



## Colon Injury during Intraoperative Puncture of Percutaneous Endoscopic Lumbar Discectomy: A Case Report

Dingwen He, Xinxin Miao, Jingyu Jia and Xigao Cheng\*

Department of Orthopaedic Surgery, The Second Affiliated Hospital of Nanchang University, China

### Abstract

**Background:** Percutaneous Endoscopic Lumbar Discectomy (PELD) has been promoted as a useful surgical strategy. The efficacy and safety of PELD have been improved by technological innovation with time. But, there are still some complications have been reported. We have countered a non-reported intraoperative puncture-related complication of colon injury, and consequently successful diagnosis and conservative management which wish to attack attention to this hazard and avoid it.

**Case Description:** A 63-year-old female with abdominal pain and fever 1 day after PELD. According to the patients' complaints of recurrent fever with constant abdominal, laboratory tests, imaginings and incision pain persistently, confirmed diagnosis (septicemia) and guidelines of management, so we decided to carry out anti-infection therapy (Yaan), fasting, gastrointestinal decompression, maintenance of water electrolyte balance and symptomatic support treatment. After constant conservative treatment, the results of laboratory tests were negative and the previous described symptoms of the case were relieved apparently. Finally, the result of colonoscopy revealed that the organization was intact. The patient made smoothly recovery and was free of symptoms before discharged.

**Conclusion:** The colon injury during PELD procedures is a scanty but a serious complication. A detail plan in advance and prudent operation are very important to improve the safety of this procedure. We hope that this report of PELD complications can help more colleagues, especially the beginner.

**Keywords:** Percutaneous endoscopic lumbar discectomy; Colon injury; Intraoperative puncture-related complications

### Introduction

Posterolateral Endoscopic Lumbar Discectomy (PELD) has been encouraged as a useful surgical strategy. The efficacy and safety of PELD have been improved by technological innovation, but the puncture-related complications of this approach are still difficult to avoid. As strong clinical evidences cumulated, several complications of PELD have drawn our attention, including the intraoperative injury to vascular, neural structures, guide wise breakage and failure of the surgery [1-2]. However, no case about colon injury by intraoperative puncture of PELD have been reported. Here, we have countered a non-reported intraoperative puncture-related complication of colon injury, and consequently successful diagnosis and conservative management which wish to attack attention to this hazard and avoid it [3-5].

### Case Presentation

A 63-year-old female (Weight 40 kg, height 154 cm) with abdominal pain and fever (Temperature fluctuates around 38 degrees) 1 day after PELD. Her past medical history including several months of radiological pain of left lower limp and were diagnosed with L4-L5 disc herniation and the lumbar spinal canal stenosis. The physical examination documented abdominal soft, left lower and middle abdomen only with deeply pressure pain but no obvious rebound pain. In addition, there were no noticeable positive signs of both lower limbs. After preoperative evaluation carefully, an L4-L5 PELD via a left posterolateral transforaminal approach was performed under local anesthesia. In the process of puncture, she complained that there was a tractively discomfortableness in the left inguinal area. Postoperative physical examination revealed numbness and pain of the left lower limp

### OPEN ACCESS

**\*Correspondence:**

Xigao Cheng, Department of Orthopaedic Surgery, The Second Affiliated Hospital of Nanchang University, China,  
E-mail: 406521215127@email.ncu.edu.cn

**Received Date:** 22 Jun 2018

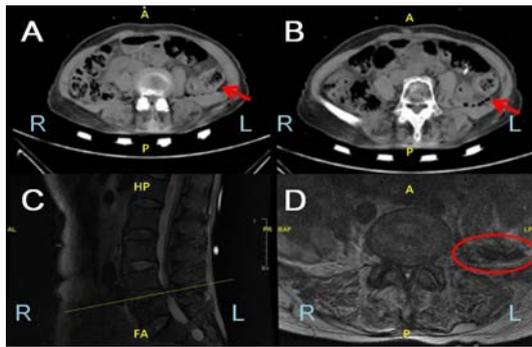
**Accepted Date:** 13 Jul 2018

**Published Date:** 18 Jul 2018

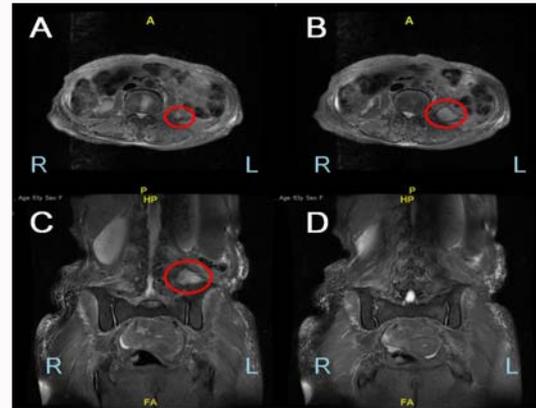
**Citation:**

He D, Miao X, Jia J, Cheng X. Colon Injury during Intraoperative Puncture of Percutaneous Endoscopic Lumbar Discectomy: A Case Report. *Clin Surg.* 2018; 3: 2042

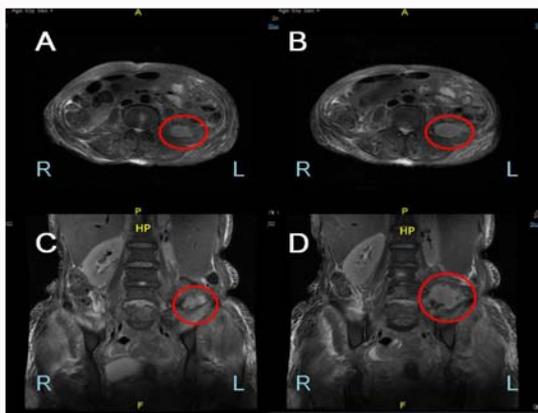
**Copyright** © 2018 Xigao Cheng. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.



**Figure 1:** A and B showed the CT images of lumbar on the 2nd postoperation day; C and D presented the MRI images of lumbar on the 3rd postoperation day. Red arrows and circle denoted the pathological positions. Yellow line represented segment of the disease. "A" and "P" represent anterior and posterior respectively, "HP" and "FA or F" represent head and final correspondingly. "R" and "L" represent right and left respectively. Yellow slant locates the affected segments in sagittal section.



**Figure 3:** The MRI images on the 36th postoperation day. Red circles inhibited the pathological positions. "A" and "P" represented anterior and posterior respectively, "HP" and "FA or F" represented head and final correspondingly. "R" and "L" represented right and left respectively.



**Figure 2:** The MRI images on the 18th postoperation day. Red circles denoted the pathological positions. "A" and "P" represented anterior and posterior respectively, "HP" and "FA or F" represented head and final correspondingly. "R" and "L" represented right and left respectively.

were relieved significantly. However, when returning to the ward, the patient complained of a paroxysmal pain around the navel and the discomfortableness of the left inguinal area disappeared immediately, subsequently with chills and high fever (41 degrees) at night. The laboratory tests indicated the value of neutrophilic granulocyte (96.1%) was higher than the normal, the expression of C-reactive protein (228 mg/L) was increased rapidly, and the erythrocyte sedimentation rate (59 mm/h) was accelerate apparently. Urgent abdominal computed tomography (CT) showed descending colonic wall swelling combined with adjacent retroperitoneal exudation, gas accumulation and perforation probably on the 2nd postoperation day (Figure 1A and 1B), and magnetic resonance imaging (MRI) reported a small amount of blood accumulation in the front of the left square muscle probably on the 3<sup>rd</sup> postoperation day (Figure 1C and 1D). Empiric using of antibiotic therapy was performed. On the 5<sup>th</sup> postoperation day, the *E. coli* was cultured in the blood of patient that indicated septicemia and abdominal infection. According to the patients' complaints of recurrent fever with constant abdominal and incision pain persistently, confirmed diagnosis and guidelines of management, so we decided to carry out anti-infection therapy (Yaan), fasting, gastrointestinal decompression, maintenance of water electrolyte balance and symptomatic support treatment. On

the 18<sup>th</sup> postoperation day, we executed celiac puncture and drainage as a gray brown purulent liquid. After 2 weeks constant treatment, the results of laboratory tests were negative and the previous described symptoms of the case were relieved apparently. Nevertheless, under the previous treatment, the patient had a high fever again on the 20<sup>th</sup> postoperation day. As early as the 18<sup>th</sup> postoperation day, the results of the reexamination of abdominal MRI showed that the abnormal signal range of the left retroperitoneal space was weakened and the edema of the abdominal wall was decreased and the soft tissue of the buttocks was reduced. Furthermore, the signal range of the left retroperitoneal space was weaker than the former which was re-examined by the abdominal MRI scan on the 22<sup>nd</sup> postoperation day. The patient pointed out that the abdominal pain was disappeared and the fever was gone, in addition, the laboratory findings returned to the normal range. After 35 days later, the celiac puncture was implemented again and white purulent liquid was drained from the tube, moreover, the bacteria culture was negative. On the 36<sup>th</sup> postoperation day, the MRI scan (Figure 3) inhibited that the pathological position diminished when compared with previous imaging results (Figure 2). The drugs of Yaan and Amikacin were still used for anti-infection in 2 weeks by the way of intravenous drip and micro pump (Intravenous drip and micro pump). Finally, the result of colonoscopy revealed that the organization was intact. The patient made smoothly recovery and was free of symptoms before discharged.

## Discussion

This is a non-reported case report of a colon injury during PELD procedures. Colon injury is a serious complication in percutaneous endoscopic spine surgeries. And it is actually caused by the inaccurately puncture needle angel or working channel which entered into the abdominal contents. For the cases of lower lumbar regions, it happened possibility when the distance from needle entry point to midline is too far. Generally, skin entry point for needle insertion is calculated based on pre-operative MRI and CT by measuring distance from midline and painting the needle trajectory aimed to target ruptured fragment without entering peritoneal sac and just to graze the facet [6]. Therefore, it is essential to study the imaging data detailed and determine the puncture program appropriately before operation. For the cases of upper lumbar region, not only colon injury should be considered, but also kidney injury must be noticed. In this case, the patient complained of a tractively discomfortableness in the

left inguinal area firstly, then transferred to a paroxysmal pain around the navel when returning to the ward. Unfortunately, the patients' feedback in the operation neither gets a timely response nor rational analysis under local anesthesia. Therefore, we need to reflect that both operate carefully and focuses on the patients' chief complaint are very important to succeed in surgery. Once the patient has an adverse reaction, the operation should be stopped immediately and placated the patient firstly, or else, continued after a calm assessment and patients permit.

According to the symptom (Infectious fever, abdominal pain), the physical examination, the laboratory findings (Escherichia coli of bacterial culture result) and the imaging of the patient, we made the diagnosis of sepsis and retroperitoneal infection. Considering the premise of sepsis and retroperitoneal infection, we judged that the cause of this series of complications was intraoperative colon injury. Once this complication occurred reluctantly, it is very important to choose a feasible treatment consist of conservational therapy and surgical therapy (exploratory laparotomy and fistulation). Firstly, surgical therapy would not be supplied under the condition of patient although it was standard management. Secondly, under the guidance of therapeutic guide [7,8], the management of septicemia and retroperitoneal infection caused by colon injury should be disposed as soon as possible, such as early rehydration and symptomatic support treatment. For regard to the suspected retroperitoneal infection, empiric using of antibiotic therapy, controlled the source of infection and targeted anti-infection therapy according to the results of co-culture and drug sensitivity were accomplished. In the condition of previously described, fasting and intestinal decompression were also necessary if there were additional symptoms of abdominal pain and distention simultaneously. Through clinical diagnosis data and imaging information, we found that the patient recovered well without exploratory laparotomy or fistulotomy.

## Conclusion

In summary, the colon injury during PELD procedures is a serious complication. A detail plan in advance and prudent operation are very important to improve the safety of this procedure. Once it does occur, a series of complications caused by colon injury would be managed with reasonable analysis and great experience. We hope that this report of PELD complications can help more colleagues, especially the beginner.

## Acknowledgment

This work was supported by the National Natural Science Foundation of China (No. 81660357 to Cheng Xigao).

## References

1. Yeung, A. T, Tsou P. M., Posterolateral endoscopic excision for lumbar disc herniation - Surgical technique, outcome, and complications in 307 consecutive cases. *Spine*. 2002;27(7):722-31.
2. Guan, X., Zhao S, Gu X, Zhang H, He S., Guide wire breakage during posterolateral endoscopic lumbar discectomy procedure: A case report. *Journal of Back and Musculoskeletal Rehabilitation*. 2017;30(2):383-863.
3. Ahn Y, Lee S.-H, Lee J. H, Kim J. U, Liu W. C. Transforaminal percutaneous endoscopic lumbar discectomy for upper lumbar disc herniation: clinical outcome, prognostic factors, and technical consideration. *Acta Neurochir*. 2009;151(3):199-206.
4. Choi I, Ahn JO, So WS, Lee SJ, Choi IJ, Kim H. Exiting root injury in transforaminal endoscopic discectomy: preoperative image considerations for safety. *European Spine Journal*. 2013;22(11):2481-87.
5. Ruetten S, Komp M, Merk H, Godolias G. Full-endoscopic interlaminar and transforaminal lumbar discectomy versus conventional microsurgical technique - A prospective, randomized, controlled study. *Spine*. 2008;33(9):931-9.
6. Choi G, Pophale C. S, Patel B, Uniyal P. Endoscopic Spine Surgery. *Journal of Korean Neurosurgical Society*. 2017;60(5):485-97.
7. Solomkin JS, Mazuski JE, Bradley JS, Rodvold KA, Goldstein EJC, Baron EJ, et al. Diagnosis and management of complicated intra-abdominal infection in adults and children: guidelines by the Surgical Infection Society and the Infectious Diseases Society of America . *Clinical Infectious Diseases*. 2010;50:133.
8. Rhodes A, Evans L. E, Alhazzani W, Levy MM, Antonelli M, Sevransky JE. Surviving Sepsis Campaign: International Guidelines for Management of Sepsis and Septic Shock: 2016. *Intensive Care Medicine*. 2017;45(3):304-37.