

Transcatheter Arterial Embolization for Hemorrhage from the Lumbar Artery after Radiofrequency Ablation for Lumbar Disc Herniation: A Case Report and Literature Review

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Abstract

Case Report

We reported a rare case of hemorrhage from right 4th lumbar artery, which caused by radiofrequency ablation (RFA) treatment for lumbar disc herniation (LDH). We performed transcatheter arterial embolization (TAE) and successfully controlled hemorrhage without immediate and delayed complication. To the English-language literature review and best our knowledge, there are no reports describing the TAE for lumbar arterial major hemorrhage after RFA for LDH.

Keywords: Radiofrequency ablation, Lumbar herniated disc, lumbar artery, bleeding, intervention, embolization.

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INTRODUCTION

Lumbar disc herniation (LDH) is a common present in adult and frequently causing low back pain or radiating pain to the leg. The degeneration causes the protrusion or extrusion of intervertebral disc directly to the lower lumbar nerve root, resulting in compression and chemical stimulation, and it plays a key role in mechanism of LDH-related pain [1, 2]. LDH is usually managed with conservative treatment or surgery [3]. Recently, minimally invasive treatment technique has been arising with small wound, little bleeding, and rapid recovery. Radiofrequency ablation (RFA) therapy is an early applied treatment option for LDH as a minimally invasive treatment technique with a wide range of applications in a long time [4-6]. Although reported complications are rare nor fatal [6], serious complications can occur such as infection or bleeding. Recently, we encountered a case of huge retroperitoneal hematoma with active bleeding from right 4th lumbar artery caused by RFA for LDH. In this report, we introduce a case of successfully treated the patient by performing transcatheter arterial embolization of right 4th lumbar artery after RFA for LDH.

CASE REPORT

A 52-year-old woman was referred to our emergency department with acute right flank, back pain and bruising. Approximately 3 hours earlier, she had undergone RFA treatment for her LDH in the right lower back at a local hospital. She had a medical history of hypertension and spinal stenosis. At initial physical examination, her vital signs were as follows: blood pressure 100/70mm Hg; pulse rate: 76 beats/min; respiratory rate, 20 breaths/min; body temperature, 37.5 °C. Her hemoglobin level was 8.4 g/dl, and hematocrit was 24%. Computed tomography (CT) examination was performed after initial fluid resuscitation and CT revealed that huge hematoma in right retroperitoneum and active extravasation of contrast medium from right 4th lumbar artery (Figure 1). The patient immediately referred to interventional radiology, and superselective right 4th lumbar arteriography showed extravasation of contrast from distal branch of right 4th lumbar artery (Figure 2). We successfully performed transcatheter arterial embolization by using Histoacryl (N-butyl-2-cyanoacrylate)-Lipiodol mixture. A post-embolization arteriogram showed successful embolization of the active bleeding (Figure 3). The patient had no procedure related early and late complications and was discharged 9 days later.

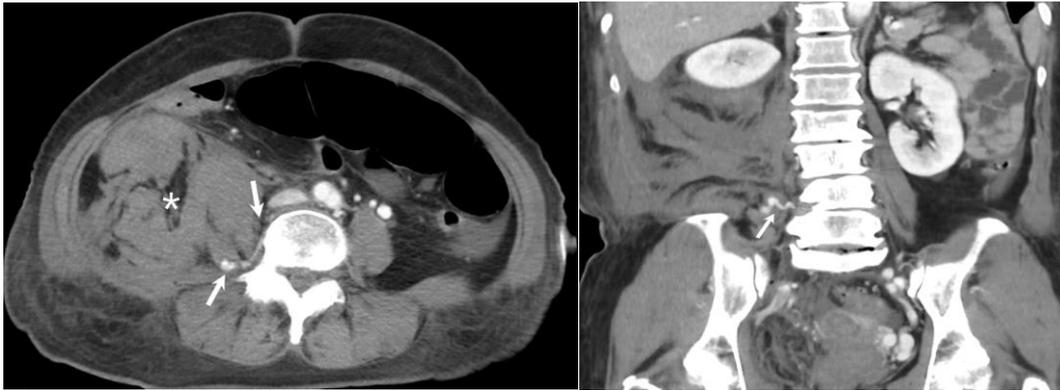


Figure 1A and 1B: Contrast-enhanced CT demonstrates a large hematoma at right retroperitoneum (star) with active bleeding from right 4th lumbar artery (arrow)



Figure 2: Right 4th lumbar arterial superselective arteriography demonstrates active extravasation from a branch of lumbar artery

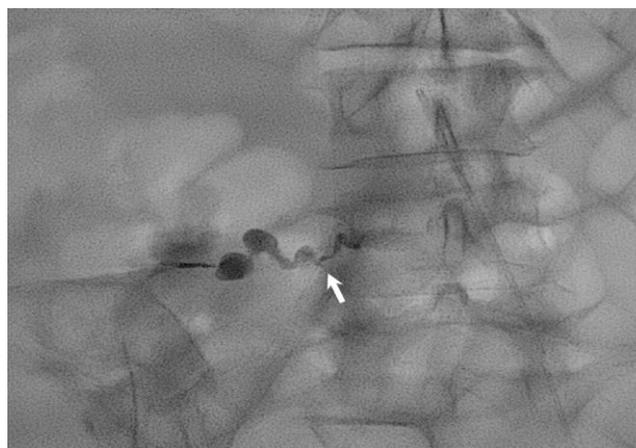


Figure 3: Post-embolization image from the same patient show successful control of bleeding and glue cast in situ

DISCUSSION

The lumbar arteries located in the lower back or lumbar region. The lumbar arteries are in parallel

with the intercostal arteries, and arise from the back of the aorta, opposite the bodies of the upper four lumbar vertebrae.

The injury of lumbar arteries is uncommon and a cause of potentially life-threatening retroperitoneal hemorrhage [7]. Most of injury of lumbar arteries divide into traumatic injury and iatrogenic cause such as percutaneous renal procedure or lumbar spine surgery. When lumbar artery injured, massive retroperitoneal hemorrhage can occur and significant change in hematocrit levels are common with hemodynamic unstable state.

CT examination with contrast enhancement is important to evaluate retroperitoneal hemorrhage including injury of lumbar arteries and transcatheter angiography are useful in the diagnosis and treatment of lumbar artery injuries, including pseudoaneurysm.

Liu *et al.*, reviewed the reported data related to iatrogenic lumbar artery injury in spine surgery by conducting a comprehensive search in the Web of Science, PubMed, EMBASE, and Chinese biomedical databases [8]. They reported that a total of 26 cases of lumbar artery injury were reported, and injury of lumbar arteries have been treated with TAE in 20 cases, percutaneous embolization in 2 cases, surgical ligation in 1 case, and steroid and cyclophosphamide treatment in 1 case. All patients were treated successfully. In our case, we used NBCA as an embolic agent, is a liquid and a permanent adhesive material that can be injected through a microcatheter.

In recent literature review, Trinidad *et al.*, reported that RFA for LDH is useful treatment strategy that can achieve very similar outcomes to spinal surgery with a very high level of patient's satisfaction [6]. In addition, no significant adverse effects were reported after RFA, although a few patients reported mild pain at the puncture site in the days following the treatment, which was resolved spontaneously without any need for further treatment.

In conclusion, although RFA for LDH is widely applied, minimally invasive and safe procedure, unexpected fatal retroperitoneal hemorrhage by injury of lumbar artery can occur, and attention should be given to the procedures that are likely to cause lumbar

artery injury. Once a diagnosis of lumbar artery injury has been confirmed, superselective transcatheter arterial embolization is safe and preferred treatment.

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