



Case report

Late screw perforation of external iliac artery following acetabular revision. A simple solution for a rare complication[☆]



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ABSTRACT

Vascular lesions, although quite rare, are one of the most devastating complications in the context of a hip prosthesis. Therefore, the correct diagnosis is crucial to prevent irreversible damage to the patient.

The authors present the case of a 70-year-old Caucasian woman with an ischemic lower limb as consequence of a late perforation of external iliac artery due to an acetabular screw.

The issue was resolved by simply cutting part of the screw, avoiding other surgical options that would be much more aggressive for the patient.

Careful clinical evaluation allowed for a correct diagnosis and a timely creative treatment, preventing further consequences to the patient.

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Perfuração tardia da artéria ilíaca externa após cirurgia de revisão acetabular: uma solução simples para uma complicação rara

RESUMO

As lesões vasculares, embora muito raras, são uma das complicações mais devastadoras no contexto de uma prótese do quadril, pelo que o seu diagnóstico correto é fundamental para evitar danos irreversíveis ao paciente.

Apresentamos o caso de uma mulher caucasiana de 70 anos de idade com um membro inferior isquêmico causado por uma perfuração tardia da artéria ilíaca externa devido a um parafuso acetabular.

Palavras-chave:

Artroplastia de quadril

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[☆] Study conducted at the Centro Hospitalar São João, Porto, Portugal.

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O problema foi resolvido simplesmente cortando parte do parafuso, evitando outras opções cirúrgicas que poderiam ser muito mais agressivas para o paciente.

A avaliação clínica cuidadosa permitiu um diagnóstico correto e um tratamento criativo a tempo de prevenir outras consequências para o paciente.

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Introduction

Total hip arthroplasty (THA) has a low complication rate and the incidence of vascular injury is even lower.¹⁻³ The later can have devastating effects that if not immediately recognized and can eventually lead to amputation or even dead.^{3,4} We present a case of an acetabular screw that resulted in injury and compression of left external iliac artery and ischemia of the left lower limb.

Case report

A 70 year-old woman attended the emergency clinic for evaluation of an increasing swollen left lower limb since she had woken up with associated abdominal and left lower limb pain. She denied dyspnea or other symptoms. She also had no trauma history or and did not had unusual physical exercise in the days before.

In 2007 she underwent an uncemented total hip arthroplasty as treatment to her hip osteoarthritis. Following a pain free interval of six years she started to have groin pain for which she was investigated. She was diagnosed with aseptic acetabular loosening and so she had an acetabular revision surgery in 2014 (three months before she come to our emergency service). Post-op underwent with a wound infection that was promptly treated with large spectrum antibiotics and surgical debriding. Both surgeries were recorded as uneventful and the patient did well for the following three months returning to her full employment and weight-bearing. She had no other relevant medical history.

When she entered our hospital, medical examination showed a painful and pale left lower limb with numbness and diminished pulses. She was hypotense and laboratory exams showed a hemoglobin of 4.9 with no other relevant alterations. Pelvic CT scan showed a bulky hematoma nearby left ilio-psoas until superior femoral level leading to an almost complete occlusion of the ilio-femoral vascular axis (Fig. 1). Her hip prosthesis looked well positioned despite assessment difficulties caused by image artifacts (Fig. 2). One of acetabular screws pierced the internal cortical with intrapelvic extension (Fig. 3).

The vascular surgeons suggested that her left ischemic member was due to a bleeding artery of iliac-femoral axis combined with a compressive hematoma. She was immediately proposed to surgery by vascular surgery.

A retroperitoneal approach of the left iliac fossa was used. After the hematoma drainage it was noticed that an acetabular



Fig. 1 – CT scan showing intrapelvic hematoma.



Fig. 2 – Acetabular component with no loosening signs.

screw was in a close relationship with the left external iliac artery (Fig. 4). Orthopedic surgeons were asked to take over.

Given the urgency of the surgery the Orthopedic Team simply cut the prominent screw with a bar cut usually used in spine surgeries so the screw could be in the inner cortical boundary of the acetabulum (Fig. 5). After that, vascular surgeons arranged to repair the artery with no need of a bypass. There were no signs of a pseudoaneurysm.

Post-op underwent well with improvement of edema and pain. A year later the patient has adequate vascularity and



Fig. 3 – Intrapelvic acetabular screw.



Fig. 5 – Portion of the screw that has been cut.



Fig. 4 – Acetabular screw in close contact with the artery.

good ambulation assisted by a crutch with the prosthesis remaining in the previous orientation.

Discussion

Vascular injuries associated to primary or revision hip surgeries have been described but its incidence is less than 1% off all THA cases.³⁻⁷ The most usual causes are injury to the common femoral artery due to misplaced retractor or from a cerclage wire placement.⁸⁻¹² There have been some other unusual reports of vascular injuries such as lesion of external iliac artery after complicated removal or chronically infected THA, development of external iliac and superficial femoral pseudoaneurysm or even a late direct external iliac vessel injury from a spike of a medially displaced acetabular implant.⁹⁻¹⁴

However, to the best of our knowledge this is the first time that a late perforation of left external iliac artery due to an acetabular screw is reported without loosening of acetabular components and no formation of pseudoaneurysm.

During the revision surgery that the patient sustained one of the acetabular screws stayed misguided and near to the left external iliac artery. It is believed that this proximity led to a repeatedly, but yet soft injury of the artery. The fact that the patient started her symptoms just three months after the last surgery suggests that it might be a first period of an inflammatory response in the surroundings of the artery that may had controlled more concerning symptoms. The infection that the patient had may also had contribute to this first period. However once the inflammatory phase faded away and the patient started to do more physical activity the anticipated artery fragility led to its rupture. Hopkins et al.¹⁵ also believed that infection had a crucial role as a predisposing factor to an artery rupture after THR once that, in its absence, a spike injury would produce fibrosis of the arterial wall with consequent constrain or thrombosis.

Other authors also previously showed the relationship between pseudoaneurysm and rupture of the external iliac artery and infection after a THA.¹⁵⁻¹⁸ Nevertheless, in this case no proof of pseudoaneurysm was found. This may be due to the prompt treatment at an early stage of the infection and so there are still doubts about that relationship.

In this kind of clinical situations speed in diagnosis and treatment are crucial. Clinical presentation with pain and swelling of the left lower limb may misleading suggest deep vein thrombosis. However, hemoglobin drop and pelvic CT scan showing a bulky hematoma with consequent occlusion of the ilio-femoral vascular axis is highly suggestive of a vascular rupture. This shows that although the initial clinical presentation can sometimes be similar, etiology and subsequent treatment are totally antagonistic.

Kong et al.¹⁹ showed a delayed presentation of the iliac artery injury by an acetabular screw detected in a revision surgery, 10 years after the first procedure. In that case the screw that was misguided was not changed and vascular team did a bypass grafting. In our case, the option was to cut the part of the screw that was out of bone despite no records of similar reports. This was a simple procedure, which solved the problem quickly, avoiding the need for a more aggressive surgery, as it would be a new hip revision.

The presence of a swelling and painful lower limb in a patient with history of hip prosthesis should always be evaluated as soon as possible, bearing in mind that not all situations are deep vein thrombosis. Other vascular complications are already listed and should be taken into account in the evaluation of these patients. In this study a late complication of a poorly oriented acetabular screw that led to a rupture of the external iliac artery is presented. Careful clinical evaluation allowed a correct diagnosis and appropriate treatment in time preventing further consequences to the patient.

In this report we showed an unusual presentation of a late perforation of left external iliac artery due to an acetabular screw without loosening of acetabular components and no associated pseudoaneurysm. The issue was resolved by simply cutting part of the screw avoiding other surgical options that should be much more aggressive for the patient.

Conflicts of interest

The authors declare no conflicts of interest.

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