

## C A S E R E P O R T

## Late bleeding during anterior approach to the hip: case report

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**Summary.** Vascular injuries represent an uncommon complication of total hip arthroplasty, with an incidence of 0.1-0.3% as reported in the literature. The aim of the study is the description of a case of late bleeding in a female patient undergoing surgery for total hip arthroplasty in right osteoarthritis through direct anterior approach. The treatment carried out was a selective embolization of the main ascending branch of the lateral circumflex artery. This was performed by placing two spirals following an angiography, which was revealing an active spreading of contrast at the right femoral circumflex ascending artery. The effectiveness of endovascular techniques for the treatment of early and late bleeding after surgery is pointed out. ([www.actabiomedica.it](http://www.actabiomedica.it))

**Key words:** direct anterior hip approach, artery embolization, late bleeding

### Introduction

Vascular injuries represent an uncommon complication of total hip arthroplasty, with an incidence reported in the literature of 0.1-0.3%; the frequency is higher during revision surgery (1). Acetabular penetration, reaming and screw fixation, extraction of the acetabular component, femoral cerclage wires and inappropriate placement of anterior acetabular retractors (2, 3) are, as reported, common causes of vascular damage. Spontaneous rupture of the femoral artery through atherosclerotic plaques has also been described (4). Distal extension of the direct anterior approach, may increase the risk of vascular injuries (5). The aim of this study, describing a case of late bleeding in a female patient undergoing surgery for total hip arthroplasty via anterior approach, is to highlight the effectiveness of endovascular techniques for the treatment of early and late bleeding after surgery.

### Case report

In June 2016, a 76-year-old female patient with a history of symptomatic osteoarthritis of the right hip

received a total hip arthroplasty (MicroPort Orthopaedics®, Arlington, TN, USA) by anterior approach. There was nothing significant in her medical history, blood and instrumental exams performed during the preparation to surgery were regular. During the perioperative surgery period the patient was undergoing to anti-DVT, antibiotic and anti-ossification prophylaxis according to the hospital protocol. During the surgery, the branch of the lateral circumflex was tied. Post-operative course was regular and after five days from surgery the patient was transferred to Rehabilitation department. On the 19th postoperative day the patient was subject to sudden onset of painful swelling on the right thigh. After Orthopaedic evaluation, a Color-Doppler-Ultrasound confirmed the presence of a hematoma partially arranged at the level of the swelling (13x5 cm). This hematoma was not apparently supplied. On the 22nd postoperative day, due to a persistence of low haemoglobin level, the patient has been subjected to an angio-CT which revealed an active arterial bleeding (Fig 1, Fig. 2).

An angiogram with retrograde left femoral access showed an active spreading of contrast solution at the right ascending femoral circumflex artery (Fig. 3,

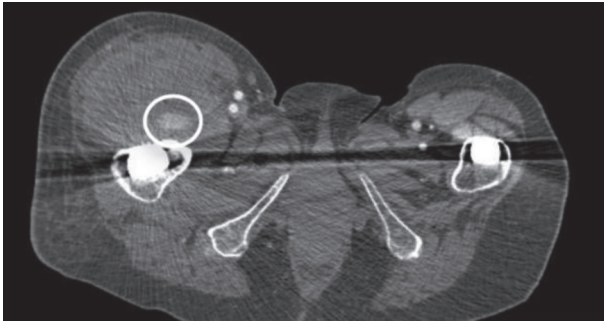


Figure 1. Active arterial bleeding on angio-CT scan



Figure 2. Active arterial bleeding on angio-CT scan

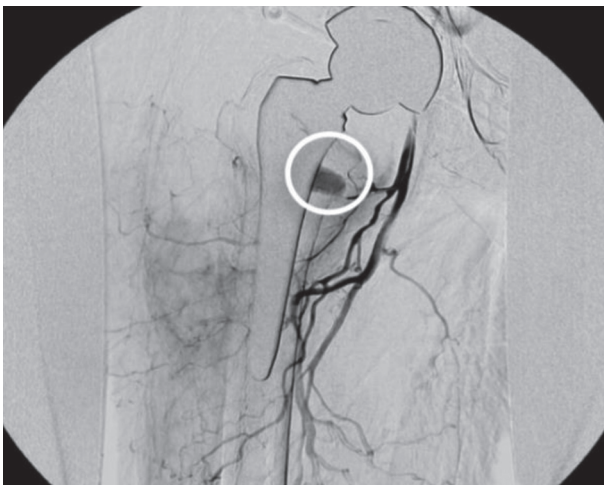


Figure 3. Active spreading of contrast solution at the right ascending femoral circumflex artery on angiogram

Fig. 4). Through coaxial system with guide and microcatheter (Terumo Interventional Systems®, Somerset, NJ, USA) and by placing a two 2 and a 4 mm diameter spirals, embolization on the main branch of the ascending one of the lateral circumflex artery was performed. (Boston Scientific®, Marlborough, MA, USA) (Fig. 5). After this procedure, the introducer sheath was re-

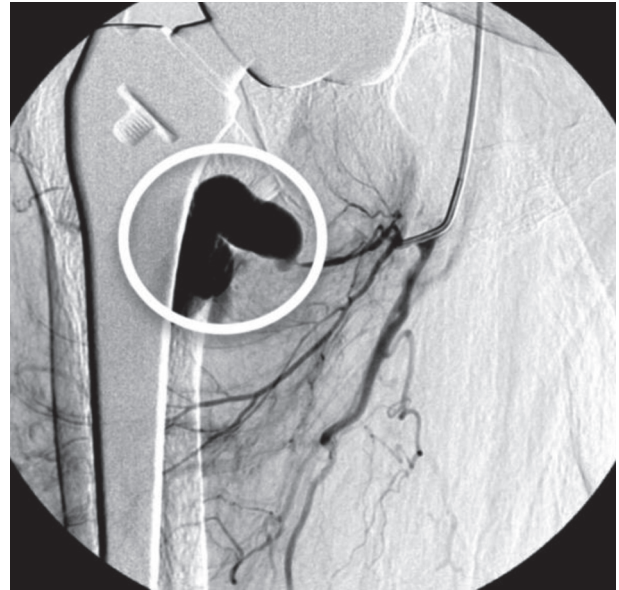


Figure 4. Active spreading of contrast solution at the right ascending femoral circumflex artery on angiogram

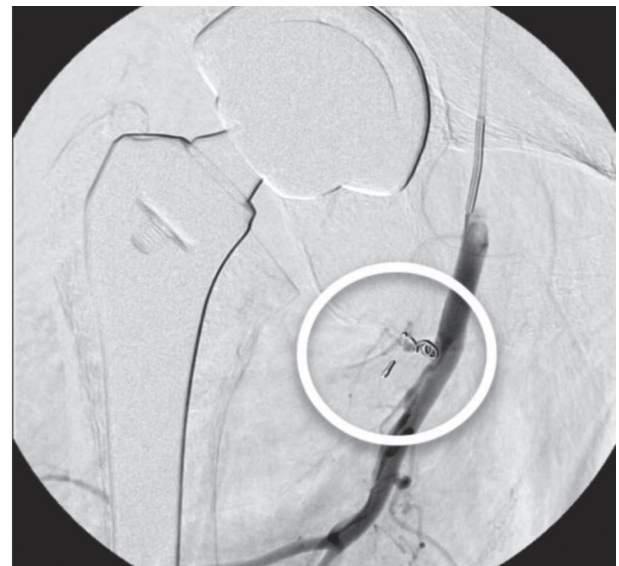


Figure 5. Spirals embolization on the main branch of the ascending one of the lateral circumflex artery

moved and replaced by an Angioseal (St. Jude Medical®, St. Paul, MN, USA).

Clinical reevaluation in the days following the procedure, showed a positive outcome with a stabilization of the post-operative blood exams, the absence of further anaemia and a progressive local resolution of the clinical conditions.

## Discussion

To prevent or minimize neurovascular injuries, which are one of the complications of hip arthroplasty, it is essential to have accurate knowledge of the anatomical structures and to recognize anatomical variants. During surgery, it is important to be cautious regarding excessive stretching, the utilization of the instrument which can easily cause damages, any bone cement leakage and the possible hematoma formation (6). Vascular injuries may manifest in many ways including bleeding, hemodynamic instability, presence of pulsatile mass, limb ischemia or occult blood loss. Any of these signs, isolated or combined, could represent a vascular injury, hence it should be considered an urgent angiogram (7). Color-Doppler ultrasound is the first level of Imaging method used to evaluate a vascular injury. CT scan and Magnetic Resonance Angiography are usually not applicable in joint replacement surgery because of the artefacts metal related. When non-invasive Imaging fails to reveal the injury, it is always required to submit the patient to an angiography. Endovascular treatments have been effective and safe interventional techniques in the acute or late postoperative period after elective orthopaedic surgery. In the case reported it is assumed a loosening of the ligature of the branch of the lateral circumflex occurred more than 20 days after the surgery with subsequent haemorrhagic spreading favoured by anticoagulant prophylaxis. These techniques should be considered as

the first option in the treatment of these kind of lesions (8).

**Conflict of interest:** Each author declares that he or she has no commercial associations (e.g. consultancies, stock ownership, equity interest, patent/licensing arrangement etc.) that might pose a conflict of interest in connection with the submitted article

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