Trauma Case Reports 29 (2020) 100352

Contents lists available at ScienceDirect

Trauma Case Reports

journal homepage: www.elsevier.com/locate/tcr

Case Report

Endovascular occlusion of iatrogenic lumbar artery pseudoaneurysm using liquid embolic agent: Case report

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ARTICLE INFO

Keywords:
Pseudoaneurysm
Lumbar artery
Endovascular occlusion

ABSTRACT

We describe a case of iatrogenic pseudoaneurysm of the fourth lumbar artery as a complication after transpedicular screw fixation in the lumbar spine. The lesion was succesfully occluded with endovascular liquic embolic agent infusion and the patient was fully recovered.

Case report

A 72-year-old male patient treated with oral anticoagulant for prosthetic heart valve presented long-term lower back pain and neurogenic intermittent claudication. Lumbar spine magnetic resonance (MR) image revealed severe lumbar scoliosis and L3-S1 spinal stenosis due to adjacent segment degeneration. The patient underwent T12–S1 posterior lumbar fusion with instrumentation. Oral anticoagulation was discontinued 5 days before surgery and replaced with low-molecular-weight-heparin (LMWH). The patient made an uneventful postoperative recovery and LMWH was initiated 24 h after surgery.

Three days after surgery, the patient present acute onset monoplegia affecting the left lower limb, and general discomfort with abdominal pain with sweating. Low hemoglobin level (6.4 g/dl) was observed on blood test. A CT scan revealed a large posterior epidural and paravertebral hematoma and an acute hematoma in the left psoas muscle suggesting pseudoaneurysm (Fig. 1). LMWH was discontinued. A diagnostic spinal angiogram was performed via right common femoral artery. Selective second left lumbar injection demonstrated two pseudoaneurysms in the left paravertebral space (Fig. 2A).

A decision was made to treat the pseudoaneurysms with selective embolization. A microcatheter with a detachable tip (Sonic 1.5F; Balt, Montmorency, France) with a 0.08-in. micro-guide wire (Hybrid; Balt, Montmorency, France) was advanced in a coaxial fashion through a 5-French diagnostic catheter across the lumbar artery to reach the lumen of the proximal pseudoaneurysm (Fig. 2B). A total of 4 ml of high-density liquid embolic agent (Squid 18; BALT, Montmorency, France) were injected through the microcatheter in the proximal pseudoaneurysm, and both pseudoaneurysms were succesfully occluded in the final control angiogram (Fig. 2C).

The patient was then re-operated and the posterior paravertebral and epidural hematoma was drained. On the first day after surgery, the patient was mobile and he reported significant pain relief. He was hemodynamically stable. LWMH was then initiated and replaced with oral anticoagulation after 24 h. After a few days, the patient's overall condition improved significantly and he was discharged two weeks after hematoma evacuation.

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https://doi.org/10.1016/j.tcr.2020.100352
Accepted 7 August 2020
Available online 10 August 2020

Fig. 1. Contrast-enhanced abdominal CT scan shows a large posterior paravertebral and epidular collection and a hyperdense hematoma the left psoas muscle at the level of L2.

Discussion

False aneurysms or pseudoaneurysms result from transmural rupture of the arterial wall and formation of a hematoma that remains in communication with the arterial lumen. This haematoma grows gradually and encroach upon the surrounding tissues. Sometimes the pseudoaneurysm can rupture causing massive hemorrhage which can be life threatening [1].

The therapeutic options have evolved over recent years and go from traditional surgery to less invasive approaches as echo-guided compression, percutaneous thrombin injection and endovascular procedures (embolization or placement of endoprostheses) [2]. Arteriography is indicated for hemodynamically stable patients, both for diagnosing and for treating hemorrhage by means of embolization. Endovascular approaches are the gold standard for treating deep arterial hemorrhage.

Selective embolization of pseudoaneuryms with liquic embolic agent has proven to be an effective technique for achieving complete occlusion of pseudoaneurysms, with no recurrences during follow-up [3–5]. Intraaneurysmal controlled injection of high-viscosity embolic liquid allows total pseudoaneurysm occlusion and parent artery preservation in most cases, with no further risk of aneurysm recanalization from colateral arteries.

Pseudoaneurysm of the lumbar arteries has been described as a result of penetrating injuries or blunt trauma [3]. The time at which pseudoaneurysm is presented is variable and can be at any time from the original injury until years later.

Only a few cases of iatrogenic lumbar injury following transpedicular screw fixation have been reported in the literature and most of them have a rapid course with hemodynamic deterioration. Lee et al. [4] described a massive hemorrhage of the lumbar artery after surgery to correct scoliosis in a 23-year-old patient, which led death of the patient several hours after surgery. Sandri et al. [5] reported a lumbar artery injury with sudden hemodynamic disorders following posterior spinal instrumentation for scoliosis, which was resolved with endovascular coiling. Latka et al. [6] described a lumbar artery pseudoaneurysm with delayed progression and gradual neurological deterioration without hemodynamic disturbances. The pseudoaneurysm was occluded with endovascular coiling.

Lumbar artery pseudoaneurysm is an uncommon but potentially life-threatening complication of lumbar screw fixation and should be considered in patients that present with flank pain and hemodynamic instability following surgery.

Selective lumbar arteriography should be performed to rule out lumbar arterial injury and liquid embolic embolization can be a safe and effective method of controlling the bleeding.

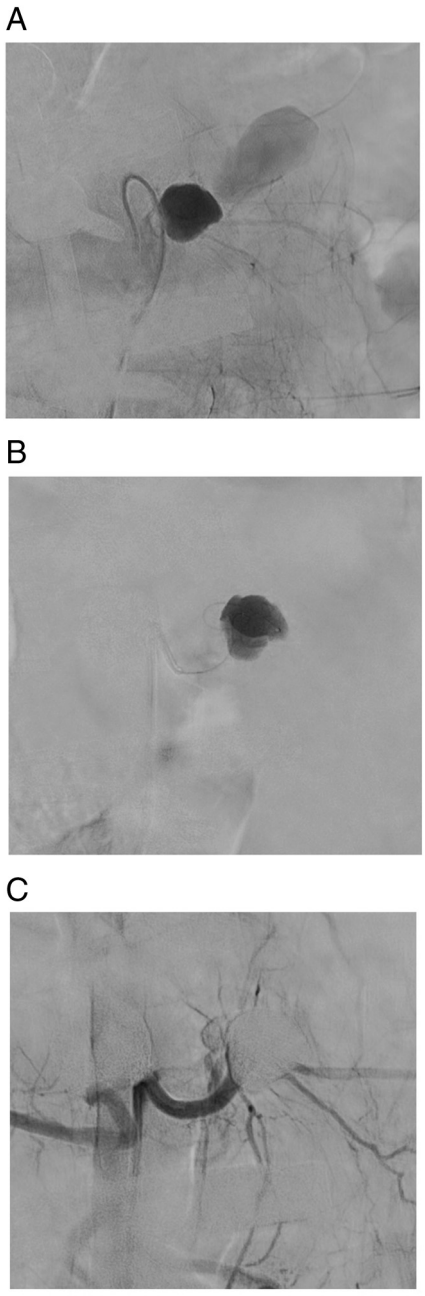

Fig. 2. . A. Selective angiography shows two pseudoaneurysms at the left second lumbar artery. B. Supraselective microcatheterism of the proximal pseudoaneurysm. C. Selective angiography after embolization shows occlusion of the pseudoaneurysm with preservation of the lumbar artery.

References

[1] B. Mohan, S. Singal, A.S. Bawa, P. Mahindra, M. Yamin, Endovascular management of traumatic pseudoaneurysm: short & long term outcomes, J Clin Orthop Trauma 8 (3) (2017) 276–280 Jul-Sep.
[2] N. Tulsyan, et al., The endovascular management of visceral artery aneurysms and pseudoaneurysms, J. Vasc. Surg. 45 (2) (2007 Feb) 276–283 discussion 283.
[3] S. Vashisht, V. Bachhal, V. Kumar, D. Kumar, Lumbar artery pseudoaneurysm following blunt trauma: a case report and literature review, Trauma Case Rep 23 (2019 Oct) 100232 (Álvarez Postigo M[1], Pizones Arce J[2], Izquierdo Núñez E[3]).
[4] K.H. Lee, J.H. Park, J.W. Chung, et al., Vascular complications in lumbar spinal surgery: percutaneous endovascular treatment, Cardiovasc. Intervent. Radiol. 23 (1) (2000) 65–69.
[5] A. Sandri, D. Regis, M.A. Marino, et al., Lumbar artery injury following posterior spinal instrumentation for scoliosis, Orthopedics 34 (4) (2011) 24.
[6] K. Latka, et al., Iatrogenic lumbar artery pseudoaneurysm after lumbar transpedicular fixation: case report, SAGE Open Medical Case Reports 7 (2019) 1–4.