was deployed.

Following the procedure, the haematuria resolved, and the patient had an uneventful post-operative stay. He was discharged two- weeks after admission, following a course of large spectrum antibiotic therapy. Patient remained asymptomatic at 3 month follow up.

DISCUSSION: Uretero-arterial fistula is an uncommon condition but with an increasing prevalence, at least in part due to improvement in pelvic cancer management.

The main risk factors for the development of an UAF are chronic ureteral stenting, abdominal/ pelvic surgery, pelvic radiotherapy, and iliac artery aneurysms. The main symptom (and sometimes the only one) is gross haematuria which can be intermittent or persistent and up to 21% of patients will present with haemodynamic instability.

Diagnosis is challenging, requiring a high clinical suspicion. Both CTA and invasive angiography seem adequate imaging methods but the latter has advantage of a possible invasive treatment.

Surgical intervention in patients with UAF is often difficult due to hemodynamic instability and hostile abdomen from prior surgery and/or radiotherapy.

Endovascular treatment is an effective and less invasive modality in controlling the arterial bleeding however open surgical treatment is still required for patients with local sepsis, previously failed endovascular treatment, or infected

stent-grafts. Endovascular treatment could be used as a “bridge” to definitive treatment for unstable patients.

Despite high primary technical success rates, many patients will require open conversion due to recurrent bleeding, stent-graft infections, or other infectious complications (such as abscess formation).

CONCLUSION: UAF should be included in the differential diagnosis of patients with unexplained haematuria who have a history of chronic ureteral stenting, pelvic surgery, and radiotherapy.

Furthermore, it could be reasonable to perform immediately a diagnostic angiography in the operating room/angiosuite in patients with risk factors and convincing medical history.

Intervene without definitive imaging evidence in patients possessing several risk factors and convincing medical history. Endovascular treatment with stent-grafts has become the mainstay in the management of UAF as it provides an alternative to open surgery, with lower morbidity rates.

P09

Mycotic aortic aneurysms: A ticking time-bomb!

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INTRODUCTION: Mycotic or primary infected aortic aneurysms (1.3% incidence) are caused by septic emboli to the vasa vasorum, by haematogenous spread during bacteraemia or by direct extension of an adjacent infection leading to an infectious degeneration of the arterial wall and aneurysm formation.

CONCLUSION: MAA is a rare and threatening disease with rapid progression and high mortality. Even with broad-spectrum antibiotic and rapid surgical response, the tragic outcome is often the unavoidable result.

OBJECTIVES: To describe a clinical case of a complicated mycotic aortic aneurysm.

METHODS: Based in clinic report.

RESULTS-CASE REPORT: A male, 69-year-old patient, with medical background of diabetes, hypertension and a bladder carcinoma (resectioned 5 years ago, complicated at the time with an E.coli septicaemia), presented at the ER with generalised malaise, asthenia, anorexia, abdominal pain, diarrhea and fever, with 1 week of evolution.

At clinical examination on admission, the patient presented poor general condition, fever (T 39°C), normotensive, and abdominal examination showed no abnormalities.

Laboratory results showed a stable haemoglobin (Hb) of 13 g/dL, leukocytosis (19850/UI) and neutrophilia (90%), PCR 350.

CT-angiography showed a 3,5 cm juxtarenal AAA, saccular, with peri and intra-aortic gas, strongly suggestive of a mycotic AAA.

Hospitalization was indicated and a septic and immunologic screening was performed. The patient started a broad-spectrum antibiotic with meropenem and vancomycin and clinical, laboratory and hemodynamic surveillance.

Blood and urine cultures showed no E.Coli infection, and directed antibiotic was started.

After 10 days of hospitalization, the patient was haemodynamic stable, presented no fever or abdominal pain, however he kept high inflammatory parameters, so we performed a reevaluation angio CT that showed a daunting increase of 4 cm of the AAA (7,5 cm) with signs of contained rupture.

An emergency intervention was indicated and the patient underwent a thoracophrenolaparotomy and aorto-aortic interposition with bovine pericardium patch. After 24h of surgery the patient died of septic shock.

P10

Parallel grafting technique for a complex zone 6 aortic pseudoaneurysm treatment

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INTRODUCTION: Endovascular reconstruction of the thoracoabdominal aorta is highly complex due to the need to preserve the main visceral branches. This complexity increases in cases of previous aortic intervention and urgent situations with rupture. Meticulous and detailed surgical planning is essential to obtain the best results. Endovascular treatment with fenestrated endoprostheses allows for customized and minimally invasive therapy with suitable medium and long-term outcomes. However, this treatment is impossible in urgent situations.

CASE REPORT: A 44-year-old male, born in Guinea Bissau, presents to the emergency department with epigastric pain radiating to the dorsum. The patient had a history of large vessel vasculitis secondary to Bechet's disease (HLA B51 allele positivity). Approximately ten years ago, the patient was admitted to the hospital with left flank pain associated with fever. A computed tomography angiography (CTA) demonstrated the presence of a pseudoaneurysm involving the left common and external iliac arteries and another aortic paraceliac pseudoaneurysm. A positron emission tomography (PET) scan revealed fludeoxyglucose uptake at the level of these vessels. The patient was urgently treated with an aneurysmectomy and a bypass from the left common iliac artery to the left common femoral artery using an 8mm ringed ePTFE prosthesis. An infection was excluded, and immunosuppression was started. The aortic pseudoaneurysm was excluded with a 28mm thoracic endoprosthesis that extended to the superior mesenteric artery (SMA) ostium for an adequate landing zone occluding the ostium of the celiac trunk. Due to collateralization from the SMA, the patient did not present visceral ischemic symptoms.

The patient maintained close surveillance with serial CTA and PET scan in the following years. Two years before the present episode, the PET scan showed uptake at the thoracic endoprosthesis distal segment. Endovascular treatment with a fenestrated endoprosthesis was planned.

Still, he developed epigastric pain with dorsal radiation that motivated him to come to the emergency department. An urgent CTA demonstrated significant growth of the pseudoaneurysm with approximately 10 cm in greatest diameter. He underwent acute exclusion of the zone 6 pseudoaneurysm with a parallel grafting technique using a 31x100mm GORE® TAG® thoracic endoprosthesis (W. L. Gore and Associates Inc, Flagstaff, Ariz) with a periscope graft for the right renal artery (7x100mm) and a chimney graft for the SMA (10x100mm) in a sandwich configuration. The grafts used were Viabahn® self-expandable covered stents (W. L. Gore and Associates Inc, Flagstaff, Ariz). We attempted to perform another chimney to the left renal artery but were unsuccessful, and the left kidney was excluded. A crossed

right-to-left iliofemoral bypass using an 8mm ringed ePTFE prosthesis was done to correct a dissection of the left iliac arteries. Postoperative CTA confirmed the exclusion of the pseudoaneurysm and permeable reconstructions. No inflammatory activity was visible in the PET scan.

CONCLUSION: The pathology of the thoracoabdominal aorta is highly complex, requiring experience and detailed planning. The complexity increases in urgent cases, and in these situations, "off-the-shelf" solutions can be fundamental to the treatment and saving the patient's life.

P11

Infeção de prótese aórtica – Explantação de EVAR

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Sexo masculino, 62 anos, com antecedentes de AAA infra-renal, submetido a EVAR Medtronic Endurant II bifurcado com fixação supra-renal em 2018, com diagnóstico de endoleak tipo II com crescimento do saco e necessidade de embolização do saco em 2021. De outros antecedentes, destaca-se hipertensão, cardiopatia isquémica, dislipidemia e SAOS. Recorreu ao SU, 3 meses após embolização do saco, por dor abdominal peri-umbilical com irradiação dorsal, perda ponderal de 13kg em 3 meses, desconforto abdominal pós-prandial e noção de febre no domicílio. Ao exame objetivo, doente pálido, sudorético, hemodinamicamente estável e apirético, com massa abdominal dolorosa à palpação e pulsos femorais palpáveis bilateralmente. Realizou angio-TC AP (figuras 1 e 2) que mostrou endoleak tipo II a partir de artéria lombar com saco aneurismático de 90mm (crescimento de 10mm em 3 meses); e colheu estudo analítico que revelou elevação da PCR (18.03mg/dL [<0.50]), sem leucocitose (leucócitos $8.9 \times 10^9/L$) e anemia microcítica hipocrômica (Hb 10.8g/dL [12.0-15.6]). Foi internado sob antibioterapia com Metronidazol, Linezolide e Meropenem. Do estudo analítico realizado durante o internamento, destaca-se procalcitonina negativa e VS aumentada (81mm/h [1-20]). Por suspeita de infeção protésica, foi submetido a cirurgia em dois tempos.

Em 1º tempo, foi submetido a bypass axilo-bifemoral, seguido de explantação da prótese aórtica, após 3 dias. Na segunda intervenção, identificou-se o saco aneurismático com aderências à raiz do mesentério e 1ª ansa de delgado (Figura 3), com saída de abundante conteúdo purulento após a sua secção, enviado para estudo microbiológico. Realizou-se rafia dos óstios das artérias lombares por hemorragia ativa; excisão da prótese aórtica com auxílio de seringa 20cc e alicate; laqueação do coto aórtico e das artérias ilíacas comuns; excisão de parede de saco aneurismático (enviada para exame microbiológico e estudo anátomo-patológico); lavagem da cavidade abdominal; e plastia da face anterior do coto aórtico com encerramento de grande omento. Foi administrado Azul de Metileno com exclusão de fístula aorto-entérica. Por constatação de ausência de pulso na artéria ilíaca externa esquerda, realizou-se também trombectomia femoral esquerda e do bypass femoro-femoral direito-esquerdo. No pós-operatório, iniciou quadro de febre (máximo 39°C) que resolveu em dois dias, e leucocitose que atingiu o máximo ao 3º dia pós-operatório (leucócitos $20.9 \times 10^9/L$), com diminuição progressiva. Todo o estudo microbiológico (incluindo hemoculturas, urocultura, microbiologia do pús do saco aneurismático e microbiologia da parede do saco aneurismático) foi negativo. A histologia da parede do saco aneurismático revelou tecido inflamatório com superfície externa com angiogénese e infiltrado inflamatório polimorfo. Cumpriu 6 dias de Metronidazol e 16 dias de Linezolide e Meropenem e teve alta medicado com Ciprofloxacina 750mg durante 6 meses, e Linezolide 600mg oral durante 1 mês seguido de Trimetoprim/Sulfametoxazol 800mg+160mg durante 5 meses. Infeção de prótese aórtica

é uma situação infrequente, mas ameaçadora de vida. Ainda não há consenso em relação à melhor abordagem terapêutica e esta deve ser decidida para cada paciente individualmente tendo em conta o contexto clínico e comorbilidades. A antibioterapia de largo espectro de longa duração associada a explantação do EVAR (com reconstrução in situ ou bypass extra-anatómico) constituem a primeira linha de tratamento.



Figura 1 - Angio-TC AP mostra endofuga tipo II a partir de artéria lombar (seta) na vertebra posterior do saco aneurismático (corte axial)

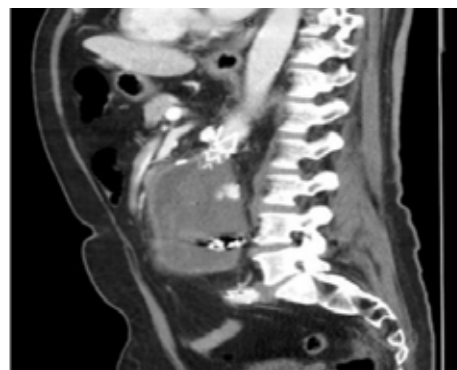


Figura 2 - Angio-TC AP mostra endofuga tipo II a partir de artéria lombar na vertebra posterior do saco aneurismático (corte sagital)



Figura 3 - Fotografia intra-operatória durante a explantação da prótese aórtica, mostrando a remoção do saco aneurismático e a plastia do coto aórtico.

Transcarotid artery revascularization – initial experience of a tertiary center

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INTRODUCTION: Transcarotid artery revascularization (TCAR) has emerged in the last decade as an alternative to both carotid artery endarterectomy (CEA) and transfemoral stenting (TfCAS). In the benchmark ROADSTER trial, a 1.4% rate of stroke at 30 days was observed. TCAR has shown superiority over CAS in terms of transient ischemic accident (TIA)/stroke/death in the Society for Vascular Surgery Vascular Quality Initiative TCAR Surveillance Project. In high-risk for surgery patients, TCAR might prove a more suitable option than classic CAS. In this study, the initial experience of a tertiary center with TCAR is reported.

INTERVENTION TECHNIQUE: We hereby report three case reports of patients undergoing TCAR, as these were considered at high risk for CEA. All patients received dual antiplatelet agents (aspirin 100mg and clopidogrel 300mg) on the night before intervention. Procedures were undertaken with the patient under regional anesthesia through a cervical block, with selective use of sedation. Neurological function monitoring was done with a post-clamping clinical examination, complemented by near-infrared spectroscopy (INVOSTM - Medtronic).

A longitudinal cervical incision was performed to access the common carotid artery, which was clamped after 80U/Kg heparin administration. Angiography was performed to confirm the location of the stenosis and an Emboshield NAV6™ Embolic Protection System (Abbott ®) was deployed distally in the internal carotid artery (ICA). No flow inversion was utilized. A 6*8*40mm tapered Xact stent (Abbott ®) was then deployed across the lesion and post-dilated. Completion angiography demonstrated good positioning of the stent and no remaining lesions.

PRE-OP HISTORY

CASE 1: An 80-year-old patient was admitted to the emergency department with a history of left upper limb paresis due to a stroke in the right carotid territory. The patient had a medical history of right conventional CEA with primary closure in 2010 due to a symptomatic >70% carotid stenosis. Diagnostic workup revealed a 90% right ICA stenosis. In the presence of a symptomatic internal carotid restenosis, the decision was to perform TCAR.

CASE 2: A 60-year-old patient was observed in the outpatient clinic. The patient had been previously submitted to a right-sided patched carotid endarterectomy due to a symptomatic stenosis. At the one-year follow-up, a 80-89% early restenosis was detected. The rapid progression of restenosis led to the decision to perform TCAR.

CASE 3: A 69-year-old patient was observed in an outpatient setting due to a 80% right ICA stenosis detected on duplex ultrasound. The patient had a history of a stroke in the right carotid territory 6 months prior. A preoperative observation by the otolaryngology team revealed a left vocal cord palsy, hence the patient was considered high-risk for CEA, which prompted the decision to perform TCAR.

FOLLOW-UP: All patients had an uneventful postoperative recovery and were discharged on dual antiplatelet therapy for a minimum of one month. After one year of follow up, no restenosis have occurred.

CONCLUSION: TCAR may be a safe option for carotid revascularization in patients considered high-risk for CEA.

FIGURES

Figure 1. Deploying the Embolic Protection System in the distal internal carotid artery

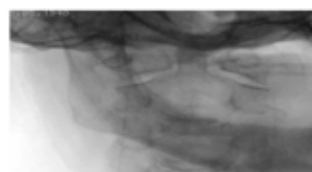


Figure 2. Angiography demonstrating restenosis at the origin of the internal carotid artery

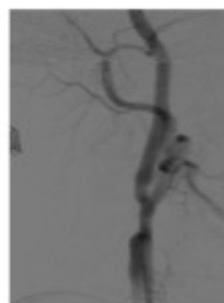
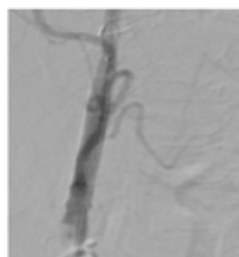


Figure 3. Post-stenting angiography



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Type IIIB: An unexpected type of endoleak

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INTRODUCTION: As endovascular aneurysm repair (EVAR) becomes the treatment of choice for abdominal aneurysms, we should be aware of its short and long-term complications. Endoleaks are among the most frequent and known complications following this procedure, making up for almost 30% of complications after EVAR.

CASE REPORT: An 85-year-old male with history of aortoiliac artery aneurysm, extending from the aortic bifurcation to the right iliac artery, submitted to endovascular repair in 2003 with a GORE® EXCLUDER® AAA Endoprosthesis with branch extensions to the external iliac arteries, presented at the emergency department with acute abdominal pain, hypotension and loss of consciousness.

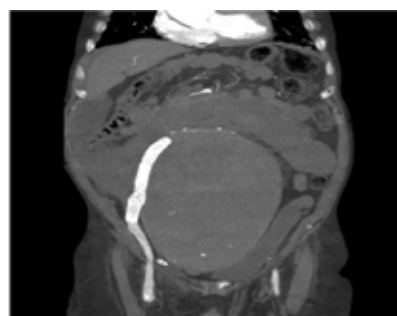
He had been treated for a suspected type II (coil embolization of collaterals and CT-guided thrombin and glue injection of the aneurysmatic sac) and type IIIa endoleak (relining of the connection between the right iliac branch and its extension) throughout 2009 and 2010, none of which seemed to successfully treat the cause as the aneurysm sac showed progressive growth. The patient refused open surgery and any further endovascular treatments, keeping annual follow-up.

At admission a CT angiography was performed showing aneurysm (187 x 132 mm) rupture without a visible site of bleeding. Due to the clinical history, a type II endoleak was assumed as the cause and an open approach was taken.

A REBOA technique through left femoral artery was done with balloon inflation at the descending thoracic aorta to obtain hemodynamic control, then the aneurysm sac was opened through a midline laparotomy. After emptying the aneurysm sac, a type IIIb endoleak was identified due to a fabric tear on the right iliac extension of the stent graft.

Direct suture of the stent graft was attempted without success, thus relining of the lesion with a MEDTRONIC® Endurant™ II stent graft was performed through the right femoral artery repairing the endoleak.

CONCLUSION: Type IIIb endoleaks are considered uncommon and underdiagnosed due to fabric defects being either too small or leaking intermittently. They can mimic other types of endoleaks and may cause aneurysm sac growth and rupture, thus type IIIb endoleaks should be considered if previous treatments for other endoleaks are insufficient or ineffective.



Lumbar sympathectomy: how did our practice change in the last 20 years? – Case series

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INTRODUCTION: The use of lumbar sympathectomy for peripheral arterial disease remained as one of the only surgical treatments for this condition in the first half of the 20th century. The development of the first revascularization techniques, which are the gold standard in vascular practice, has left lumbar sympathectomy, in the modern-day era, as a procedure for selected cases of arterial disease, as well as for plantar hyperhidrosis and complex regional pain syndrome.

The goal of this article is to assess the indications as well as the clinical changes in our institution's practice in the last two decades regarding the use of lumbar sympathectomy.

METHODS: Retrospective analysis of a single-center experience of patients that were submitted to lumbar sympathectomy in our department between January 2002 and December 2021. Patient demographics, diagnostic, procedural volume and clinical outcomes were analyzed throughout the years, using the data available in our institutional records.

RESULTS: A total of 23 lumbar sympathectomies were performed in 22 patients between 2002 and 2021. Eighteen males (81,8%) and four females (18,2%), with a mean age of 61,9 years (SD 14,7) at the time of surgery. Sixteen procedures (69,6%) were performed for peripheral arterial disease of which 13 for stage IV and 3 for stage III disease (Fontaine's classification); six for patients with Buerger's disease (26,1%) all of which had foot or leg ulcers and one surgery (4,3%) for plantar hyperhidrosis. Angiographic studies showed concomitant extensive below the knee lesions in nineteen cases (82,6%). The most common indication for lumbar sympathectomy were patients that weren't suitable for arterial revascularization.

Six cases (21,8%) required amputation, four (17,4%) didn't show any signs of clinical improvement (3 with non-healing ulcers and one with resting pain), five (21,7%) patients died and six (26,1%) lost follow-up. Only 2 cases (8,7%), both with stage III peripheral arterial disease, showed some improvement, yet maintaining severe claudication (stage IIb).

A yearly analysis of the volume of lumbar sympathectomies performed at our institution throughout the years showed that 14 surgeries (60,9%) were performed between 2002-2011 and nine (39,1%) between 2012-2021. It should be noted that 3 were done in 2012 alone and in the last 5 years only one lumbar sympathectomy was performed for a patient with Buerger's disease.

CONCLUSIONS: A change in practice has been seen in the last couple of decades, due to the lack of evidence regarding the benefits of lumbar sympathectomy, especially in patients with chronic limb threatening ischemia. Also, the advances in endovascular surgery and the results achieved through below the knee bypasses have given new opportunities for patients that weren't previously considered as suitable candidates for arterial revascularization. Our institutional practices reflect these changes, reserving sympathectomy to selected cases.

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ADÃO E EVA(S)

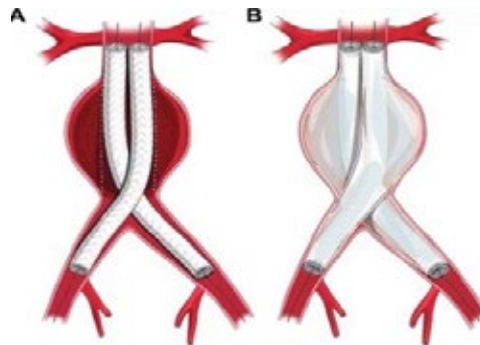
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INTRODUÇÃO: Em 1990 Parodi realizou o 1º EVAR, o que constituiu uma revolução, um marco histórico no tratamento do AAA. Todavia, nas décadas seguintes foram constatadas algumas complicações, nomeadamente endoleaks, migrações, crescimento do saco e rotura aneurismática. O Endovascular Aneurysm Sealing System (EVAS) foi desenhado de modo conceptualmente distinto do EVAR, prometendo colmatar as suas limitações, através da selagem e obliteração do lúmen do aneurisma. A Endologix desenvolveu o dispositivo Nellix®, implantado pela primeira vez em 2012, acolhido pela comunidade científica com grande entusiasmo, porque parecia muito promissor.



CASO CLÍNICO: Homem de 70 anos, submetido a EVAS na Alemanha em 2017 por AAA, sem seguimento desde 2018. Seguido na consulta de Cirurgia Vascular do nosso hospital a partir de 2021, tendo sido pedido angioTC que revelou saco aneurismático de 10 cm, com migração da endoprótese e endoleak tipo Ia de grande volume. Foi submetido a explantação do dispositivo Nellix® e correcção do aneurisma, com interposição de enxerto aorto bi-iliaco. A cirurgia foi laboriosa, mas decorreu sem complicações. Pós-operatório sem complicações.



CONCLUSÃO: Os resultados a curto prazo do EVAS foram favoráveis, mas a longo prazo mostraram-se desastrosos e levaram à retirada do produto do mercado. A falência terapêutica global do EVAS foi observada numa taxa alarmante de 33,2%, sendo o mecanismo de falha mais comum a migração da endoprótese associada a endoleak tipo IA, com expansão do saco aneurismático. Segundo a Sociedade Europeia de Cirurgia Vascular, atualmente, novas técnicas como EVAS não são recomendadas na prática clínica. O EVAR continua atualmente a ser a técnica de eleição de tratamento endovascular do aneurisma da aorta abdominal.

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Embolia paradoxal como causa de isquemia aguda de membro superior

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INTRODUÇÃO: A isquemia aguda do membro superior representa um quinto das isquemias agudas de membro. A embolia paradoxal é definida pela embolia de trombo originário no sistema venoso para a circulação arterial através de um shunt. Constitui menos de 2% de todas as causas de embolia arterial.

CASO CLÍNICO: Doente 45 anos, género feminino, com antecedentes de hipotireoidismo, obesidade, paratiroidectomia inferior por adenoma da paratiroide e anexectomia por cistadenoma benigno do ovário recorreu ao serviço de urgência por dispneia súbita, dor, poiquiloteremia e perda de força no membro superior esquerdo. Ao exame objetivo encontrava-se polipneica com tiragem e com cianose do membro, sem pulso radial e umeral. Na gasimetria arterial apresentava hipoxemia e hipocápnia com saturação de O₂ de 70% necessitando de oxigénio a 6L/min. No ecodoppler verificava-se ausência de fluxos na artéria umeral e a jusante nas artérias radial e cubital e no território venoso dos membros inferiores não apresentava trombose venosa, profunda ou superficial. Em angio-TC tórax confirmou-se tromboembolismo pulmonar (TEP) bilateral e a oclusão da artéria axilar (Fig.1). A doente foi hipocoagulada com heparina de baixo peso molecular e submetida a tromboembolectomia por abordagem da artéria umeral com angiografia de controlo com recuperação de pulso radial e cubital. Realizou a investigação etiológica da embolia arterial com Ecocardiograma transtorácico e transesofágico que identificou um forâmen oval patente (FOP) (Fig.2). Teve alta hipocoagulada com rivaroxabano (20mg uma vez/dia). Em ambulatório foi realizada investigação de trombofilias (Síndrome dos anticorpos antifosfolípidos, mutação do Fator V de Leiden, do gene da protrombina e pesquisa da deficiência da antitrombina III, proteína C e S) com resultado negativo. Tendo em conta evento esporádico de sobrecarga aurículo-ventricular direita associado ao TEP não recebeu indicação para encerramento do forâmen oval.

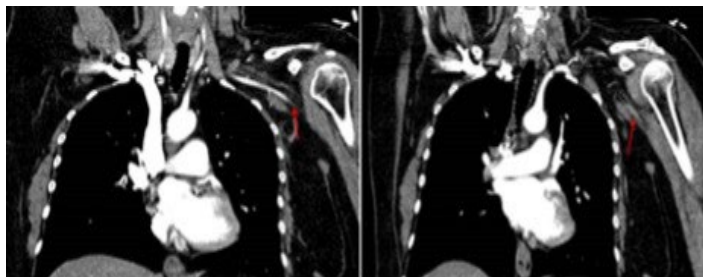
DISCUSSÃO: O defeito intracardíaco mais associado à embolia paradoxal é o foramen oval patente (FOP). Dependendo do território arterial atingido, a embolia paradoxal pode manifestar-se com um acidente vascular cerebral isquémico, um enfarte agudo do miocárdio, isquemia mesentérica aguda, enfarte renal ou isquemia de membro.

Em condições fisiológicas, o gradiente de pressão entre as aurículas encerra passivamente o FOP. Contudo situações como o TEP, a manobra de Valsalva ou a insuficiência da válvula tricúspide, condicionam um shunt direito-esquerdo que permite a embolização paradoxal. O diagnóstico do

defeito cardíaco poderá ser realizado por ecocardiograma transtorácico ou transesofágico.

O encerramento do FOP, apesar de ser um procedimento seguro e eficaz, não é consensual devendo a estratégia ser individualizada. Relativamente à isquemia ameaçadora de membro as opções terapêuticas passam pela anticoagulação e/ou embolectomia cirúrgica ou trombólise. Estudos demonstraram maiores complicações decorrentes da estratégia de anticoagulação e trombólise do que da embolectomia cirúrgica em situações de embolia paradoxal.

CONCLUSÃO: A embolia paradoxal é um fenómeno raro mas que deverá ser suspeitado na presença de TEV e de embolia arterial simultâneos, uma vez que poderá afetar o prognóstico dos doentes. Para além do tratamento dos eventos embólicos, a investigação da fonte embólica é particularmente relevante para a individualização do tratamento e prevenção da recorrência.



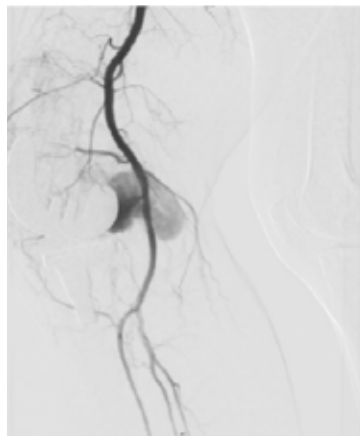
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"Gato por lebre"

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INTRODUÇÃO: As complicações vasculares após artroplastia do joelho (PTJ) são raras, mas podem ameaçar um membro viável. O pseudoaneurisma da artéria poplítea pode ocorrer em 0.03 a 0.5% das PTJ, secundariamente a trauma arterial intra-operatório. O exame físico é bastante sugestivo, revelando uma massa pulsátil e expansível na fossa poplítea, com frêmito e sopro. Todavia, geralmente o diagnóstico é acidental, aquando do despiste de trombose venosa profunda (TVP), entidade frequente no pós-operatório de cirurgia ortopédica. O recurso a exames radiológicos, tais como eco-doppler, angioTC ou angiografia, possui um papel importante para planeamento terapêutico.



CASO CLÍNICO: Mulher, 71 anos, recorreu ao SU por dor e edema da perna direita, ao 7º dia de pós-operatório de PTJ. Ao exame físico, apresentava pulsos pedioso e tibial posterior bilateralmente e simétricos. Com o intuito de despiste de TVP, foi pedido um eco-Doppler, que excluiu esta hipótese diagnóstica e descreveu pseudo-aneurisma lobulado contido pelos músculos gastrocnémios, no plano dos côndilos femorais, medindo 39 x 33 x 23 mm, com origem na artéria poplítea. Realizou ainda angiografia para se proceder ao planeamento cirúrgico. Foi submetida a correção cirúrgica de falso aneurisma poplíteo por abordagem posterior. Intra-operatoriamente, procedeu-se à remoção de trombo e constatou-se orifício irregular na face anterior da artéria poplítea em contacto com PTJ, o qual foi encerrado com patch de veia pequena safena direita.



CONCLUSÃO: O diagnóstico atempado do pseudoaneurisma poplíteo é importante para impedir a ameaça vascular, síndrome compartimental e défices neurológicos irreversíveis devido à compressão. A correção cirúrgica convencional é a abordagem preferencial, pois permite a correção segura e definitiva da lesão e a descompressão, com alívio sintomático.



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Native aortic contained rupture following aortobifemoral bypass: uncommon complication, inventive solution

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CHVNG/E

INTRODUCTION: Non-anastomotic pseudoaneurysms are uncommon complications of prosthetic grafts and potentially life threatening conditions. Open surgical repair carries significant morbidity and mortality. We describe a case of a patient successfully treated with an endovascular approach.

CASE REPORT: DWe report a case of a 77 year old male patient who had a history of an aortobifemoral bypass procedure 15 years before and complicated with a non-anastomotic contained rupture in the native distal aorta. Previous remarkable medical history included hypertension, dyslipidemia, CABG and former smoking. A year before, he had a hospital admission in intensive care unit, due to a gram positive sepsis from cholecystitis treated conservatively.

Ten months later, he presented to the emergency with complaints of back pain and constipation. CTA revealed a ruptured pseudoaneurysm and PET-CT scan showed enhanced captation of 18F-FDG-PET (SUVmax 18.6) in the distal aorta and proximal left common iliac artery, suggesting active graft infection. Given the patients' age, co-morbidities, persistent elevated inflammatory parameters and fever, we decided to perform an endovascular procedure as a temporary "bridge technique". It consisted of deployment of an iliac extension endograft (25x82 mm, Medtronic®) which was deployed proximally at the native infra-renal aorta and distally at the Dacron body graft of previous aortobifemoral bypass (femoral surgical cutdown), followed by pseudoaneurysm embolization with microcoils (brachial surgical cutdown). The procedure was uneventful and the patient was kept under oral antimicrobial therapy at the moment of discharge. Follow-up CTA at 1 month revealed patency of the endograft and aortobifemoral bypass with successful rupture exclusion and clinical resolution of symptoms.

CONCLUSIONS: Non-anastomotic pseudoaneurysms in the native aorta may result from iatrogenic injuries imposed by cross-clamping, thromboendarterectomy, aortic wall ischemia from interrupted lumbar arteries or low grade infection. We described a non-anastomotic pseudoaneurysm found 16 years after the primary procedure, in a patient with recent history of gram positive sepsis. During this admission, blood cultures remained negative, which according to literature are positive only in 35% of cases, but PET-CT scan was in favor of a graft infection. An endovascular strategy was chosen to avoid a more invasive approach in a patient who was already physiologically and nutritionally deconditioned. ESVS guidelines recommend that in the emergency setting of active bleeding complicating abdominal aortic graft

infection with/without aorto-enteric fistula, treatment with an endograft should be considered, as a temporary measure or even as a definitive solution in selected cases. In the meanwhile, oral antibiotics will be kept indefinitely.

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Região retroperitoneal – um espaço exíguo de grande complexidade e inúmeras variações

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INTRODUÇÃO: O espaço retroperitoneal é sede de inúmeras variações anatómicas descritas na literatura, nomeadamente anomalias do sistema vascular e urinário. Por serem geralmente assintomáticas, torna-se fulcral o seu reconhecimento imagiológico prévio a qualquer intervenção cirúrgica que invada este espaço. O objetivo é estudar este local, permitindo um melhor planeamento cirúrgico e evitando a ocorrência de lesões iatrogénicas.

CASO 1: Doente do sexo masculino, 35 anos, submetido a estudo electrofisiológico por Cardiologia, com punção da veia femoral comum direita. A progressão do guia em trajeto à esquerda da coluna vertebral e término a nível da Aurícula Direita, fez levantar a hipótese diagnóstica de uma Veia Cava Inferior (VCI) esquerda. O diagnóstico foi confirmado por angio-TC, que descreveu uma VCI esquerda, sem outras anomalias associadas.

CASO 2: Doente do sexo masculino, 71 anos, submetido a cirurgia eletiva para correção de Aneurisma da Aorta Abdominal (AAA) de 7cm de diâmetro. A análise cuidada da angioTC pré-operatória permitiu reconhecer a presença de veia renal esquerda retro-aórtica. Durante a intervenção cirúrgica procedeu-se a dissecação e referenciação cautelosa do colo aneurismático, sem laceração acidental desta veia.

CASO 3: Doente do sexo masculino, 56 anos, submetido a Bypass Aorto-bifemoral por Isquemia Grau III do membro inferior esquerdo. A Angio-TC relatava a presença de rins em ferradura, tipicamente fundidos no polo inferior, pelo que sem interferência na dissecação da aorta infra-renal para o inflow do bypass, mas que poderia ser problemática numa situação de AAA.

CONCLUSÃO: O diagnóstico de anomalias retroperitoneais deve ser pré-operatório e é essencial que os cirurgiões que abordam este espaço conheçam não só a sua anatomia normal, como as variações anatómicas mais frequentes. Desta forma, a cirurgia decorre tranquilamente e em segurança.



P20

Rupture of superficial femoral artery true aneurysm: case report.

João Diogo Jorge de Castro¹, Sérgio Teixeira¹, Henrique Almeida¹, Ivone Silva², Daniel Mendes¹, Carlos Veterano¹, Henrique Rocha¹, Andreia Pinelo¹, Miguel Queirós¹, Maria do Sameiro Caetano Pereira¹, Rui Almeida¹

¹ CHUPorto, ² CHPorto

INTRODUCTION: True superficial femoral artery aneurysms (TSFAA) are rare and are usually seen in elderly people and males. Several causes for TSFAAs such as atherosclerosis, infection, arteritis, connective tissue disorders, trauma and chemotherapy have been described. In two-thirds of the patients the TSFAA is not evident at physical examination unless they growth and a palpable mass is noticed. However, they can complicate with thrombosis, distal embolization and rupture.

We present a case of rupture TSFAA in a 74 years-old male that started with an expandable painful mass in the left groin and its treatment.

CASE REPORT: A 74 years-old male with prior medical history of atrial fibrillation, hypertensive cardiac failure, hypertension, type 2 diabetes, stage 3 chronic kidney disease and obesity, came to emergency department due to pain in the left groin 3 days before with an increasing mass.

The patient referred that he had a palpable mass in that location but 3 days before we woke at night with pain and a growing mass at the left groin.

At evaluation, a pulsatile mass at the left groin was noticed. The doppler ultrasound showed a superficial femoral artery (SFA) aneurysm with a false aneurysm due to rupture.

The patient did not have any surgery, puncture or trauma in that symptomatic region.

An angioCT was requested and showed a sacular aneurysm at the posterior wall of the common femoral artery (CFA) and a fusiform aneurysm with 28mm at the left SFA with an anterior pseudoaneurysm with 35mm suggesting a contained rupture (Image 1). No other concomitants aneurysms were found in the angioCT.

The patient was prompted prepared to surgery. A longitudinal incision was performed at the upper thigh. CFA, Profunda femoral artery (PFA) and SFA proximal and distal control to aneurysm was achieved. Next, a careful dissection on the SFA aneurysm and the false aneurysm created by rupture was performed. Exclusion of CFA (to exclude another aneurysm at the posterior wall) was done. An interposition between external iliac artery and SFA with PFA reimplantation was performed with an 8mm ringed prosthetic graft (see image 2).

The microbiologic samples were sterile.

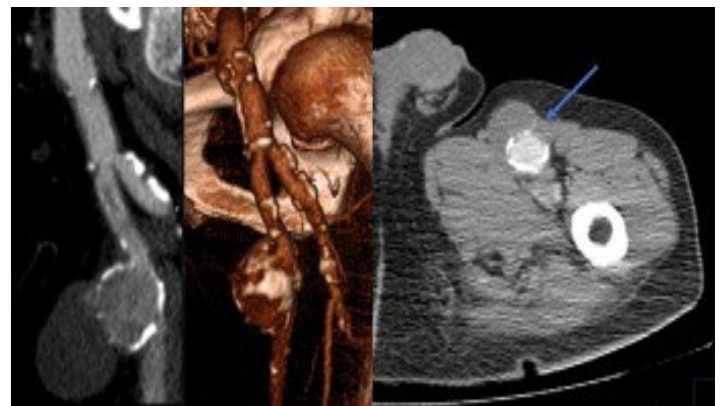
At 5th post-operative day, the patient was discharged without complications.

CONCLUSIONS: SFA aneurysms comprise approximately 15% of all femoral artery aneurysms. An early diagnosis is needed to avoid complications and comorbidities. CTA is the most commonly employed diagnostic study, which can

determine the size and location of the aneurysm and aid in operative planning.

In our case report, the rupture of the SFAA was the first presentation of atherosclerotic disease and an urgent treatment was needed to avoid critical blood loss and limb loss.

Despite endovascular techniques, the open surgery with aneurysmal excision and graft interposition remains the gold-standard due to higher graft patency.



Double-barrel technique for ilio-cava bifurcation reconstruction in a patient with phlegmasia cerulea dolens due to venous stent jailing

João Diogo Jorge de Castro, Carlos Pereira, Daniel Mendes, Carlos Veterano, Henrique Rocha, Andreia Pinelo, Henrique Almeida, Miguel Queirós, Maria Sameiro Caetano Pereira, Rui Almeida

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INTRODUCTION: Phlegmasia cerulea dolens (PCD) is an uncommon presentation of deep vein thrombosis. It produces an obstruction to venous outflow and presents a high mortality risk related with gangrene, limb loss and systemic affectation.

For these reasons the diagnosis must be made early in the course of the process for treatment effectiveness.

It can occur in patients with a hypercoaguability state but also due to mechanical obstruction.

We present a case of a 66 years-old female patient with a PCD in the right left lower limb and previous medical history of venous stent in the left lower limb.

CASE REPORT: A 66 years-old patient arrived at the emergency department with complaints of right lower limb oedema and pain with less than 24h. Previous medical history included May-Turner Syndrome treated with angioplasty and venous stenting (16x100mm + 14x100mm optimed®) seven months before and a covid-19 infection in the last 15 days.

At presentation a significant oedema was noticed in the right limb with altered skin perfusion and cold right foot.

At ultrasound evaluation a femoro-popliteal thrombus was noticed in the right lower limb.

An AngioCT was requested and it showed a deep vein thrombosis from right popliteal vein to right vena cava. The left lower limb deep vein system was patent. (Image 1).

From a popliteal venous access, a Cragg-McNamara catheter was placed at left common iliac vein and started a catheter directed thrombolysis (CDT) with 1mg/hour alteplase infusion (Image 2).

In the next day, an angiographic control was made and the right lower limb was patent.

So, to maintain the venous outflow in the right lower limb a double barrel technique was performed to reconstruct the ilio-cava bifurcation and treat the jailing created by the previous stent.

From the right side a sinus venous 14x80mm stent was released at the same time as a sinus venous 16x80mm stent from the left side (Image 3).

The completion angiography showed a patent deep venous system to the vena cava.

In the following days, the pain disappeared and oedema improved significantly.

CONCLUSION: PCD is a limb threatening condition and needs urgent treatment.

In addition to treat it with hipocoagulation and CDT, there is the need to correct the cause.

This case demonstrates not only the advantages of venous stenting but also the complications it can lead to and how we could treat it.

FA: fibrilação auricular ou falso aneurisma?

João Diogo Jorge de Castro, Sérgio Teixeira, Duarte Rego, Rui Machado, Arlindo Matos, Carlos Veiga, Daniel Mendes, Carlos Veterano, Henrique Rocha, Andreia Pinelo, Henrique Almeida, Miguel Queirós, Maria Sameiro Caetano Pereira, Rui Almeida

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INTRODUÇÃO: Um falso aneurisma aórtico pode ter várias apresentações sendo que uma delas pode dever-se à compressão de estruturas adjacentes pelo efeito de massa. Este trabalho apresenta um caso de um falso aneurisma da aorta torácica descendente cuja manifestação inicial foi fibrilação auricular.

CASO CLÍNICO: Doente do sexo masculino com 83 anos de idade recorre ao serviço de urgência por palpitações e dor no dorso após realizar esforço.

Como antecedentes médicos apresentava dislipidemia, hipertensão arterial, tuberculose pulmonar aos 22 anos, hiperplasia benigna da próstata e artrose de anca.

Durante o estudo por electrocardiograma objetivou-se fibrilação auricular persistente que se filiou numa provável cardiopatia hipertensiva.

O doente ficou com indicação para seguimento em consulta de cardiologia onde se requisitou ecocardiograma com objetivo de estratificar e clarificar etiologia de fibrilação auricular.

Durante o ecocardiograma objetivou-se a presença de compressão extrínseca sobre a aurícula esquerda.

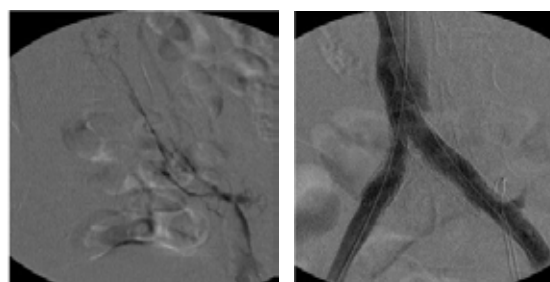
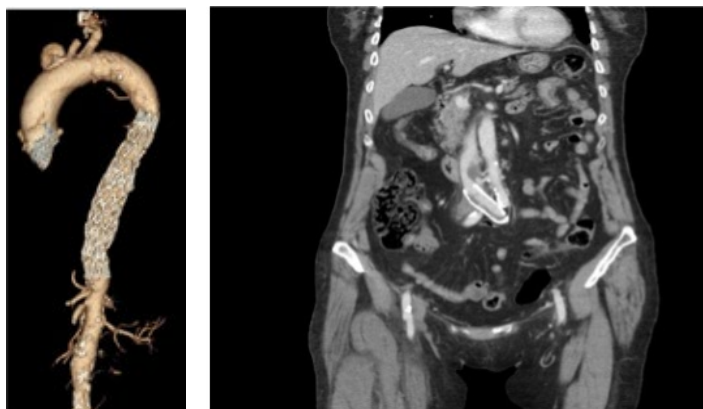
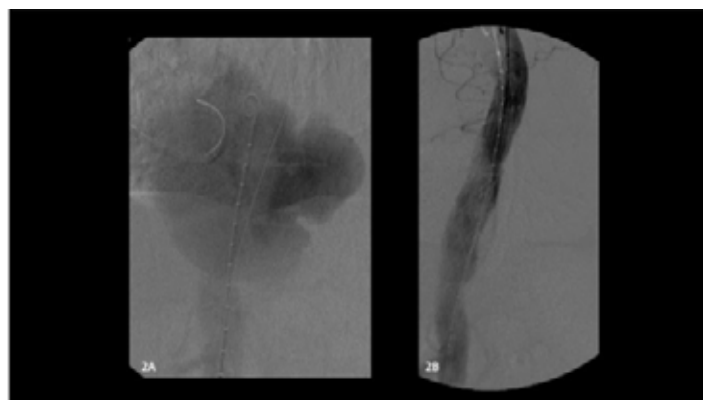
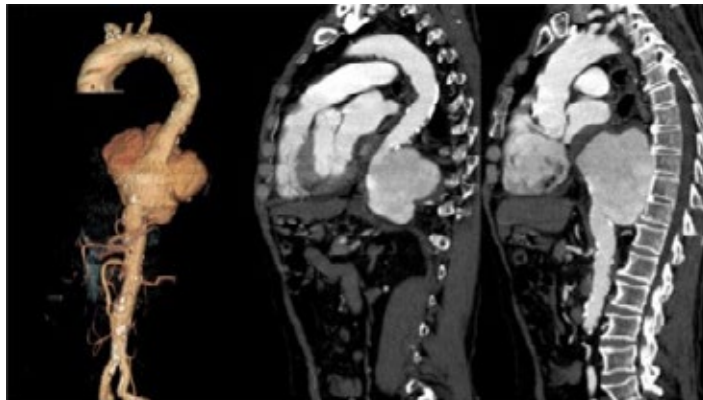
De forma a esclarecer a etiologia da compressão extrínseca realizou-se angiogramia torácica que demonstrou volumoso aneurisma da aorta torácica descendente, na proximidade da transição toraco-abdominal, com morfologia sacular excêntrica, com 11,2cm de extensão longitudinal, 8cm de diâmetro antero-posterior e 11,3cm de maior diâmetro transverso, com trombo marginal envolvente (Imagem 1).

O doente foi prontamente indicado para cirurgia.

Por via femoral direita procedeu-se a uma angiografia diagnóstica que demonstrou volumoso falso aneurisma (Imagem 2A). De seguida realizou-se a exclusão do falso aneurisma com endoprotese Medtronic® Valiant 30x30x150 + 28x28x100mm. Angiografia de controlo a demonstrar total exclusão de falso aneurisma (Imagem 2B).

No pós-operatório o doente evoluiu de forma satisfatória, com exclusão total de falso aneurisma sem endoleaks (Imagem 3) tendo tido alta sem complicações.

CONCLUSÃO: Os falso aneurismas aórticos podem ter apresentações inusuais e por isso a sua deteção precoce é vital para obter um tratamento sem complicações e evitar a sua rotura. Este caso demonstra que um achado inusual deve levantar a suspeita e necessidade de estudos adicionais para que condições como esta não passem despercebidas.



Tumor retroperitoneal – um desfecho inesperado

Luis Orelhas, Professor José Guilherme Tralhão, Emanuel Furtado, Ricardo Martins, Ricardo Vale Pereira, Júlio Constantino, Mário Moreira, João Gama

CHUC

INTRODUÇÃO: Tumores Retroperitoneais Primários são uma entidade clínica rara, sendo os mais comuns os Liposarcomas, fazendo diagnóstico diferencial com linfomas, sarcomas e tumores de células germinativas extragonadais.

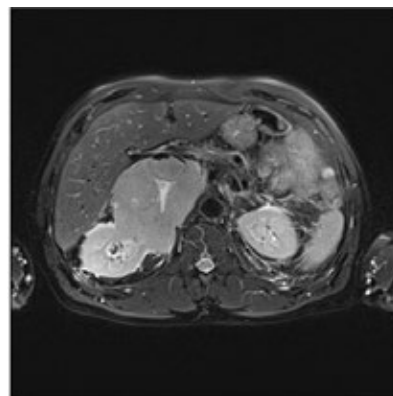
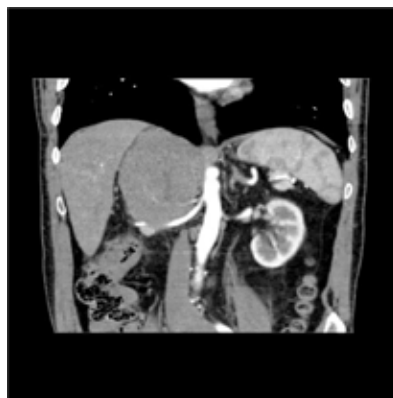
O Leiomiossarcoma da Veia Cava Inferior (VCI) é um tumor primário vascular extremamente raro, com mau prognóstico. Atualmente, o único tratamento potencialmente curativo destes tumores passa por uma abordagem cirúrgica, individualizada para cada doente, dependendo da dimensão e das estruturas invadidas.

MÉTODOS E MATERIAIS: Doente do sexo masculino, 67 anos, assintomático com achado de massa abdominal em íntima relação com VCI após realização de ecografia abdominal em contexto de trauma. RM Abdominal mostrou lesão tumoral centrada à parede da VCI medindo 9,3 x 9,3 x 12 cm (AP x T x L) com extensão ao longo de 10 cm da parede posterior da VCI e crescimento póstero-lateral direito, sem invasão aparente de vasos renais, embora condicionando estenose por compressão – principal hipótese diagnóstica: Leiomiossarcoma da VCI. Achados suportados por TC toraco-abdomino-pélvica e sem evidência de metástases à distância. Discussão de caso clínico em reunião de decisão terapêutica multidisciplinar, tendo sido decidida abordagem cirúrgica para ressecção da massa tumoral.

RESULTADOS: Durante a intervenção, constatou-se invasão tumoral da artéria e veia renal direitas e da veia renal esquerda. Face aos achados, optou-se por realização de Ressecção da VCI + Nefrectomia direita + Lobectomia do caudado + Suprarrenalectomia direita em bloco com posterior Interposição de prótese de Dacron e reimplante da veia renal esquerda, sem intercorrências imediatas e com alta ao 6º dia pós-operatório com Tinzaparina.

Na consulta de seguimento aos 30 dias pós-operatório apresentou-se assintomático, com boa recuperação, e sem sinais de oclusão da prótese de Dacron ou veias ilíacas ao EcoDoppler abdominal – transição para Rivaroxabano. Resultado de estudo anatomo-patológico da peça operatória: Linfoma B Difuso de Grandes Células. Encaminhamento para consulta de Hemato-Oncologia para avaliação e orientação.

CONCLUSÃO: Apesar do inesperado diagnóstico final devido às características imagiológicas do tumor, a ressecção cirúrgica complexa e multivisceral necessária em tumores raros, como os Sarcomas Retroperitoneais, oferece a melhor probabilidade de cura. A experiência em centros de referência, nomeadamente em Transplantação Hepática e Cirurgia Vascular, e a abordagem por equipas multidisciplinares permite a ressecção de tumores complexos, de outra forma considerados irressecáveis.



Abordagem de trauma carotídeo iatrogénico por cateterização venosa central com dispositivo de encerramento mynx control

Mafalda Correia, Antonio Gonzalez, Maria José Ferreira

Hospital Garcia de Orta

INTRODUÇÃO: A cateterização venosa central acarreta alguns riscos nomeadamente o de punção ou colocação intra-arterial do cateter (0.1-0.5% dos casos). As complicações associadas à colocação intra-arterial do cateter venoso central (CVC) são hematoma, hemotórax, acidente vascular cerebral ou lesão neurológica e podem ocorrer em 30% dos casos. O risco de AVC aumenta com o tempo de cateterização intra-arterial sendo o diagnóstico, por isso, uma prioridade. A abordagem desta situação passa pela retirada do cateter e compressão manual ou por cirurgia convencional ou endovascular.

CASO CLÍNICO: Apresenta-se o caso de uma doente de 78 anos, do sexo feminino, com antecedentes de insuficiência cardíaca, cardiopatia isquémica, doença pulmonar obstrutiva crónica, hipertensão, fibrilhação auricular, diabetes mellitus, portadora de próteses valvular aórtica e mitral. A doente encontrava-se internada por uma agudização da insuficiência cardíaca, sob suporte de ventilação não invasiva, e foi submetida à colocação de um CVC jugular direito. Posteriormente à colocação do CVC, a doente inicia um quadro de prostração e hemiparesia esquerda transitórias. Após colheita de sangue pelo CVC e análise gasométrica, é realizado o diagnóstico de colocação de CVC intra-arterial, nomeadamente na artéria carótida comum direita. A doente encontrava-se anticoagulada sob varfine e apresentava um INR de 4. Após realização de *ecodoppler*, confirmou-se a posição intra-carotídea do CVC. Sob anestesia local, a doente foi submetida à remoção do CVC sobre um fio guia e à colocação de um introdutor arterial de 6 french. Posteriormente, foi utilizado um dispositivo *MYNX CONTROL* para encerramento arterial, sob controlo com *ecodoppler*. A doente manteve-se assintomática do ponto de vista neurológico durante e após o procedimento e sem hemorragia ou hematoma relacionados com o acesso. Foi realizado *ecodoppler* carotídeo após o procedimento que confirmou a patência do eixo carotídeo.

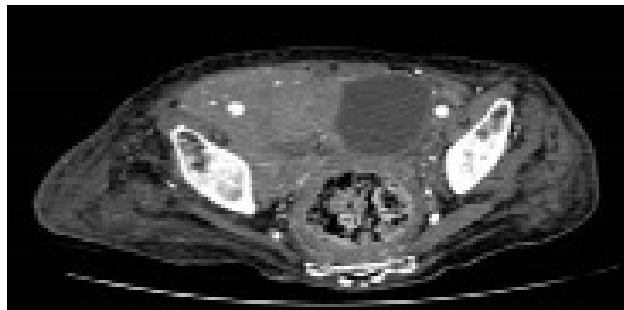
CONCLUSÃO: A abordagem endovascular das lesões iatrogénicas da carótida aquando da cateterização venosa central apresenta-se como um método minimamente invasivo, com um elevado sucesso técnico e raras complicações que evita ainda a necessidade de anestesia geral. Está descrita a utilização de vários dispositivos de encerramento arterial na abordagem destas lesões, no entanto, e até então, apenas se tem conhecimento de um caso publicado na literatura utilizando o *MYNX CONTROL*. Neste caso, o encerramento arterial com *MYNX CONTROL* revelou-se uma abordagem eficaz e segura.

Uma causa rara de edema unilateral do membro inferior

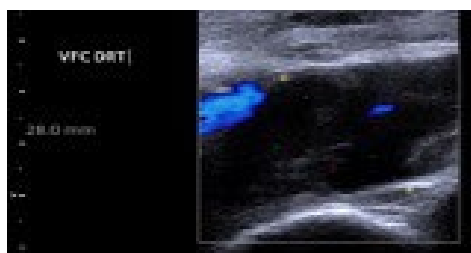
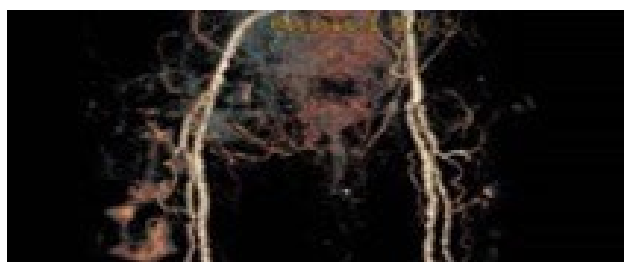
João Valadas da Silva¹, Mafalda Correia², Vanessa Gomes², Maria José Ferreira²

¹Hospital Prof. Dr. Fernando Fonseca, EPE, ² Hospital Garcia de Orta, EPE

INTRODUÇÃO: O edema do membro inferior é um desafio diagnóstico com impacto significativo na qualidade de vida do doente, podendo ser o resultado de múltiplas etiologias incluindo patologia local ou sistémica. Apesar da causa mais frequente de edema unilateral do membro inferior em doentes com idade superior a 50 anos ser a insuficiência venosa, a etiologia é frequentemente multifatorial e inclui celulite, linfedema, rutura muscular, síndrome pós-trombótica, compressão extrínseca...



CASO CLÍNICO: Apresenta-se o caso de um doente de 92 anos, do género masculino, com antecedentes pessoais de hipertensão arterial, dislipidémia, parcialmente dependente nas atividades de vida diária. Recorreu ao serviço de urgência por edema do membro inferior direito com 3 dias de evolução. Ao exame objetivo, apresentava edema do membro até à raiz do mesmo e uma tumefação inguinal direita de consistência dura, pé direito quente, com motilidade preservada, e pulsos pedioso e tibial posterior palpáveis. A avaliação por Ecodoppler revelou uma massa de limites bem definidos com aparente vascularização no seu interior e em íntimo contacto com o eixo femoral. Para esclarecimento diagnóstico, o doente realizou uma angioTC que evidenciou uma volumosa massa na fossa ilíaca e região inguinal direitas, de realce heterogéneo e contornos lobulados, com dimensões de 16 x 1.4 x 9 cm, que se prolongava até às cadeias ganglionares aorto-ilíacas, traduzindo um eventual conglomerado adenopático. Esta massa condicionava estenose da veia ilíaca externa sem condicionar trombose venosa profunda. Após biópsia da lesão, foi realizado o diagnóstico de linfoma difuso de grandes células B com índice proliferativo elevado.



CONCLUSÃO: O edema unilateral de membro inferior pode ser a apresentação inicial de um linfoma difuso de grandes células B, apesar de ser uma manifestação rara. Assim, no doente que se apresenta com edema do membro inferior, a realização de uma história clínica e exame físico completos reveste-se de particular importância na investigação etiológica do edema, uma vez que existem causas raras e que podem mimetizar outras mais frequentes como a trombose venosa profunda.

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Aneurisma da artéria umeral pós-traumático: um caso clínico

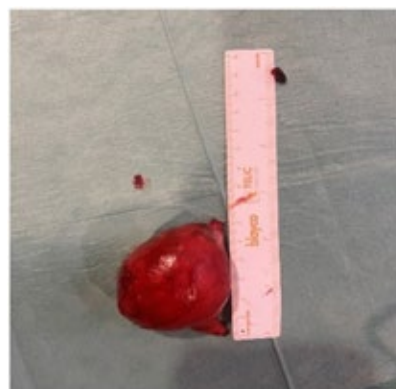
Miguel Castro e Silva, Luís Antunes¹, Mário Moreira, João Alegrio, Ricardo Pereira, Manuel Fonseca, Joana Silva, Pedro Lima, Vânia Oliveira, Celso Nunes, Eduardo Silva, Leonor Baldaia

Centro Hospitalar e Universitário de Coimbra

A patologia aneurismática da artéria umeral como complicação do uso prolongado de canadianas é uma manifestação clínica rara. Na maioria das vezes tem um carácter assintomático. Pode manifestar-se pela presença de uma massa pulsátil no cavado axilar ou por manifestações tromboembólicas à distância.

Relatamos um caso de um paciente de 72 anos que deambulava com auxílio de uma canadiana que apoiava na região úmero-axilar esquerda há cerca de 30 anos, com aneurisma da artéria umeral já identificado previamente, e que foi admitido com um quadro de isquemia aguda do membro superior esquerdo.

Admitiu-se estar perante um quadro de trombose aguda do aneurisma umeral e, neste sentido, realizou-se trombectomia proximal e distal e aneurismectomia com interposição com veia cefálica invertida homolateral. Excelente evolução clínica no pós-operatório, com recuperação do quadro isquémico do membro. Apresenta-se este caso dado a sua raridade.



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Embolização *transealing* de artéria lombar para o tratamento de *endoleak* tipo 2 após EVAR

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INTRODUÇÃO: O *endoleak* tipo 2 (ELT2) é uma complicação frequente após o tratamento endovascular do aneurisma da aorta (EVAR). A correção está indicada na presença de crescimento do saco aneurismático, sendo a abordagem *transealing* uma das técnicas descritas para o efeito.

CONCLUSÃO: A embolização por abordagem *transealing* é uma técnica segura e eficaz no tratamento de ELT2 após EVAR. No caso descrito, o maior tempo de *follow up* será determinante para avaliar o sucesso clínico do procedimento.

MATERIAIS E MÉTODOS/RESULTADOS: Doente do sexo masculino de 78 anos, com antecedentes de aneurisma da aorta infra-renal de 52 mm, foi submetido em 2016 a EVAR aorto bi-iliaco com endoprótese bifurcada. O angioTC realizado em 2018 relevou crescimento do saco aneurismático (74mm) e *endoleak* tipo 1b através do ramo direito do EVAR. O doente foi submetido a extensão da selagem para a artéria iliaca externa direita com ramo ilíaco e embolização da artéria hipogástrica direita. O angioTC realizado em 2021 relevou crescimento do saco aneurismático (90mm), ELT2 de artéria lombar esquerda, selagem curta de artéria ilíaca comum esquerda, sem *endoleak* tipo 1b. Foi submetido a embolização de artéria lombar e IBD esquerda: por acesso femoral esquerdo foi realizada embolização de artéria lombar com coils, através de cateterização *transealing* pela zona de selagem do ramo esquerdo do EVAR. A cateterização da artéria lombar foi caracterizada pela difícil manipulação dos dispositivos no saco aneurismático parcialmente trombosado. O procedimento foi concluído com uma endoprótese bifurcada ilíaca para preservação da artéria hipogástrica esquerda. A angiografia final confirmou boa selagem e permeabilidade da endoprótese, sem *endoleaks*. O pós-operatório decorreu sem complicações. O angioTC, após 1 semana, revelou permeabilidade das endopróteses e ausência de *endoleaks*.

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O gigante silencioso: aneurisma da artéria umeral em transplantado renal – caso clínico

Andreia Pinelo, Sérgio Teixeira, Luís Loureiro, Paulo Almeida, Arlindo Matos, Rui Almeida

Centro Hospitalar Universitário do Porto

INTRODUÇÃO: Os aneurismas verdadeiros das artérias do membro superior são entidades raras, representando menos de 1% de todos os aneurismas. Apresentamos o caso clínico de um doente que desenvolveu um volumoso aneurisma da artéria umeral vários anos após transplante renal.

CASO CLÍNICO: Sexo masculino, 57 anos, submetido a transplante renal de dador vivo em 2004. Previamente dialisado por FAV radio-radial céfálica e úmero-céfálica no membro superior esquerdo, ambas laqueadas. Desenvolvimento de volumoso aneurisma da artéria umeral ipsilateral, com 50x58mm e 150mm de eixo longitudinal, clinicamente assintomático. O doente foi submetido a exclusão do aneurisma e pontagem úmero-umeral topo-a-topo com prótese de ePTFE aramada de 8mm através de 3 incisões, sem intercorrências.

DISCUSSÃO: Apesar de raros, existe uma crescente associação entre o desenvolvimento de aneurismas da artéria umeral e os antecedentes de acesso vascular ipsilateral para hemodiálise em recetores de transplante renal. As alterações hemodinâmicas causadas pela presença de uma fistula arterio-venosa e a terapêutica imunossupressora prolongada têm sido os mecanismos propostos para degenerescência aneurismática da parede arterial. Desconhece-se a verdadeira prevalência dos aneurismas da artéria umeral nesta população e muitos são diagnosticados apenas após a ocorrência de complicações. Apesar de não existirem diretrizes específicas recomenda-se o tratamento mesmo quando assintomáticos pelo elevado risco de rotura e embolização. Assim, o rastreio de aneurismas da artéria umeral em recetores de transplante renal com história prévia de acesso vascular poderá ser uma estratégia adequada para uma melhor compreensão da patologia e prevenção de complicações.



Figura 1. Aneurisma da artéria umeral
A) pré-operatório; B) desenvolvimento, visível ao exponer a parede arterial após evacuação do volumoso trombo organizado; C) instalação de prótese de ePTFE aramada de 8mm por trajecto axiláreo; D) aspecto do membro no pós-operatório.



Figura 2. Avaliação pré-operatória por angioTC a nível do volumoso aneurisma da artéria umeral

Comparison of open versus endovascular reconstruction for TASK-II D aortoiliac occlusive disease

Domingues-Monteiro D, Luís Afonso Gamas, António Pereira Neves, Leandro Nóbrega, Filipa Jácome, Tiago Moura, João Rocha Neves, Oliveira-Pinto J, Armando Mansilha

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AIMS: The aim of the study was to evaluate the safety, efficacy and compare both open vs. endovascular surgery for the treatment of TASC-II D aortoiliac lesions.

METHODS: 105 patients were divided into two groups: open repair (66 patients) and endovascular treatment (ET) (69 patients) for symptomatic TASC II D AIODs between January 2013 to February 2021 were consecutively and prospectively reviewed. Baseline characteristics, preoperative and postoperative imaging, and operation procedure reports were reviewed and analyzed. Patency after revascularization was assessed by duplex ultrasound and ankle brachial index. Survival analysis was used to evaluate the relevance between risk factors, surgical technique, and patency.

RESULTS: Median follow-up was 79 months (CI 95% 61.2-96.8). Open repair was associated with a higher technical success rate (95.5% vs. 73.7%, $p=0.01$). 30-days major adverse cardiovascular (MACE) and limb (MALE) events rate were not different between both groups (7.7% vs 7.7%, $p>0,99$ and 11.3 vs 20.5%, $p=0.225$, respectively).

Log-rank survival analysis showed no significant differences regarding MALE events between open and endovascular approach at 60 months (hazard ratio, HR 1.30 95% CI 0-56-3.06, $p=0.54$).

CONCLUSION: Open and endovascular techniques reveal to be safe and effective for complex AIOD.

Open repair revealed an higher technical success rate. However, there are no significant differences in terms of primary patency, secondary patency and MALE between these two techniques.

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Surgical correction of a marfan syndrome right subclavian aneurysm with right vertebral artery reimplantation: a case report

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INTRODUCTION: Marfan syndrome has been associated with thoracoabdominal aneurysms and dissections.

Vascular manifestations of Marfan syndrome involve aortic root dilation, progressive root and ascending aortic aneurysmal degeneration, and potentially aortic dissection of variable extent. Because most patients are asymptomatic, treatment is aimed at preventing rupture. Aneurysms of the subclavian artery are a rare manifestation in patients with Marfan syndrome.

Secondary interventions are common in this genetic disorder, with 20% of reoperations at 5 years from the index operation, reinforcing need for regular follow-up.

CASE REPORT: A 48 years old male with the diagnosis of Marfan's Syndrome, followed as outpatient for a previous valve Sparing Aortic Root Replacement (David Procedure), presented a right subclavian dissection with aneurysmal degeneration (23mm x 19mm). The patient was asymptomatic. However, the aneurysm has been growing for the last three years. Perioperative physical examination revealed present carotid and radial pulses. The patient was submitted to an elective procedure, which consisted in an aneurismectomy and a reinforced 8mm interposition graft, with reimplantation of the right vertebral artery via supraclavicular and subclavicular incisions, as well as right cervical approach, without resecting the clavicle. The distal anastomosis was performed to the right axillar artery. The patient was discharged 5 days after surgery without neurological deficits. The 1-month postoperative duplex ultrasound (DUS) revealed exclusion of aneurysm and dissection flaps, without further stenosis of the performed anastomosis. The postoperative course was uneventful.

CONCLUSION: Marfan syndrome may be associated with cardiovascular complications, dominated by proximal aortic disorders. Complex and repeated interventions are often necessary in these patients. Strict followup is paramount to assure procedure durability and to anticipate potential complications.

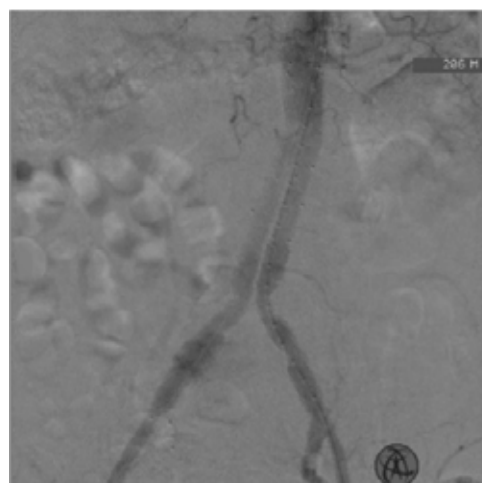
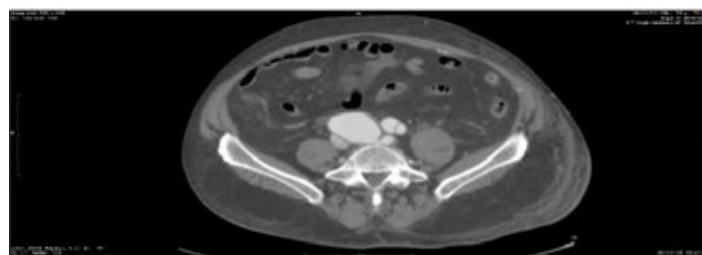
An uncommon rupture of an aortoiliac aneurysm

Celso Nunes, Pedro Lima, Juliana Sousa, Ricardo Pereira, Eduardo Silva, Joana Silva, Vânia Constâncio, Leonor Baldaia, Miguel Silva

CHUC

Ilio-iliac arteriovenous fistula (AVF) is an uncommon complication that occurs in 1% of all common iliac artery aneurysms. A variety of symptoms appear depending on the size and location of the AVF, making the correct diagnosis quite difficult, around 37–52% of cases before surgery. We present a case of 73-year-old male admitted to our hospital with nocturnal paroxysmal dyspnea and left leg edema with three days of evolution. Periumbilical pulsatile mass was palpated, and distal pulses were present on both lower limbs. Past medical history revealed ischemic cardiopathy, type 2 diabetes, chronic renal disease, and hypertension. He had an implantable cardioverter-defibrillator and was anticoagulated with warfine. To rule out venous thromboembolism a venous ecodöppler was made which showed that the deep venous system was clear of thrombus and compressible, but a retrograde pulsatile flow was noted in the left common femoral vein. Thoracoabdominal computer tomography revealed bilateral small pleural effusions but no pulmonary embolism. It was also noted an aortic abdominal aneurysm and a right common iliac aneurysm with a maximum diameter of 56 and 44mm, respectively. The early appearance of contrast in the dilated left common indicated the presence of an ilio-iliac AVF. Blood test showed a hemoglobin of 12.9g/dL, creatinine 2.5 mg/dL and troponins and D-dimers not elevated. The patient underwent elective surgery and it was implanted a bifurcated endoprosthesis with previous embolization of the right internal iliac artery. After the procedure, the leg edema and dyspnea resolved in a few days and the patient was discharged on postoperative day 5. One year after, the control CT revealed an occlusion of the right branch but with no ischemic symptoms. No endoleaks were present. McAuley et al. in their review of case reports identified a triad consistently present and associated with AVF: high-output cardiac failure, pulsatile abdominal mass accompanied by a thrill and a bruit and lower limb ischemia or leg edema due to venous engorgement. These signs are not always present and usually point out other differential diagnoses such as pulmonary embolism or new onset of cardiac failure. Even so, in order to reduce morbidity and mortality is fundamental to establish the diagnosis in the preoperative phase which can be done by a combination of imaging modalities, such as contrast-enhanced CT and abdominal ultrasonography. In terms of treatment, either open repair and endovascular approach are documented. Compared with open repair, the endovascular approach has the advantage of being less invasive and minimizing the blood loss and air embolism risk. However, randomized controlled trials are required to better understand the endovascular outcomes, since this approach also carries the risk of type 2 endoleak due to venous bleeding into the aneurysm sac. We report a successful endovascular treatment of an AVF associated with a ruptured aortoiliac

aneurysm. A careful physical examination should be done in order to raise clinical suspicion, since a definitive diagnosis is difficult, due to subjective signs and symptoms. The combination of different imaging modalities makes it possible to identify the fistula before the surgical planning, thus reducing the mortality.



Aortic endarterectomy - a forgotten treatment?

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CHUSJ

INTRODUCTION: Aortic endarterectomy is a rare procedure in modern vascular surgery. It was largely replaced by both bypass grafting and endovascular techniques, including due to its technical difficulty. Nonetheless, it has proved efficacious in localized lesions limited to distal aorta or proximal common iliac arteries, with feasible and durable results. Patients that potentially benefit more from this intervention, besides the lesion characteristics above detailed, are those younger patients or those with small vessels which are less than ideal for both endovascular therapy and aortobifemoral grafting. It also provides the inherent advantages of not needing a prosthetic graft.

Here we present a case of successful treatment with aortic endarterectomy.

CASE REPORT: A 62-year-old female patient was followed in the vascular outpatient clinic due to symptomatic peripheral artery disease (PAD). Further comorbidities included dyslipidaemia, hypertension, diabetes, smoking and severe obstructive sleep apnoea. Despite best medical treatment, besides smoking cessation, there was worsening of PAD symptoms with progression to limiting intermittent claudication (Rutherford grade 3). On clinical examination, femoral pulses were diminished, and no distal pulses were palpable, contrary to first outpatient records. Pre-operative ankle-brachial index was 0,69 (right lower limb) and 0,71 (left lower limb).

She underwent pre-operative computed tomography angiography (CTA) which revealed a focal, hypodense, sub-occlusive lesion in the infra-renal abdominal aorta (Figure 1).

An aortic endarterectomy was proposed, and after explanation of risks and potential complications, the patient accepted intervention. She was then submitted to thrombo-endarterectomy of infra-renal abdominal aorta with Dacron patch closure through a xipho-pubic anterior approach (Figure 2).

In the post-operative period there was a need for oxygen therapy, which eventually resolved. At 1-year outpatient visit, the patient maintains palpable distal pulses bilaterally. Additionally, she quit smoking.

CONCLUSION: Aortic endarterectomy remains a reliable solution for aortic atherosclerotic disease, with durable results in highly selected patients and lesions.

Isquemia aguda como complicação tardia de fratura femoral proximal

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CHUSJ

INTRODUÇÃO: As lesões traumáticas arteriais representam uma emergência vascular com uma incidência decrescente. Podem manifestar-se sob a forma de hemorragia ou isquemia do membro afetado, habitualmente num curto espaço de tempo após o trauma. A apresentação tardia representa um fenómeno raro. O tratamento destas lesões é habitualmente cirúrgico e varia conforme o tipo e local de lesão, podendo envolver cirurgia aberta ou uma intervenção endovascular.

MÉTODOS: Os autores apresentam um caso de isquemia aguda do membro inferior como complicação tardia de uma fratura do fémur proximal.

RESULTADOS: Doente de 85 anos do sexo feminino autónoma e com antecedentes de uma fratura femoral trocantéria do membro inferior direito oito meses antes, recorreu ao serviço de urgência com um quadro de arrefecimento e parestesias do membro inferior direito com dois dias de evolução. Ao exame objetivo apresentava apenas pulso femoral direito palpável, sem défice motor evidente. Realizou eco-doppler arterial dos membros inferiores que revelou oclusão da artéria femoral superficial na sua região proximal. No angio-TC vislumbrou-se oclusão longa da artéria femoral superficial desde a sua origem mas com repermeabilização distal, apresentando também fragmento ósseo com efeito compressivo sobre a artéria femoral superficial na sua origem. Adicionalmente apresentava hematoma lobulado com cerca de 70 mm no compartimento dos adutores e doença oclusiva dos eixos distais do membro inferior direito. A doente foi submetida a remoção do fragmento ósseo, trombectomia femoro-distal e correção de pseudoaneurisma da artéria femoral superficial com enxerto de interposição com veia grande safena invertida ipsilateral. O pós-operatório foi complicado com infeção da ferida cirúrgica com necessidade de antibioterapia endovenosa durante cerca de 60 dias. A doente teve alta sem outras intercorrências e não apresentou complicações durante o follow-up de quatro meses.

CONCLUSÃO: O traumatismo arterial representa uma atividade decrescente na atividade diária dos departamentos de cirurgia vascular europeus, sendo a manifestação do quadro isquémico traumático tardio representa um fenómeno de ainda maior raridade. Contudo, a sua deteção e correção atempada são de vital importância. O caso apresentado representa um fenómeno raro de isquemia arterial tardia após trauma, salientando a importância de um estudo etiológico completo e intervenção atempada para resolução completa do quadro.

CHUSJ

INTRODUÇÃO: As fraturas supracondilares do úmero em idade pediátrica são das lesões traumáticas vasculares mais frequentes nesta faixa etária e podem estar associadas a lesão da artéria braquial em até 10% dos casos. A apresentação clínica pode ser assintomática ou manifestar-se sob sinais de isquemia grave, manifestando-se sob pulseless pink hand (PPH). No caso do trauma fechado, alguns autores defendem uma atitude expectante enquanto outros defendem exploração cirúrgica de forma a evitar complicações a longo prazo.

MÉTODOS: Os autores apresentam um caso uma isquemia aguda do membro superior numa criança após trauma fechado por queda.

RESULTADOS: Criança com 11 anos recorreu ao serviço de urgência de ortopedia após queda de cerca de 1,5 metros de altura associada a deformidade angular do membro superior esquerdo, sem défices neurovasculares associados. Realizou radiografia que revelou uma fratura supracondilar do úmero, tendo realizado redução da fratura no serviço de urgência. Após ter realizado a cirurgia de fixação, foi avaliada por Cirurgia Vascular por apresentar ligeiro arrefecimento da mão associado a ausência dos pulsos distais do membro superior esquerdo. A doente apresentava pulso braquial palpável ao nível do terço médio do braço, não apresentando pulso radial ou cubital. À fluxometria doppler apresentava ausência de sinal a partir da artéria braquial próximo da prega do cotovelo, que foi confirmado com eco-doppler arterial dos membros superiores. O angio-TC revelou oclusão da artéria braquial imediatamente proximal à prega do cotovelo, com repermeabilização distal ao nível da bifurcação. Foi realizada exploração cirúrgica da artéria braquial ao nível da prega do cotovelo em que se constatou aprisionamento da adventícia da artéria braquial no traço de fratura associado a colapso da artéria a este nível. Foi realizada libertação arterial cirúrgica, com necessidade de nova redução e fixação por parte de Ortopedia. Após a libertação da artéria, constatou-se recuperação lenta e progressiva de pulso radial e cubital assim como ausência de lesão evidente da artéria braquial. A doente teve alta com pulso radial palpável e sem sinais de má perfusão da mão esquerda.

CONCLUSÃO: A presença de quadros de isquemia não diagnosticados ou não tratados atempadamente em doentes pediátricos podem ter graves consequências como contractura de Volkmann ou amputação, com impacto significativo na qualidade de vida. O caso descrito é um exemplo paradigmático como uma apresentação relativamente inocente pode estar associado a um quadro grave com necessidade de exploração cirúrgica urgente para evitar futuras complicações.

Superior vena cava syndrome – a simple solution for a quick recovery

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CUF PORTO

INTRODUCTION: Superior vena cava syndrome (SVCS) encompasses a variety of symptoms that arise from obstruction of the superior vena cava and/or the brachiocephalic veins. This may occur through compression, tumor invasion or thrombosis and can be secondary to both benign and malignant etiologies. Nowadays, the most common causes are malignant tumors and placement of medical devices. Management may initially be done with conservative measures, but incapacitating symptoms usually require intervention. Endovascular intervention is the first line invasive therapy in this setting, allowing for a rapid symptom relief.

METHODS: We herein report a case of a patient with a superior vena cava syndrome treated by an endovascular procedure.

RESULTS: A 61 years-old female patient, with a past medical history positive for a left hemicolectomy six years ago due to an adenocarcinoma (stage pT3aN1aMx) with adjuvant chemotherapy through an implanted port (port-a-cath) placed in the right subclavian vein, presented with a right upper extremity deep vein thrombosis six months after surgery. She was placed on low molecular weight heparin (therapeutic dosage) during six months (throughout this period the implanted port was no longer needed and was removed). One year ago, she was observed due to a worsening feeling of fullness in the head, orthopnea, and headache, now with a very significant impact in her quality of life. Physical examination revealed prominent chest wall collateral veins in addition to a neck and face edema. A CT angiography was subsequently performed revealing a total occlusion of the superior vena cava and of both brachiocephalic veins. As the patient was very symptomatic, an endovascular procedure was purposed. Under general anesthesia, a 4F sheath was placed in the right internal jugular vein. After having crossed the occlusion, the 0,035" glidewire (stiff, straight tip) was then snared from a right common femoral vein access (10F sheath) to get a through-and-through guidewire. Subsequently, a sequential PTA of the occlusion was performed from the right common femoral vein access. Finally, a dedicated self-expandable stent (Medtronic® Abre™ 16*80 mm) was successfully deployed in the superior vena cava and the right brachiocephalic vein. The post-operative period was uneventful and the patient was discharged under tinzaparin 14000U per day during 30 days, followed by rivaroxaban 20 mg per day. During follow-up, the symptoms disappeared and the physical signs became much less evident. A CT angiography was

completed three months after the procedure showing a wide opened stent with residual thrombus. Nine months after the procedure the patient remains asymptomatic and with no complications regarding the anticoagulation.

CONCLUSION: The presence of SVCS may lead to incapacitating symptoms and can even require urgent treatment. Endovascular treatment provides a safe and effective solution for these patients with quick symptom relieve and a low rate of complications. Life-long anticoagulation and surveillance is paramount to minimize thrombotic complications.

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Which came first: ischemic colitis or abdominal aortic aneurysm repair?

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CHUSJ

INTRODUCTION: Abdominal aortic aneurysms are usually asymptomatic, however, they can present with symptoms in different pathophysiological ways, such as rupture, compressive syndromes, thrombosis or lower limb embolization. Ischemic colitis related to AAA is well described and is almost always a consequence of the treatment because of occlusion of the inferior mesenteric artery (IMA) and/or iliac arteries, either after open surgery or endovascular repair, but almost never as a form of presentation of an AAA.

CASE PRESENTATION: 65-year-old male previously healthy patient with several episodes of diffuse abdominal pain and hematochezia. Colonoscopy revealed descendend and sigmoid colon extensive colitis with ulcerations. Patient initiated IV antibiotics (a 3rd generation cephalosporin and metronidazol) with clinical improvement and hospital discharge after a week. Histologic analysis of colon biopsies revealed a pattern of colitis of ischemic nature. Due to the relapse of symptoms an angio-CT was performed and a 65 x 85 mm diameter infra-renal, angulated neck, AAA was diagnosed: both the IMA (of large caliber) and internal iliac arteries patent and the AAA had significant anterior mural thrombus molding the ostium of the IMA. Other causes for ischemic colitis were excluded such as diabetes, chronic renal disease, vasoconstrictors, constipation-inducing medications or hypoalbuminemia. Inflammatory colitis such as ulcerative colitis and Crohn disease were also excluded. After a second cycle of IV antibiotics and administration of low molecular weight heparin the patient was transferred to our Vascular Surgery Department and the AAA was repaired by open surgery with median laparotomy due to the fitness of the patient, the ability to directly observe the large intestine and to re-implant the IMA if necessary. An aorto-bi-iliac interposition graft was performed and the IMA was ligated due to the presence of a retrograde pulse. Postoperative course was uneventful and the patient was discharged after one week. On follow-up the patient remained asymptomatic without relapse of abdominal pain, diarrhoea or intestinal blood loss.

CONCLUSION: To our knowledge, this is the first report of ischemic colitis as a presentation of an AAA which we believe was caused by microembolization of the extensive anterior thrombus through the branches of a large IMA. The clinical and laboratory exclusion of other causes of ischemic colitis and inflammatory colitis, as well as the absence of recurrence of abdominal symptoms after AAA repair supports our theory. Although rare, we recommend that vascular surgeons and clinicians consider the diagnosis of a symptomatic AAA as a possible cause for ischemic colitis.

Tratamento cirurgico urgente de pseudoaneurisma em bypass periférico com veia grande safena

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INTRODUÇÃO: O enxerto habitualmente preferido para um bypass periférico é o autólogo com veia grande safena (VGS). O aneurisma venoso deste enxerto é uma complicação rara (incidência estimada em 1%). Habitualmente estes aneurismas de enxertos venosos são do tipo fusiforme.

CASO CLÍNICO: Homem de 59 anos recorre ao Serviço de Urgência por apresentar tumefação pulsátil na face medial da coxa direita com 2 semanas de evolução e crescimento nos últimos 3 dias. Fora submetido previamente a enxerto de interposição tubular com prótese de dacron por aneurisma da aorta abdominal há 3 anos e bypass femoro-tibial posterior com VGS para exclusão de aneurisma poplíteo trombosado há 6 anos (trajeto subcutâneo). À admissão não apresentava outros sinais ou sintomas de relevo, nomeadamente dor ou sofrimento cutâneo.

Conjugando as imagens de eco-Doppler e angio-TC realizadas à admissão, pôde-se concluir tratar de uma dilatação aneurismática sacular/ falso aneurisma na vertente medial do bypass femoro-tibial, ao nível do terço distal da coxa, com cerca de 4*4,5cm, com trombo mural circunferencial. O bypass encontrava-se permeável. Pela rápida evolução com expansão do aneurisma e desenvolvimento de sofrimento cutâneo o doente foi proposto para correção cirúrgica urgente.

O doente foi submetido a aneurismectomia e interposição de enxerto com VGS contra-lateral. Não foram registadas intercorrências. O estudo microbiológico foi positivo para *Staphylococcus capitis* multissensível, pelo que se optou por manter antibioterapia oral. O estudo anatomo-patológico foi compatível com falso aneurisma. O doente teve alta ao 4º dia pós-operatório encontrando-se assintomático e com bypass permeável.

DISCUSSÃO E CONCLUSÃO: A formação de pseudoaneurismas em bypass por enxertos tende a manifestar-se habitualmente vários anos após a cirurgia. As principais manifestações clínicas do pseudoaneurisma são uma tumefação pulsátil que pode levar a ulceração da pele, rotura, trombose ou embolização distal.

As principais causas descritas para a formação destes aneurismas são: degeneração por alterações ateroscleróticas, estenoses pós-dilatação ou infeções de baixo grau.

O tratamento destes aneurismas deve ser célere dado o seu risco de expansão. Podemos proceder à sua reparação através de cirurgia aberta (por interposição de enxerto autólogo ou protésico) ou por tratamentos menos invasivos (injeção de trombina, embolização com coils, compressão eco-guiada ou através de stents cobertos).

O sofrimento cutâneo severo e dor incontável, verificadas

neste caso clínico, motivaram a cirurgia aberta urgente. Na presença de um pseudoaneurisma o bypass inicial pode ser preservado através de uma interposição autóloga ou protésica. Neste caso optou-se por uma reparação com VGS contralateral dada a maior taxa de permeabilidade, assim como pelo risco associado de infeção.

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Fistula arteriovenosa como diagnóstico diferencial de hiperpigmentação dos membros inferiores

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INTRODUÇÃO: As fístulas arteriovenosas (FAV) surgem de forma congénita, espontânea ou adquirida. As FAV congénitas e espontâneas são raras, constituindo as adquiridas de etiologia pós-traumática as mais frequentes. As FAV poderão desenvolver sinais de hipertensão venosa, insuficiência arterial e insuficiência cardíaca. Apresenta-se o caso de uma doente com sinais de doença venosa crónica (DVC) proposta para cirurgia cujo ecodoppler pré-operatório identificou uma FAV.

CASO CLÍNICO: Mulher 63 anos, com antecedentes de artrite reumatoide, HTA, dislipidémia, fratura maleolar esquerda viciosamente consolidada (2017- submetida a osteossíntese com placa) foi observada em consulta de Cirurgia Vascular por sintomas de edema, dor, calor, eritema e hiperpigmentação no membro inferior esquerdo (MIE). Ao exame objetivo com sinais de DVC CEAP 4b (fig. 1). No ecodoppler apresentava insuficiência de perfurante de Cockett e FAV com fluxos arteriais de perfurante com extensão à safena interna. Assim foi submetida a arteriografia do MIE onde se identificou duas comunicações com preenchimento venoso rápido (Fig. 2). Foi submetida a embolização com coils TORNADO® com bom resultado final (Fig. 3). Teve alta no primeiro dia após a intervenção sem intercorrências, medicada com venotrópicos e com meias de compressão grau III (30-40mmHg). Na consulta de reavaliação apresentava estabilização da evolução da hiperpigmentação e resolução do calor, dor e eritema e em ecodoppler fluxos contínuos na VGS com marcada redução do componente arterial.

DISCUSSÃO: As FAV de origem congénita podem não ser sintomáticas numa fase inicial da vida tornando-se apenas sintomáticas na vida adulta com o aumento do fluxo. As de origem espontânea são também raras e a sua etiologia permanece desconhecida, devendo por isso ser excluídas outras causas adquiridas como traumatismos, cirurgias ou aneurismas antes do seu diagnóstico definitivo. As FAV podem ser estadiadas pela classificação de Schobinger.

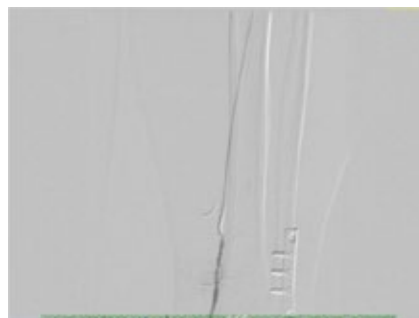
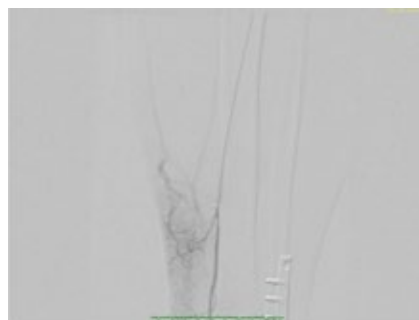
O *gold-standard* de diagnóstico é por angiografia contudo poderá também ser realizado por ecodoppler, angio-TC e angio-RM. O ecodoppler poderá revelar dilatação do lúmen e fluxos de alta velocidade com onda tipo arterial. Na angio-TC e angio-RM identifica-se contrastação venosa precoce na fase arterial.

A abordagem conservadora é uma opção para as FAV com sintomas ligeiros e sem complicações. A intervenção cirúrgica (convencional/endovascular) é indicada se a FAV condicionar instabilidade hemodinâmica, se não regredir em duas semanas se etiologia for traumática e para as FAV congénitas com sequelas.

A intervenção poderá ser realizada por cirurgia convencional – ressecção/exclusão da FAV com ou sem reconstrução vascular - ou por via endovascular, através da embolização por coils, plugs ou cola de cianocrilato, ou por exclusão com stent coberto. Habitualmente o tratamento endovascular é o preferido, preterindo a cirúrgica convencional apenas para os casos de insucesso endovascular dado o maior risco de morbimortalidade.

No caso descrito a decisão de tratamento baseou-se na ausência de melhoria sintomática com uma terapêutica conservadora prévia com meias de compressão.

CONCLUSÃO: As FAV deverão ser consideradas no diagnóstico diferencial de várias patologias que produzam sintomas de hipertensão venosa, como a dor e hiperpigmentação. A intervenção nem sempre é necessária contudo quando indicada, a opção endovascular é preferencial sendo planeada de acordo com a localização e características da FAV.



Úlcera de estase crónica: o que há de novo?

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Centro Hospitalar Tondela Viseu

INTRODUÇÃO: Desde cedo aprendemos o aforismo de que quaisquer lesões tróficas com solução de continuidade cutânea com >2 anos de evolução, sob tratamento médico otimizado, têm baixa potencialidade cicatricial. A procura de novos apósitos/ terapêuticas que invertam o curso desfavorável nestes casos é uma constante. Foi aprovado recentemente um novo produto – Debrichem© - de aplicação tópica, única, capaz de “transformar” uma úlcera crónica, estacionaria numa úlcera aguda com potencial de granulação e epitelização. Trata-se de um acido desbridante que induz a desidratação do leito ulceroso e destruição do biofilme, sem lesar o tecido são circundante. É assim criado um ambiente suscetível de cicatrizar sob efeito dos apósitos habitualmente utilizados na prática clínica diária.

MATERIAIS E MÉTODOS: Os autores apresentam o quadro clínico de um doente, sexo masculino, 71 anos, com antecedentes de TVP (trombose venosa profunda) íliaca direita e TEP (tromboembolia pulmonar) em 2000 e 2001, respectivamente, com consequente implantação de filtro na veia cava inferior (em instituição estrangeira), que se torna permanente. Retorna a Portugal em 2013, registando-se novos episódios de TVP nos membros inferiores e surgimento de úlceras de estase, bilaterais, dolorosas, envolvendo a hipoderme, recidivantes sob contenção elástica e abertas desde 2019. Realiza pensos com variados apósitos e aplicação secundaria de ligaduras coesivas com redução do tamanho das úlceras até um ponto estacionário, mas sempre com necessidade de analgesia crónica.

RESULTADOS: O doente foi submetido à aplicação de Debrichem© em dez/2021, mantendo depois os cuidados de penso com ligaduras coesivas (dupla) sobre Prontosan © e hidrofibra, semanal, durante 1 mês, substituindo-se estes últimos por betametazona e carvão activado desde então. A úlcera do membro inferior esquerdo encerra em março/2022 e a úlcera da perna direita apresenta dimensões reduzidas, com tecido de granulação central e epitelização periférica. Deixou de tomar analgésicos < 1mês após a aplicação do produto.

CONCLUSÕES: A úlcera de perna é o maior consumidor de recursos de penso em ambulatório no nosso sistema de saúde, com elevados custos económicos e de qualidade de vida dos doentes. Mesmo com a otimização de cuidados através da aplicação de protocolos terapêuticos adequados, há um número elevado de doentes que evoluem desfavoravelmente para um estadio de úlcera crónica,

dolorosa e incapacitante. Os resultados preliminares com a aplicação de Debrichem© são promissores e a manterem-se, este é um produto que se poderá afirmar como 2ª linha terapêutica em úlceras crónicas e resistentes aos tratamentos convencionais.

Complications after fogarty catheter embolectomy – peroneal pseudoaneurysm and arteriovenous fistula

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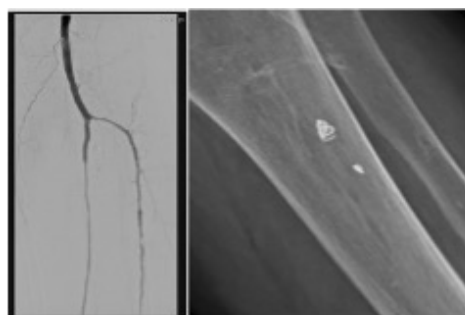
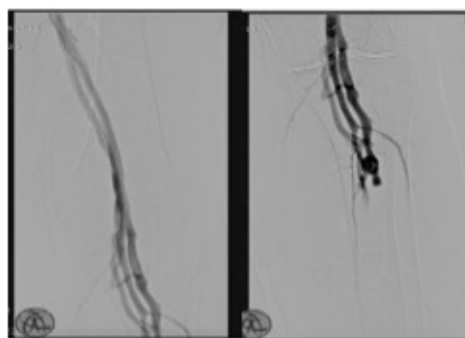
INTRODUCTION: Fogarty catheter embolectomy is a safe and effective treatment of acute limb ischemia. However, complications can ensue, including pseudoaneurysms and arteriovenous fistulas (AVF). Peroneal artery AVF and pseudoaneurysms are rare and the majority are due to trauma. Failure to diagnose this pathology may lead to massive hemorrhage or limb ischemia. We report the case of an elderly woman presenting with limb ischemia due to a peroneal high-flow AVF immediately after apparently uncomplicated embolectomy.

CASE REPORT: 88-year-old woman with atrial fibrillation presented to the hospital with acute onset left lower limb pain and paresthesias. She was under anticoagulation, however, she had suspended 1 week before. She presented with a cold, pale, pulseless left lower limb with sensory deficits. On the right side all pulses were palpable. Ultrasound revealed acute thrombus on the left femoral bifurcation. Acute embolic limb ischemia was diagnosed, and under general anesthesia, right femoral embolectomy with Fogarty catheters 3 and 4 without apparent complications was performed. In the immediate postoperative period, she developed excruciating leg pain, cyanosis, edema and neurologic deficits, including paralysis. Ultrasound revealed normal triphasic arterial popliteal waveforms, however with arterialized venous flow in the popliteal and femoral veins, suggesting an underlying AVF. Considering that, reintervention was deemed necessary. Angiography revealed a proximal peroneal pseudoaneurysm and high-flow peroneal AVF, with rapid filling of the popliteal and femoral veins, without tibioperoneal arterial opacification (figure 1). Embolization with 3 and 4mm Tornado® coils in the proximal and distal neck was unsuccessful (Figure 2). Then, a 3x26mm balloon-expandable covered coronary stent (Papyrus SOS®) was implanted with the proximal end in the tibioperoneal trunk and the distal end in the proximal posterior tibial (PT) artery, covering peroneal ostium. Final angiography revealed peroneal pseudoaneurysm and AVF exclusion with brisk antegrade flow through the anterior tibial (AT) and PT arteries (Figure 3). Her postoperative period and follow-up was uneventful.

DISCUSSION: Peroneal artery AVF and pseudoaneurysms are uncommon and rarely present together. They can be a result of Fogarty catheter embolectomy. Treatment options include coil embolization, thrombin injection or covered stents. Sac embolization or proximal and distal neck embolization with coils has been successfully reported. While ischemia is a risk, it is unlikely when flow from non-diseased AT and PT arteries is present. When sacrificing the vessel is

not an option, peroneal AVF may be treated with stentgrafts. There are successful reports of coronary stentgrafts use in the peroneal artery to exclude AVF while maintaining vessel patency. In our case, unsuccessful coils neck embolization made antegrade peroneal catheterization not feasible, so we selectively stented the tibioperoneal trunk and proximal posterior tibial artery, thereby excluding the peroneal artery from antegrade circulation.

Most femoral embolectomies are still performed "blind". Many times, the catheter will tend to pass down the peroneal artery as this has the straightest course from the popliteal artery. Care must be taken not to overinflate the balloon in the peroneal artery, as this may disrupt the arterial wall and result in serious complications.



Aortoenteric fistula recurrence as a very rare clinical entity – there would be a better strategy for primary treatment?

Marta Machado, Carolina Semiao, Joao Peixoto, Luís Fernandes, Francisco Basílio, Diogo Silveira, Paulo Barreto, Pedro Brandão, Alexandra Canedo

CHVNGE

INTRODUCTION: A secondary aortoenteric fistula (AEF) is an abnormal connection between the aorta and gastrointestinal tract in patients with history of an aortic surgery, including open repair surgery or endovascular treatment. It has been suggested that AEF arises due to either continuous physical stimulation or prosthesis infection.

Although AEFs are rare (incidence rate varies between 1.6 to 4%) they are life-threatening and have a high mortality rate (between 24 to 45.8%).

METHODS: Here we present a case of secondary AEF recurrence with different treatment strategies.

RESULTS:

CLINICAL CASE: A 64-year-old man with a history of an endovascular aneurysm repair (EVAR) was hospitalized after performing a control CTA at 6 months with evidence of diffuse densification of fat around the abdominal aorta but without organized fluid collections capable of drainage (Figure 1 A). He had also been submitted two months after the EVAR to thrombectomy of the left branch of EVAR and stent placement due to thrombosis with acute limb ischemia. He had no other relevant medical history. Endoscopy confirmed an AEF (Figure 1B) and the patient was submitted to open surgery with partial aneurysmectomy, aneurysmal sac lavage with rifampicin and segmental duodenal resection with direct closure and interposition omentoplasty. The patient was discharged asymptomatic with levofloxacin and clindamycin. One month and one year control CTAs revealed no sign of infection or AEF and antibiotics were maintained for 12 months.

Two years and 5 months after the first diagnosis of AEF, the patient presented in the emergency department with fever and a history of recurrent urinary tract infections in the last year, practically monthly. He denied abdominal pain and visible blood loss. He underwent septic screening and an abdominopelvic CTA which showed an aorto-biliacal endoprosthesis permeable but with a diffuse densification of fat around the abdominal aorta and presence of periprosthetic gas and endoscopy revealed an aortoenteric fistula with exposure of aortic endograft (Figure 1 C, D).

The patient underwent primary duodenal closure, partial endoprosthesis explantation (Figure 2) and in situ reconstruction with aorto-bi-iliac silver-impregnated Dacron interposition graft and interposition omentoplasty. The surgery duration was 7h, estimated blood loss of 2.5L and was transfused 4 units of red cells and 1g tranexamic acid.

The length of stay was 42 days at intensive care unit, 21 days at vascular surgery ward and 51 days at musculoskeletal rehabilitation center, from where he was discharged home totally asymptomatic and autonomous for activities of daily living. One month CT control showed no complications.

CONCLUSIONS: As we saw in this case, although relapse of AEF is very rare, this possibility should not be excluded, and patients with clinical suspicion should be studied with CTA and endoscopy.

An initial strategy of non-explantation of the prosthesis, although less aggressive, may not be enough to solve the underlying problem, particularly in patients in whom a prolonged survival is expected after correction of the fistula. Therefore, in young and fit patients endoprosthesis explantation may be considered as the primary treatment. Finally, it is necessary to follow up these patients throughout their lives due to the risk of relapse of infection and AEF.

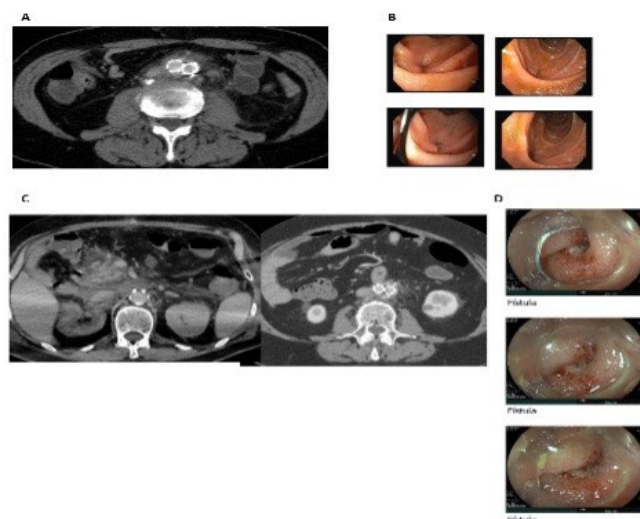


Figure 1: A- Abdominopelvic CTA at 6 months after EVAR which shows diffuse densification of fat around the abdominal aorta, without organized fluid collections capable of drainage. B- Endoscopy revealing aorto-enteric fistula at D11-D12 transition. C- Abdominopelvic CTA at 2 years and 5 months after EVAR which showed an aorto-bi-iliac endoprosthesis permeable but with a diffuse densification of fat around the abdominal aorta, without organized fluid collections capable of drainage and presence of periprosthetic gas. D- Endoscopy revealed an aorto-enteric fistula with exposure of aortic graft material.

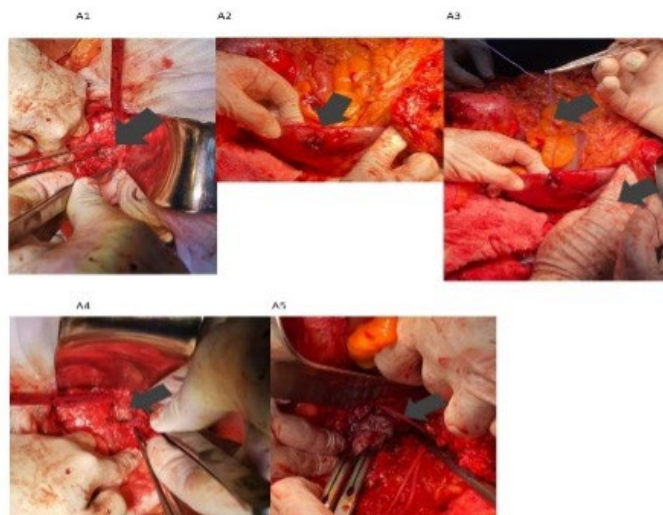


Figure 2: A- Primary duodenal closure and partial endoprosthesis explantation. A1, 2- Fistulous orifice of the duodenum side; A3- Reinforcement manual suture of duodenum; A4- Fistulous orifice of the aortic endoprosthesis side; A5- Explantation of aortic endoprosthesis.

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Visceral artery aneurysms and arcuate ligament syndrome- the same or different pathology?

Marta Machado, Carolina Semiao, Joao Peixoto, Luís Fernandes, Francisco Basílio, Ricardo Gouveia, Vítor Martins, Pedro Brandão, Alexandra Canedo

CHVNGE

INTRODUCTION: Visceral artery aneurysms (VAAs) are rare with reported incidence rates of 0.01% to 0.2%. Hepatic and splenic artery aneurysms are the most common, with pancreaticoduodenal artery aneurysms (PDAAs) accounting for only 2%-3.5% of all visceral aneurysms.

Treatment of hepatic aneurysms is recommended if symptomatic, >2 cm in diameter or growth rate >0.5 cm/year. PDAAs' treatment is currently recommended in all cases regardless of the size.

As VAAs may develop secondary to stenosis of celiac trunk (due to atherosclerotic disease or median arcuate ligament (MAL) syndrome), in patients with VAAs and celiac stenosis/occlusion, simultaneous celiac artery release or revascularization are themes of debate.

CLINICAL CASE 1: A 50-year-old woman, only with a refractory arterial hypertension in study, was accidentally diagnosed in CTA with right renal artery stenosis with suspected of muscular fibrodysplasia, a stenosis of celiac axis associated with MAL syndrome and a PDAA with a diameter of 1.4 cm (Figure 1 A,B).

The patient first underwent balloon angioplasty of the right renal artery stenosis and in second time resection of the PDAA with reimplantation of pancreaticoduodenal artery in superior mesenteric artery (Figure 1 C,D).

The patient is currently asymptomatic, with controlled blood pressure, and is going to do a control CTA at 1 year after surgery.

CLINICAL CASE 2: A 49-year-old woman was accidentally diagnosed with a visceral aneurism during ultrasound follow-up of a hepatic nodule. After questionnaire, the patient referred complains of an uncharacteristic epigastric pain. Angiography and CT-angiography revealed celiac artery occlusion probably secondary to MAL syndrome and confirmed an aneurysm of the common hepatic artery with 4 cm of diameter originated from the superior mesenteric artery (Figure 2 A, B).

The aneurysm was resected with reimplantation of common hepatic artery in superior mesenteric artery (Figure 2 C-F).

3 months after the operation, patient maintains epigastric pain and the follow-up CT revealed patent anastomosis but a global ectasia of the common hepatic artery with maximum diameter of 6 mm (Figure 2 G).

CONCLUSION: In the setting of celiac artery stenosis/occlusion some authors theorized that PDAAs develop due to compensatory increased blood flow through the superior mesenteric artery and pancreaticoduodenal arteries. According to the literature, 50%-80% of PDAAs are associated with CA compression by MAL. In our second case, as there is a vascular congenital anomaly (common hepatic artery

originating from SMA) the common hepatic artery aneurysm can behave as a PDAAs.

Illuminati et al in their multicenter study with 57 patients with PDAAs and MAL syndrome showed that both open and endovascular treatment for PDAAs yield excellent post-operative results but with few midterm recanalizations after PDAAs embolization. In our serie, due to the patients age (and desire for definitive repair) and aneurysm anatomy, the patients were selected for open repair.

Illuminati et al also treated all MAL syndromes simultaneously with celiac release (if only celiac stenosis) or revascularization (if celiac occlusion), with excellent results. In our serie, particularly in case 2, due to persistent epigastric pain complaints and development of diffuse common hepatic artery ectasia on early follow-up CT scan, a reintervention may be considered.

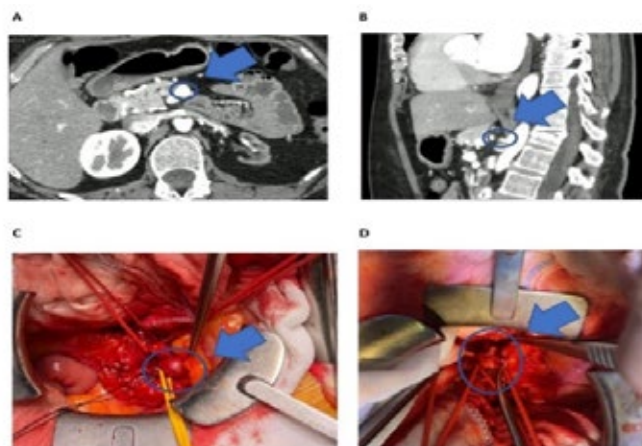


Figure 1: A-D- CTA showing inferior pancreaticoduodenal sacular aneurysm and stenosis of celiac artery (MAL syndrome).E- Aneurysm of the anterior pancreaticoduodenal artery with proximal and distal control (red and yellow silastic slings); D- resection of the PDAAs with reimplantation of pancreaticoduodenal artery in superior mesenteric artery

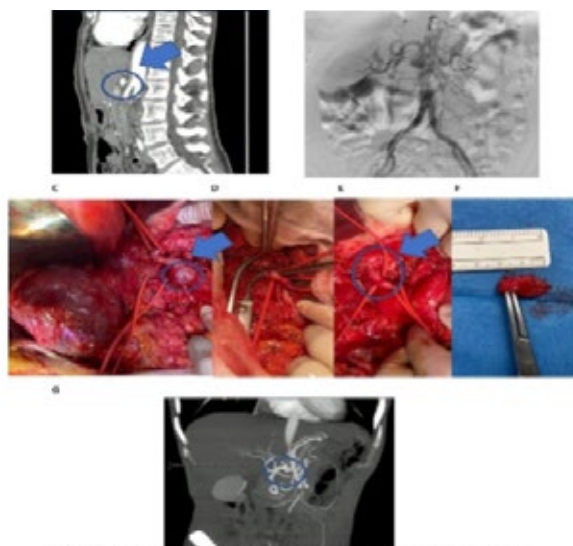


Figure 2: A-G- CTA showing celiac artery occlusion and aneurysm of the common hepatic artery. H- Aneurysm of the common hepatic artery with proximal and distal control (red and yellow silastic slings). I- Resection of the common hepatic artery with reimplantation of common hepatic artery in superior mesenteric artery. J- Control angiogram

Percutaneous direct sac puncture with onyx embolization: an alternative treatment of type ii endoleaks

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CHVNGE

INTRODUCTION: Type II endoleaks (T2Es) are the most common endoleaks, occurring in 9%–30% endovascular abdominal aortic aneurysm (AAA) repair (EVAR).

They occur from retrograde collateral blood flow into the aneurysm sac, typically from a lumbar artery or the inferior mesenteric artery. T2Es often have a benign course with spontaneous resolution or without sac enlargement.

To treat T2Es associated with sac enlargement many strategies have been used to prevent conversion to open repair, including laparoscopic clipping or embolization using plugs, coils or more recently liquid embolic agents.

CLINICAL CASE: A 84 years old man, undergone an EVAR 4 years ago in Brazil. He came to our medical consultation to maintain follow-up of EVAR, and in the angio-CT there was a suspicion of an endoleak tipe Ib with sac enlargement.

The patient was submitted to an angiography which revealed a type II endoleak through the lumbar artery and inferior mesenteric artery (Figure 1).

He underwent embolization of the aneurysmal sac with 4 mL onyx by percutaneous translumbar puncture of the aneurysmal sac, without retrograde filling of the nutritive arteries. (Figure 2)

Immediate control angio-CT revealed a thrombosed infrarenal AAA without endoleaks (Figure 3).

DISCUSSION: The principle of T2E embolization treatment is to obliterate the shunt/communication between inflow and outflow vessels. This can be achieved by embolizing the arteries (ie, lumbar, IMA) and/or the connection (nidus) between them.

Compared to trans arterial embolization, direct sac puncture is associated with shorter fluoroscopy and procedure durations, conferring multiple potential advantages, including decreased sedation time and improved patient comfort.

The trans lumbar approach may be useful for accessing posterolateral endoleaks, but it can be difficult to access endoleaks anterior to the stent graft and to cannulate lumbar artery origins, which face away from the catheter. Furthermore, prone positioning can be poorly tolerated in elderly patients.

Finally, ethylene vinyl alcohol copolymer (Onyx) has emerged as a novel liquid embolization agent that provides a minimally invasive option to treat both inflow and outflow of T2ELs and/or nidus in a single setting. Outcomes of Onyx treatment of T2ELs after EVAR are not well characterized. A retrospective cohort of 68 embolization procedures reported a 91% success rate after Onyx embolization, compared to 23% after embolization with non-Onyx agents. This is likely related

to using liquid embolic, which occlude the communicating channels within the sac. Unlike glue, Onyx does not break off and embolize distally. However, Onyx's cost can be a problem, and its density causes artifact-limiting assessment on follow-up CT.

CONCLUSION: Percutaneous direct sac puncture and embolization with onyx should be thought as an alternative way for accessing T2Es, depending on endoleak and patient's characteristics.

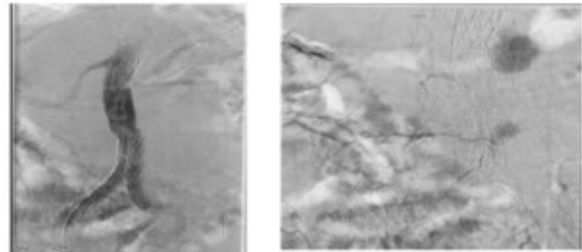


Figure 1: Angiography revealing endoleak type II

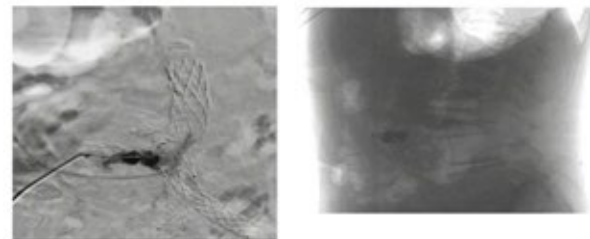
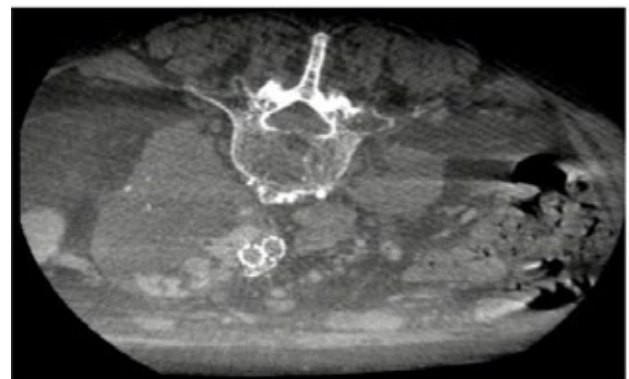


Figure 2: Visualization of endoleak by direct puncture of nidus and after embolization with onyx



Brachio-radial bypass in a failing radiocephalic fistula due to absent braquial artery – an uncommon solution for access salvage

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INTRODUCTION: Vascular access is of utmost importance in hemodialysis patients with end-stage renal disease. Autologous access, using an arteriovenous fistula (AVF), is considered the optimal access in these patients, due to improved patency and lower complication rate when compared with other forms of access.^{1, 2}

However, AVF failure is high, with recent meta-analysis reporting failure between 23% and 36%, mainly due to thrombosis and maturation failure.^{3, 4} Various surgical and endovascular techniques have been developed to improve patency of AVF.

We report the case of a failing radiocephalic AVF due to deficient arterial inflow, treated with brachio-radial bypass.

CASE REPORT The patient is an 84-year-old male with stage 5 chronic renal disease, type 2 diabetes and hypertension. His AV access history included a brachiocephalic fistula in upper right arm, in 2016, which thrombosed, and a functioning radiocephalic fistula in the left arm, in 2019.

The patient was evaluated in outpatient clinic due to failure in maturing of the AVF. A stenosis in the cephalic vein was diagnosed, and the patient underwent balloon angioplasty with good angiographic result.

In follow-up visit, the AVF maintained low flow, calculated in 200ml/min in the radial artery, while brachial artery flow was 500mL/min. Pulse was palpable in both brachial and radial artery, although weaker in the later. In doppler ultrasound, brachial artery was not visualized, and flow acceleration was noted. The patient was then proposed to surgical revision of the AVF.

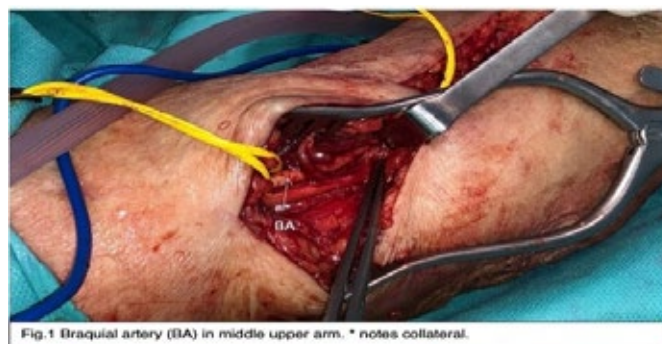
Intra-operative findings included absent brachial artery in cubital fossa, with extensive

collateralization. A tortuous artery was noted, arising from brachial artery in the middle portion of the biceps, after which the brachial artery reduced in size, until no longer visualized. This tortuous artery joined the radial artery in the proximal forearm.

Great saphenous vein was collected from distal lower left limb and a brachio-radial bypass was constructed. In the end of intervention, radial pulse improved, as well as AVF thrill. At one-month follow-up, flow in the radial artery has improved to 450mL/min, with a cephalic vein of 5mm, and brachio-radial bypass is functioning.

DISCUSSION: Follow-up after AVF surgery is essential in the detection of maturation failure and orientation for early treatment, improving primary patency of these AVFs. While most culprit lesions are venous stenosis, deficient arterial inflow, such as in this case, may be a cause of AVF failure. Arterial variations of upper limb are uncommon, but may

occur in up to one in five patients.⁵ When questioned, the patient referred a history of trauma in the left arm in childhood, for which no medical help was sought, which may explain the absence of brachial artery and the extensive collateralization seen. However, it may also be congenital in nature. Due to the crescent number of vascular accesses being performed, pre-operative and post-operative imaging, specially with non-invasive imaging such as doppler ultrasound, is essential in identifying vascular variants that may condition the success of the AVF.



Concomitant mesenteric arterial embolism and bilateral lower limb ischemia – case report

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INTRODUCTION: Acute mesenteric ischemia is a rare condition with high morbidity and mortality. After laparotomy, mortality can be as high as 44%. Early diagnosis and intervention is essential to restore mesenteric blood flow and prevent bowel necrosis.

Systemic embolic events, while less frequent than cerebral embolism, are well recognized in patients with atrial fibrillation, and are associated with considerable mortality. Concomitant embolic events are infrequently reported and worsen the prognosis. We report a case of concomitant mesenteric arterial embolism and bilateral lower limb ischemia in a patient with atrial fibrillation

CASE REPORT: The patient is an 86-year-old woman with past medical history relevant for atrial fibrillation and heart failure. She was anticoagulated with apixaban; however she had stopped taking any chronic medication for several months. She presented to the emergency department with non-specific complaints of anorexia, sporadic abdominal pain, weight loss and nausea with months of evolution. She also reported melena and hematochezia in the previous two weeks. When questioned, she referred lower limb pain. Examination was only relevant for lower abdominal discomfort. Laboratory investigations were relevant for leukocytosis and elevated creatine kinase.

Abdominal CT-scan revealed splenic infarcts, aortic thrombus, right common iliac artery occlusion and superior mesenteric artery (SMA) thrombosis, and no clear signs of intestinal transmural necrosis (Fig.1-3).

The patient was then submitted to emergent bilateral femoral embolectomy and superior mesenteric artery embolectomy by laparotomy. No bowel necrosis was observed.

Post-operative course was complicated by suspicion of bowel necrosis needing an emergent laparotomy, resulting in colecistectomy for an ischemic gallbladder. Due to progressive worsening clinical condition, the patient died 21 days after the initial procedure.

DISCUSSION: Multiple, concomitant embolic events in atrial fibrillation patients are rare, but should be considered in patients with non-specific complaints, especially if not under anticoagulation. Timely diagnosis is of utmost importance not only for prompt intervention but also for initiation or reestablishment of anticoagulation. However, morbidity and mortality remains high.

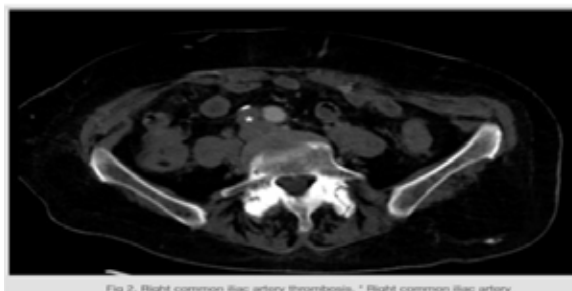


Fig 2. Right common iliac artery thrombosis. * Right common iliac artery

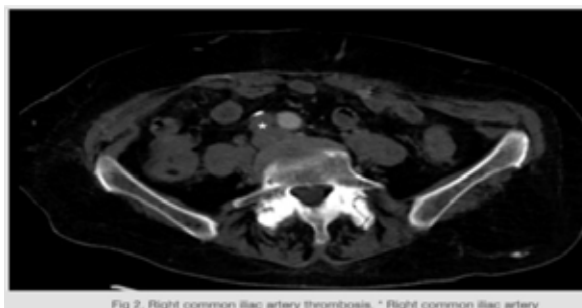


Fig 2. Right common iliac artery thrombosis. * Right common iliac artery

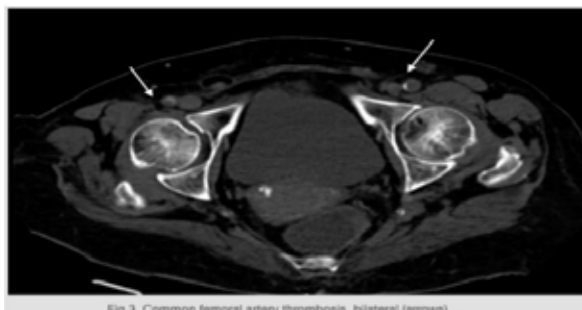


Fig 3. Common femoral artery thrombosis, bilateral (arrows).

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Popliteal artery injury due to traumatic knee dislocation after total knee arthroplasty

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INTRODUCTION: Popliteal artery injury is a potential complication after traumatic knee dislocation. Recent studies report amputation rates due to traumatic popliteal artery injury ranging from 13 to 20%. Blunt injury has also been associated with increased risk of amputation and poor functional outcomes. We report a case of popliteal artery injury due to knee dislocation in a patient with previous knee arthroplasty.

CASE REPORT: The patient is an 86-year-old woman with past medical history relevant for hypothyroidism and bilateral total knee arthroplasty twelve years prior. She had presented six years prior with left knee arthroplasty dislocation which resulted in popliteal artery injury, and a popliteal bypass was made using a great saphenous vein conduct. One year prior she had a traumatic right knee dislocation due to a fall, which was reduced with no complications.

The patient presented to a local hospital after a fall, and a diagnosis of posterior knee dislocation was made (Fig.1). Closed reduction was performed successfully. However, due to ischemic signs in the right foot, the patient was transferred to our hospital for evaluation by vascular surgery.

At arrival at our emergency department there were no palpable pulses in the right foot, with associated motor and sensory deficit. Doppler signals were absent in the right foot, while pedal pulse was palpable on the left foot. Due to worsening hemodynamic instability, the patient was transferred to the emergency operating room.

A popliteal-popliteal bypass, by medial approach, was performed using a PTFE graft, as well as right leg fasciotomies. Perfusion of right foot improved by the end of intervention.

The patient was transferred to an intensive care unit. Post-operative course was complicated with hemodynamic instability, with need for aminergic support, as well as rhabdomyolysis and acute renal failure. Intensive care unit stay was prolonged due to ventilator associated pneumonia, difficult ventilator weaning, as well as ischemic colitis. The right lower limb remained well perfused, with palpable pedal pulse. After 30 days, the patient was transferred to orthopedics department for treatment of right knee instability.

DISCUSSION: Knee dislocation after total knee arthroplasty is a rare complication but can pose serious complications such as vascular and nervous injury. The POPSAVEIT score has been proposed as a method to stratify patients with popliteal artery injury with high risk of amputation, and include systolic blood pressure <90mmHg, associated orthopedic injury and lack of preoperative pedal doppler

signals (Table 1). In our case, the patient scored 3 points, which indicated a high risk of amputation.

In conclusion, popliteal artery traumatic injury, while rare, has considerable morbidity and risk of amputation. Careful vascular examination is essential in detecting complications and their timely repair.



Fig.1 Initial plain radiograph, demonstrating posterior dislocation of right knee

POPSAVEIT score	
Points	Risk factors
1	Systolic blood pressure <90mmHg
2	Associated orthopedic injury
2	Lack of preoperative pedal doppler signals
1	Lack of palpable preoperative pedal pulses, if doppler unavailable

Table.1 POPSAVEIT score

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Cerab (covered endovascular repair of aortic bifurcation) – a case full of difficulties with a hand-full of solutions

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INTRODUCTION: Limb threatening ischemia is one of the most common presentations of vascular patients in our daily practice, and requires knowledge, mastery of multiple techniques and a whole lot of imagination. Aorto-iliac occlusive disease, and aortic thrombosis, are classically considered as first approachable with open surgery, but with the advent of endovascular surgery and the aging and growing comorbidities of patients, newer techniques have been developed. CERAB has been described as a more anatomical endovascular reconstruction in patients with TASC II C and D lesions. We present a case of a patient with an aortic thrombosis and poor surgical risk, submitted to a hybrid revascularization surgery.

CLINICAL CASE DESCRIPTION: A 62 year old male presented initially, in 2020, in our outpatient clinic with history of limiting claudication with recent progression to rest pain in both legs. Angio-CT showed an infra-renal aortic thrombosis, with patent infra-inguinal arterial axis. Pre-operative study also uncovered COPD, a pulmonary mass and ischemic heart disease with right coronary artery occlusion. In this setting, an axilo-bifemoral bypass was constructed, with satisfactory revascularization. One year later, the patient presents with grade III (Leriche-Fontaine) bilateral ischemia, occlusion of the bypass and inflammatory signs over the right inguinal. Imaging reevaluation also showed juxta-renal progression of thrombus. In October 2021, he was proposed for CERAB with renal chimneys and removal of the previous bypass, but the procedure was complicated by impossibility of recanalization of the right common iliac artery and it's iatrogenic rupture. The onsite solution consisted of extending stents only to the left iliac axis, renal chimneys (all B-Graft® stents), resection of the former bypass and reconstruction of a femoro-femoral bypass, with intra and post-operative stability, good revascularization outcome and recovery of distal pulse. One month later, he was re-admitted for acute kidney insufficiency (AKI), with occlusion of the right renal chimney and complete kidney ischemia, with laboratory AKIN 3 (sCr 0.9>2,87mg/dL) AKI, but total normalization of kidney function was observed in few days, and with no clinical signs of lower limb ischemia or de novo occlusions, which he maintained at four months post-revascularization.

CONCLUSION: Endovascular surgery in lower extremity chronic arterial disease is a world in expansion and it's applications are rapidly evolving. It allows for imaginative solutions and lower surgical risk procedures, for high risk patients, with growing evidence of good short and medium-term outcomes.

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Dissecção da aorta durante tratamento com inibidores da tirosina quinase: uma possível complicação que não pode ser esquecida.

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CHLC

INTRODUÇÃO: A inibição da angiogênese através da via do fator de crescimento endotelial vascular (VEGF) é um dos possíveis alvos dos inibidores da tirosina cinase (TKI's), um grupo de fármacos revolucionário e fundamental no tratamento de várias neoplasias. Doentes tratados com antiangiogênicos desenvolvem frequentemente hipertensão arterial, e fadiga, diarreia, edema periférico ou dislipidemia são outros efeitos adversos comuns. No entanto, a associação entre este grupo de fármacos e disseção da aorta tem sido reportada nos últimos anos, inclusive em doentes sem fatores de risco predisponentes antes ou durante o tratamento.

CASO CLÍNICO: É apresentado um caso clínico de um homem de 67 anos com o diagnóstico de Carcinoma Papilar da Tireoide, previamente submetido a tiroidectomia total, esvaziamento ganglionar e terapêutica com iodo radioativo. Por progressão da doença a nível ósseo e pulmonar, foi iniciado Lenvatinib com boa resposta. Como efeitos adversos, o doente referiu queixas de mal-estar, desenvolveu trombocitopenia e hipertensão arterial, sendo tratado com Enalapril com um bom controlo tensional. Porém, o tratamento foi interrompido ao fim de 5 meses após achado de dissecção da aorta tipo B de Stanford em TC de controlo. Após avaliação do doente, e dado se tratar de uma dissecção assintomática e não complicada de degeneração aneurismática ou mal perfusão de órgão, ficou com indicação para controlo rigoroso da tensão arterial e reavaliação imagiológica seriada.

DISCUSSÃO: Os casos publicados sugerem uma relação causal entre o efeito inibitório da angiogênese dos TKI's e a dissecção da aorta relatada durante o tratamento com este grupo de fármacos. No entanto, os mecanismos patológicos e moleculares subjacentes permanecem indefinidos, não sendo claro se a tensão arterial elevada tem papel na sua patogénese, já que são relatados casos de dissecção em doentes sem hipertensão prévia ou durante o tratamento com os TKI's.

CONCLUSÃO: Com o crescente uso destas terapias, é fundamental a supervisão e controlo rigoroso dos seus efeitos adversos, inclusive estar consciente desta possível complicação e dos sinais de alarme associados.

Going all the way around: type II endoleak with sac enlargement

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CHVNG/E

INTRODUCTION: Approximately 20% who underwent EVAR develop type II endoleak (T2EL). Typical T2EL arises from a lumbar artery or the inferior mesenteric artery (IMA). Despite consensus on the management of type I and type III EL, there is still a lot of controversy regarding T2EL, mainly due to its benign course most of the time. One of the most consensual factors to treat a T2EL is aneurysm growth beyond 10 mm in the absence of a type I or III EL. There are many approaches to this, including transarterial, translumbar, transcaval and surgical approaches. Transarterial coil embolization is performed by accessing the middle colic artery via the SMA, providing retrograde access to the proximal IMA through the arc of Rioloan or marginal mesenteric artery. Also, access between the aneurysm sac and the endoprosthesis might be possible allowing direct sac access. Alternatively, direct antegrade access to the IMA can be achieved from within the aneurysm sac by several methods: translumbar puncture of the AAA sac (frequently using CT or fluoroscopic guidance), which is the most popular route for antegrade access to branch vessels, but also, transcaval access to the AAA sac has been described. Surgical approaches such as laparoscopic ligation of the IMA have also been used but require proximal control of the vessel and advanced laparoscopic skills.

CONCLUSION: T2EL after EVAR are common but often of no clinical significance. However, in the presence of aneurysm growth, secondary interventions are indicated. Although complex, transarterial embolization of an IMA responsible for a T2EL via the Rioloan arch is safe, feasible and effective.

CASE PRESENTATION: We present two patients treated to a T2EL from the IMA. The first, an 85-year-old male, primarily treated for a 55mm asymptomatic AAA 5 years before. On the final aortography a T2EL from the IMA was already present. During follow up he had a slow but steady sac enlargement, which led to reintervention. The second, an 85-year-old female, primarily treated to a 100mm symptomatic AAA 2 years before. Technical success was achieved on the primary procedure, but, later, a type Ia endoleak dictated several reinterventions. Later, despite no type I or type III endoleaks were present, sac enlargement due to a T2EL also from the IMA dictated another reintervention. We utilised left brachial access in one patient and common femoral access in the other. Catheterization of the superior mesenteric artery (SMA) was achieved conventionally, and after sheath and catheter placement, microcatheter and microguidewire were advanced through the Rioloan arch into the IMA. One patient has its IMA embolized with a combination of liquid agent (Onyx) and detachable coils. On the other patient pushable coils were used. On both cases technical success was achieved with resolution of the T2EL. Post procedure course was uneventful. CT-scan was ordered 1 month post procedure and T2EL resolution was sustained.

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Tratamento endovascular nas complicações vasculares da Doença de Beçhet

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INTRODUÇÃO: A doença de Beçhet (DB) é uma vasculite com atingimento multissistémico, caracterizada pela presença de úlceras orais e genitais, envolvimento ocular e cutâneo.

As manifestações vascular estão presentes entre 7 – 38% dos casos, sendo estas as que estão associadas a maior taxas de mortalidade da doença. Podem ser manifestar como doença oclusiva, aneurismática ou como complicações de procedimentos vascular como falsos aneurismas.

APRESENTAÇÃO DE CASOS: Apresentamos 2 casos clínicos, uma mulher de 27 anos e um homem de 38 anos, com manifestações vasculares graves e o seu resultado cirúrgico.

A primeira doente do sexo feminino foi diagnosticada um aneurisma sacular da aorta visceral com 6cm. Tendo em conta as manifestações extravasculares (úlceras genitais, orais, uveíte e artrite) foi diagnosticada com síndrome de Behçet, e, por este motivo, após controlo sistémico da doença com imunossupressão, foi submetida reparação endovascular do seu aneurisma com uma endoprótese fenestrada “custom-made” com uma fenestração para o tronco celíaco e um scallop para a artéria mesentérica superior. O aneurisma ficou excluído com sucesso, no entanto desenvolveu passado 3 semanas um falso aneurisma do acesso femoral cirúrgico direito. Por este motivo foi submetida a reparação com patch de veia safena interna. Atualmente encontra-se no terceiro ano de follow-up, sem complicações e com colapso quase total do aneurisma.

O segundo doente foi encaminhado após interposição femoral realizado noutra hospital por aneurisma há 6 meses, apresentando-se com falso aneurisma anastomótico proximal. Foi submetido a reparação endovascular com stent coberto auto-expansível. Apresentava concomitantemente um aneurisma da artéria hipogástrica que foi tratado em diferido (após controlo sistémico da doença) com embolização com coils e cobertura com stent coberto. Passado 2 semanas apresentou rotura da anastomose distal da interposição com necessidade de nova intervenção endovascular com exclusão com stent coberto expansível por balão. Atualmente o doente tem 4 anos de follow-up, sem complicações major, com necessidade apenas de relining to stent distal por compressão externa.

CONCLUSÃO: Na abordagem das manifestações vasculares da DB é preciso ter em conta diversos fatores, tais como a localização, a região anatómica, a atividade sistémica da doença ou a experiência individual. No entanto, uma abordagem endovascular, segundo a nossa experiência e o que vem descrito na literatura, parece demonstrar vantagem sobre a cirurgia aberta, diminuindo o trauma vascular e anastomótico e com isso diminuir as complicações e aumentar as taxas de sucesso terapêutico.

Arterial phase contrast-enhanced lesion in the mesentery: a diagnostic challenge of an incidental finding

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INTRODUCTION: Lesions with contrast uptake in the arterial phase, with a density like the abdominal aorta, are highly suggestive of having a vascular nature. If there is dependence on an arterial branch, it is most likely to be a mesenteric arterial aneurysm, although these lesions are quite rare. Solid hyper-vascularized lesions present contrast uptake in the arterial phase, but usually to a lesser extent than in the arteries. Hence, differential diagnosis is generally not difficult.

CASE REPORT: A 74-year-old autonomous man was diagnosed with an adenocarcinoma of the prostate during the investigation of lower urinary tract symptoms. Subsequently, he performed a staging abdominopelvic computed tomography (CT) that revealed a 2cm epigastric arterial phase contrast-enhanced lesion in continuous communication with a segmental branch of the superior mesenteric artery inferring the diagnosis of a mesenteric arterial aneurysm. The patient did not have abdominal symptoms. The CT findings showed a bright and rapid contrast-enhancement lesion and, in the sequence without contrast, the density was similar to the vessels.

Thus, an ultrasound was suggested to clarify the lesion better. The fact that it was a vascular lesion prevented a biopsy. Two different operators performed the ultrasound; however, it was impossible to visualize the lesion due to the interposition of abdominal gas. Considering that the lesion needed further clarification, the case was discussed with vascular surgery. The patient was proposed to undergo an invasive angiography and eventual resection surgery.

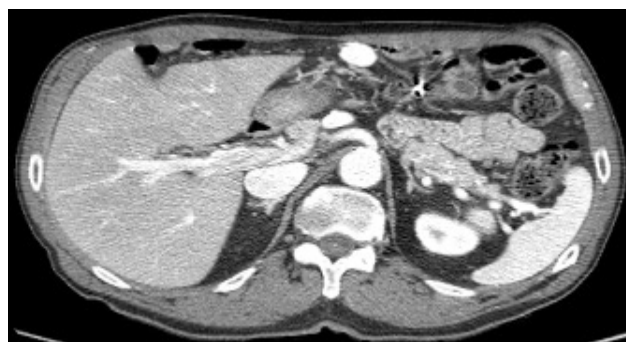
Angiography was performed via the right common femoral artery with selective catheterization of the superior mesenteric artery. Contrast filling was observed in a spherical structure depending on a segmental branch of the superior mesenteric artery. Considering the dimensions of the lesion, treatment would be indicated in the case of a mesenteric pseudoaneurysm. We decided not to embolize the lesion due to the risk of segmental intestinal ischemia,

Thus, we performed a surgical approach by mini-laparotomy, with careful inspection of the peritoneal cavity, and we observed a nodular, encapsulated, hypervascular lesion in the root of the mesentery. Due to the clinical suspicion that it was a paraganglioma, blood and urine were collected intraoperatively before tumor resection to measure metanephrines. The lesion was resected with adequate margins and sent for anatomopathological study.

Histopathological analysis showed a 2cm, well-circumscribed, hyper-vascularized, encapsulated neoplasia displaying a nested pattern. The neoplasia showed epithelioid

cells with round, centrally placed nuclei surrounded by an eosinophilic granular cytoplasm. Immunohistochemistry showed the expression of chromogranin A. The morphological and immunohistochemistry features allowed the diagnosis of a paraganglioma. A PET-Scan revealed no evidence of somatostatin-avid tumor lesions at other locations.

CONCLUSION: Paragangliomas are usually located in the adrenal medulla, and only up to 10% have an extra-adrenal location usually found in the abdomen. In these cases, they are typically located adjacent to the aorta due to their dependence on sympathetic or parasympathetic paraganglia. A mesenteric paraganglioma is very rare, with only a few cases reported in the literature. Due to their hypervascular nature, differential diagnosis with vascular lesions could be challenging.



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Deep vein thrombosis associated with ivc agenesis: catheter-directed fibrinolysis as a treatment option

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INTRODUCTION: Inferior vena cava agenesis is a rare malformation. Its diagnosis often occurs during the study of an idiopathic deep vein thrombosis of the lower limbs in typically young individuals. The aim of this case paper is to present a case of deep vein thrombosis in a young patient with agenesis of the inferior vena cava and its management.

CASE REPORT: We describe the case of a 16-year-old female patient, with no relevant pathological history, chronic medication included only oral contraceptive, who went to the emergency department for pain and edema of the right lower limb with a day of evolution. She denied chest pain, dyspnea, trauma, or recent travels. After venous doppler ultrassound of the lower limbs, an iliofemoral deep vein thrombosis was diagnosed. Subsequently a CT angiography was performed confirming the deep venous thrombosis and revealing an agenesis of the infrahepatic inferior vena cava. The patient underwent catheter-directed fibrinolysis with good therapeutic results and was discharged home on hypocoagulation. The subsequent study in the outpatient setting revealed a factor V Leiden mutation in heterozygosity. The patient remains completely asymptomatic on extended therapy with NOAC, with no new episodes of venous thrombosis in the last 2 years or signs of post-thrombotic syndrome.

CONCLUSION: Most cases of inferior vena cava agenesis are asymptomatic and therefore remain undiagnosed. The management of venous thromboembolism associated with this malformation is complex and the best therapeutic strategy is not clear. In the presented case, catheter-directed fibrinolysis was able to restore the permeability of the previously developed collateral circulation network possibly preventing post-thrombotic syndrome in a patient with inferior vena cava agenesis. Long-term anticoagulation and compression stockings are the only well-defined treatment options, but in selected cases catheter-directed fibrinolysis can also be considered.

Extensive liver ischemia following open aortic repair: a case report

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INTRODUCTION: Chronic intestinal ischemia is a rare manifestation of atherosclerotic disease, especially in its asymptomatic forms. Mesenteric revascularization in these patients is controversial. Recent guidelines recommend mesenteric revascularization only for symptom relief in severe forms. Revascularization in asymptomatic patients is still a matter for clinical debate.

CASE REPORT: We report the case of 61-year-old patient electively admitted to the Vascular Surgery ward for Leriche syndrome. He has a previous history of pulmonary thromboembolism in 2020, arterial hypertension, chronic obstructive pulmonary disease and osteoarthritis. At physical examination, the patient presents erythrodes in both feet. Abdominal palpation was painless, with no masses palpated. There was no palpable femoral pulse on both sides. An angio CT scan was performed, which confirmed extensive atherosclerotic disease in the visceral arteries, namely the celiac artery, as well as infrarenal aortic thrombosis with patent common femoral arteries bilaterally. The patient was subjected to an aortobifemoral bypass under general anesthesia, with 30 minutes of suprarenal clamping. Over the first 24 hours in the intensive care unit, he developed distributive shock due to reperfusion and perioperative hypotension. At day 2, there was a significant rise in abdominal distension and a rise in parameters of hepatic cytolysis. An urgent CT scan was performed, showing signs of liver ischemia in segments II and IV as well as occlusive disease at the origin of the celiac trunk. A diagnosis of abdominal compartment syndrome was presumed, and the patient was subjected to decompressive laparotomy and surgical exploration. Both the superior mesenteric and the hepatic arteries were patent, with no evidence of bowel or liver ischemia. The patient was left with a laparostomy. 24 hours after the surgical revision, there was a significant rise in cytolysis parameters, with ALT levels over 1500 U/L. A second look surgical exploration was performed, with evidence of liver and gallbladder ischemia. The patient was subjected to a jump graft to the common hepatic artery, liver segmentectomy and cholecystectomy. The following days in the ICU were uneventful, and the patient was transferred to the vascular surgery unit.

CONCLUSION: This clinical case highlights the importance of evaluating pre-existing mesenteric arterial disease in patients undergoing open aortic repair. Perioperative disturbances such as hypovolemia or anemia may significantly alter splanchnic circulation and potentiate mesenteric ischemia. Open or endovascular mesenteric revascularization must be weighed and discussed in this subset of patients, since there are no strict recommendations on this subject.

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Type Ia endoleak: screwing the problem

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INTRODUCTION: Endoleaks are the most common complication of EVAR. Of these, type Ia Endoleak is further associated with a high risk of aneurysmal expansion and consequent secondary rupture.

Traditionally, aortic cuff and / or Giant Palmaz Stent are the treatment options for type Ia Endoleak.

FDA-approved, since 2011, the Heli-FX EndoAnchor system (Aptus Endosystems) has emerged as an alternative for the treatment of Endoleak type IA, whose mechanism consists of "anchoring" or "screwing" the prosthesis to the aortic wall in order to obtain better apposition /sealing.

OBJECTIVES: To describe a clinical case of use of Endoanchors in a type Ia Endoleak.

METHODS: Based in clinic report.

RESULTS-CASE REPORT: Male patient, 71 years old, sent to Vascular Surgery consultation for finding AAA 55 mmx63 mm routine abdominal ultrasound.

The AAA presented a 20 mm and conical (25-28mm) aortic neck, with moderate proximal neck calcification with mild thrombus.

The patient underwent a aorto-bi-iliac EVAR (Endurant II 32x16x166 left access + 16x16x156 right access).

The procedure was complicated by extremely calcified femoral accesses (planned surgical exposure) and an extremely calcified external iliac artery (difficult progression of EVAR main body).

Control angiography revealed a type II Endoleak (IMA) and no evidence of type I Endoleak.

A control CT- Angiography (3 days after procedure) revealed a evident Type IA Endoleak, mainly in the posterior left sealing zone.

The patient underwent a new surgery, and the type IA Endoleak was solved by the deployment of 10 Endoanchors (placed preferably at the posterior left aortic neck level).

The control angiography revealed no type Ia endoleak, that was confirmed by a 5 days control CT- Angiography.

CONCLUSION: Use of EndoAnchors to treat existing and acute type Ia Endoleaks and endograft migration was successful in several clinical studies, has shown a higher rate of aneurysm sac regression and suggests its use in the treatment of patients with challenging proximal aneurysm anatomy proposed to EVAR.

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Upper limb edema in a patient with a arteriovenous access: a rare cause of venous hypertension

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INTRODUCTION: Venous hypertension is a common complication of arteriovenous fistula. The main goal in its management is to relieve edema with preservation of the access. We report a case of a rare cause of venous hypertension related to arteriovenous fistula: a patient with a cervical tumour invading jugular and subclavian veins.

CASE REPORT: We describe an 86-year-old male patient with arm and forearm edema with over two months of evolution, without any other complains. The patient had a radiocephalic arteriovenous fistula in the left arm for haemodialysis with a high blood flow (2600 mL/min). A phlebography was performed which suggested a partial occlusive thrombus on the confluence of left subclavian and the internal jugular veins. The patient was anticoagulated with LMWH and underwent a flow reduction surgery by post anastomotic vein plication (final flow 900 mL/min). After two weeks the symptoms did not improve. Further studies included doppler ultrasonography that revealed mobile mass conditioning luminal loss of the left internal jugular and subclavian veins and no proximal or distal signs of vein thrombosis. CT angiography was then performed and revealed a contrast-enhanced pharyngeal mass with invasion the left internal jugular vein. An oncology appointment was scheduled for follow-up. For symptomatic control of upper limb edema arteriovenous fistula was ligated.

CONCLUSION: Venous hypertension symptoms in an arteriovenous fistula are distressing and lead to increased morbidity with disfunction of hemodialysis access. Diagnosis and management can be challenging as presented in this case. We describe a rare case of jugular vein tumoral invasion manifested by upper limb edema secondary to venous hypertension in a limb with arteriovenous access.

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P55

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Henrique Andrade de Almeida¹, Sérgio Teixeira¹, Paulo Almeida¹, Luís Loureiro¹, Duarte Rego¹, Andreia Pinelo², Daniel Mendes², Carlos Veterano², João Castro², Miguel Queirós², Rui de Almeida²

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Oclusão crónica de EVAR e via de colaterais de Winslow - combinação improvável

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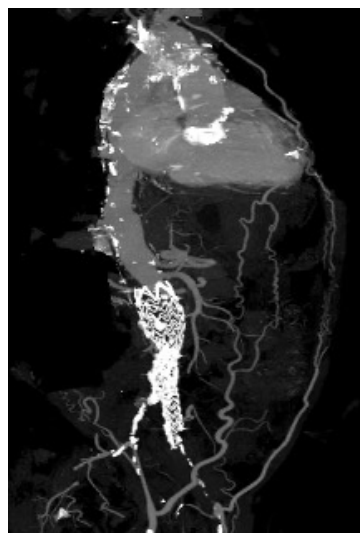
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INTRODUÇÃO: A doença arterial periférica é uma patologia frequente nos idosos e pode afetar múltiplos territórios arteriais. Tratando-se de uma doença crónica, o desenvolvimento de colateralização é comum. No caso da doença oclusiva aortoiliaca, a colateralização entre artérias viscerais- sistémicas e, de forma mais importante, a colateralização por vias de colaterais sistémico-sistémicas é observada e identificada em exames de imagem. A oclusão da aorta abdominal também pode ser o resultado da trombose aguda de aneurisma da aorta, porém manifesta-se frequentemente com isquémia aguda bilateral dos membros inferiores, com taxa de mortalidade de até 59%. Existem, mais raramente, casos descritos de oclusão crónica de aneurismas da aorta, esses manifestando-se mais frequentemente com sintomas de isquémia crónica dos membros. Reportamos um caso de oclusão assintomática de cirurgia endovascular aórtica por doença aneurismática, com ênfase nas vias de colateralização predominantes.

CASO CLÍNICO: Doente de 71 anos, do sexo masculino, com história de tabagismo, insuficiência cardíaca, DPOC, hipertensão arterial e dislipidémia. Foi submetido cerca de 5 anos antes a EVAR aorto-uni-ilíaco esquerdo por ruptura de aneurisma micótico (*Brucella Mellitensis*) da aorta abdominal infrarenal (oclusão crónica da artéria ilíaca comum direita). Não apresentou complicações pós-operatórias e posteriormente acabou por perder o seguimento. Cinco anos após a cirurgia, realizou angiografia por tomografia computadorizada por motivo não relacionado, que revelou trombose do EVAR, com repermeabilização de ambas as ilíacas externas distais por colaterais. Como se encontrava assintomático, não foi considerada necessária qualquer intervenção. Entretanto acabou por falecer por causa não relacionada.

DISCUSSÃO: Na doença oclusiva aortoiliaca verificam-se duas principais vias de colateralização. As vias de colaterais sistémico-sistémicas, originadas de segmentos embriológicos da aorta dorsal e que incluem as artérias intercostais, lombares, torácica interna, circunflexa ilíaca profunda, epigástrica inferior e obturadora. As artérias viscerais (tronco celíaco, artéria mesentérica superior, mesentérica inferior e renais) também podem formar vias de colaterais com as artérias sistémicas – vias de colaterais viscerais-sistémicas. Existe uma importante via de colateralização sistémico-sistémica que envolve as intercostais/lombares com a ilíaca circunflexa, que se consegue observar no flanco direito do doente (Figura 1).

Existe também uma via de colaterais mais infrequente, via de colaterais de Winslow, que dirige o fluxo sanguíneo dos membros superiores para a pélvis e membros inferiores através da artéria torácica interna, epigástricas superiores e inferiores terminando na artéria ilíaca externa. No caso reportado a repermeabilização bilateral das artérias ilíacas externas dá-se predominantemente através desta via incomum (Figuras 2 e 3). Os cirurgiões devem ter em atenção este tipo de vias de colateralização tendo em conta que podem ser lesadas em intervenções da parede abdominal, aquando da colheita de artéria torácica interna como conduto para revascularização coronária ou aquando da utilização de acessos intravasculares de grande calibre no membro superior, sendo que poderão surgir complicações isquémicas desastrosas



Elbow blockade of forearm av fistula: two different outflow improvement procedures

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INTRODUCTION: Autologous arteriovenous fistulas (AVF) are the vascular access of choice for hemodialysis. Whenever possible, forearm AVFs should be the first option. Venous scarring at the elbow junction is a common problem that causes forearm fistulas' early and late dysfunctions and precludes proximal cephalic AVFs constructions. Any effort to prolong the long-term patency of these vascular accesses will be highly beneficial for the patients' survival, maximizing the use of restricted venous capital. We present two patients with AVF in the forearm with impaired venous outflow at the elbow, resolved using different approaches (surgery vs endovascular).

CASE SERIES:

CASE 1: A 70-year-old man initiated hemodialysis about a year ago. The patient had end-stage chronic kidney disease (ESRD) secondary to diffuse membranous glomerulonephritis. Initially, a left radio-cephalic AVF was constructed with no maturation. Subsequently, an ulnar-basilic AVF was created at the distal forearm. Good AVF maturation with arterialization of the forearm basilic vein was observed.

After approximately eight months, a decrease in dialysis efficacy was observed. Vascular access ultrasound showed multiple stenoses along the forearm basilic vein. Percutaneous transluminal angioplasty (PTA) was made with good results. Angiography showed a lack of direct drainage to the basilic arm vein. Fistula venous outflow was limited to the antecubital perforating vein and the median basilic vein through a tortuous "S-shaped" communicant vein. After half a year, significant outflow stenosis was observed, conditioning vascular access dysfunction. The median-basilic vein was rotated and anastomosed to the forearm basilic vein ensuring adequate outflow, and in the same procedure, a PTA of inflow stenosis was made. Vascular access is patent at 18 months of follow-up.

CASE 2: An 84-year-old autonomous male with ESRD caused by diabetic nephropathy started hemodialysis approximately six years ago from a left brachio-cephalic AVF. Toward the end of this access's life, a right radio-cephalic AVF was created, needing balloon-assisted maturation. At angiography, it was observed that the only drainage vein from the fistula at the elbow was the antecubital perforator with occlusion of the cephalic vein and the median-basilic vein. After the intervention, the AVF was used uneventfully; however, AVF dysfunction was observed nine months later. An angiography showed significant stenosis of the antecubital perforating

vein, treated with PTA. Early recurrence of this stenosis was observed, and treatment with a better long-term outcome was decided. The stenosis was dilated with a 7mm high-pressure balloon, and two 8mm COVERA® stentgrafts were implanted in the perforating vein at the elbow. Stentgrafts were overlapped to increase kinking resistance at the elbow junction. Vascular access patency was observed at one year of follow-up.

CONCLUSION: Any strategy that extends the useful life of forearm access will markedly benefit patients on hemodialysis and certainly prolong their survival. Vascular surgeons, having the mastery of surgical and endovascular techniques in their toolbox, are privileged to offer the best possible solution for each patient. Our approaches proved to be an excellent strategy for a complex problem associated with vascular access chronic dysfunction or thrombosis. A detailed preoperative vascular ultrasound is essential to select the best treatment for individual patients.

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Endoleak type 2: a plague following EVAR

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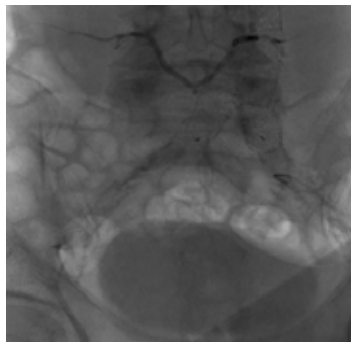
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INTRODUCTION: Type II endoleaks (EL) have a frequent occurrence after EVAR. Even though, these often have a benign nature, sometimes they keep pressurizing the aneurysm sac, leading to an increase in sac diameter potential risk of rupture. The present case report aims to present a case of a type II EL with persistent sac increase after EVAR, despite several types of interventions.

METHODS: Patient clinical registries and imagological studies were retrospectively consulted within electronic clinical registries.

CASE REPORT: A 71 years-old male, with an infrarenal aortic aneurysm with 55mm of diameter was submitted to EVAR. Patient was kept under surveillance and CT scan 4 months after surgery showed a type II EL, caused by two lumbar arteries. A progressive enlargement of aortic sac was detected, that reached an increasing more than 10mm in 12 months (between the 3rd and 4th year of follow-up). Coil sac embolization was attempted, passing a guidewire between the aortic wall and the prosthesis but without technical success. In a second time, a retroperitoneal approach and a direct sac embolization with FLOW SEAL® was performed but type II EL persisted in the post-op CT. Given its persistency, a transperitoneal approach, with aortic arteriotomy and lumbar arteries ligation was done with no bleeding identified intra-operatively. Postoperative CT scan showed consistently sac enlargement with the persistent type 2 EL. Aneurysm sac reached 130mm, so we decided to embolized lumbar arteries within internal iliac artery access with coils and onyx, with good imagological result (Figure 1). Patient maintained on regular follow-up, regarding aneurysm sac enlargement.

CONCLUSION: Type II EL after EVAR still constitute an important source of secondary interventions. Controversy regarding their behavior and treatment is still present among vascular community. Further investigation and imagiological refinements are needed to determine the most effective management for optimal durable results.



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Double “banana technique” to treat iliac aneurysms after aortic open surgery

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INTRODUCTION: Anastomotic aneurysms complicate 1-4% of arterial anastomosis, most commonly affecting the femoral artery. The incidence of aortic aneurysms is probably underestimated because of inadequate surveillance, prolonged time to recognition, and their initially quiescent behavior.

METHODS: Report a case of a patient affected by multiple aneurysms, successfully treated with hybrid repair.

CLINICAL CASE: A 66 years old man, with history of diabetes, dyslipidemia and arterial hypertension, was on the 13th year of follow-up of under an aortobifemoral bypass (ABFB) graft for abdominal aortic aneurysm (AAA). On physical examination, a pulsatile mass was evident in both femoral arteries palpation. Computed tomography angiogram revealed an aortic anastomotic pseudoaneurysm, pseudoaneurysms of both femoral anastomosis and also an aneurysms of both common iliac arteries (CIA) (Figure 1). The potential risk of rupture demanded surgical correction of all the aneurysms. However, the previous open surgery, the presence of multiple aneurysms along with the patient's young age, hypogastric preservation was mandatory and a two phase hybrid intervention was adopted. In the first surgery, an aortic cuff was also deployed for aortic anastomotic aneurysm exclusion and the left femoral pseudoaneurysm was repaired with an interposition graft between the ABFB left branch and the left common femoral artery. During this phase, in order to exclude the left CIA aneurysm and to maintain the pelvic circulation, an external to internal iliac artery (IIA) endograft (Vihaban) was positioned using “*Banana stent technique*”. The covered stents were introduced through native external iliac artery and then the hypogastric was catheterized and a bridging covered covered stent. Three weeks later, the patient was again submitted to a similar procedure on the right side: the right CIA was treated by exclusion using self-expanding heparin bonded stent grafts (Vihaban) in a “*banana*” retrograde fashion and a femoral interposition graft. At 6-month follow-up, computed tomography scan confirmed the patency of both endografts and the interposition grafts, without complications.

CONCLUSION: Surveillance is of major importance in all vascular procedures. Internal to external “*Banana stent technique*” for the treatment of CIA aneurysm after AAA open repair can be considered as an alternative option to surgery, avoiding specific surgical complications and preserving the pelvic circulation.

