



PERCUTANEOUS STABILIZATION AND ENDOSCOPIC DECOMPRESSION OF A COMPRESSION FRACTURE AT L1 WITH AN EXTRUDED BONE FRAGMENT REMOVED UNDER LOCAL ANESTHESIA: A CASE REPORT

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ARTICLE INFO

Article History:

Received 29th July, 2017
Received in revised form
14th August, 2017
Accepted 17th September, 2017
Published online 10th October, 2017

Key Words:

Glossodynia,
Glossopyrosis,
Burning Mouth.

ABSTRACT

Oral health is an The open decompression and stabilization under general anesthesia are thought to be necessary for unstable compression fractures with accompanying canal compromise. With advancement of percutaneous minimally invasive techniques, however, it is technically feasible and safe to remove the intracanal bone fragment with percutaneous endoscopic techniques influenced by Anthony Yeung of the United States for the transforaminal visualized YESS technique.

Method:

- Local anesthesia.
- Percutaneous pedicle screw fixation and fusion to restore stability.
- Intracanal bone fragment was removed from both sides by percutaneous endoscope for decompression.

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Citation: Zexing Zhu, Leiming Zhang, Yankang Liu, Heng Yuan and Xifeng Zhang. 2017. "Percutaneous stabilization and endoscopic decompression of a compression fracture at L1 with an extruded bone fragment removed under local anesthesia: a case report.", *International Journal of Development Research*, 7, (10), 16092-16094.

INTRODUCTION

Unstable compression fractures with accompanying canal compromise are usually treated with open decompression and stabilization under general anesthesia [1]. With advancement of percutaneous minimally invasive techniques, however, it is technically feasible and safe with the advancement of percutaneous and endoscopic techniques brought to China by Endoscopic Pioneers from the USA and Germany [Yeung, 2017]. We present a case of unstable compression fracture of lumbar with accompanying canal compromise, the decompression of which were carried out by the percutaneous minimally invasive endoscopic technique after the fixation by the percutaneous pedicle screw fixation technique. The operation was completed with local anesthesia.

No study has yet reported two techniques applied to one case of unstable compression fracture of lumbar with accompanying canal compromise.

Case Report

A 29-year old man walked to our outpatient department following a fall with the chief complaint of back pain for 3 weeks following his fall. Sitting or standing in one position could exacerbate pain, and lying down could relieve the pain. Dysuria existed. The preoperative X-ray fluoroscopy, CT and MRI identified an unstable compression fractures with accompanying canal compromise because of a intracanal bone fragment. (Figure1). Physical examination: Tenderness was present at the affected spinous process

(T12, L1, L2). The lower extremities muscular strength and muscular tone were normal. Straight-leg raising test was negative. TLICS: 7 points.



Figure 1. The preoperative X-ray fluoroscopy, CT and MRI presented that unstable compression fractures with accompanying canal compromise because of the intracanal bone fragment

The first step: Percutaneous Fusion

From T12 to L2 pedicle screws were performed by x-ray fluoroscopy with percutaneous pedicle screw fixation system under local anesthesia of 1% lignocaine. Fixation did not aggravate the patient's symptoms, but the intracanal bone fragment didn't be reset either (Figure 2).

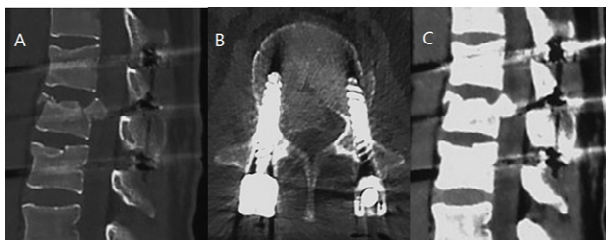


Figure 2. The intracanal bone fragment did not reset and did not aggravate depression either

The second step: Percutaneous Decompression

Located the point of intracanal bone fragment of L1 by x-ray fluoroscopy, two 18-gauge needles were inserted along the guiding wire from both sides to the target under local anesthesia of 1% lignocaine. Then on each side, a stab incision of about 6 mm was made and following the stepwise-dilating cannulas, the spine endoscope was pushed to the intracanal bone fragment of L1 (Figure 3). Using the electric grinder of the percutaneous endoscopic, intracanal bone fragment was removed from both sides (Figure 4). Percutaneous fusion with percutaneous pedicle screw fixation system placement has also evolved to make it safe and feasible for experienced endoscopic surgeons. The postoperative CT presented that the intracanal bone fragment was removed (Figure 5).

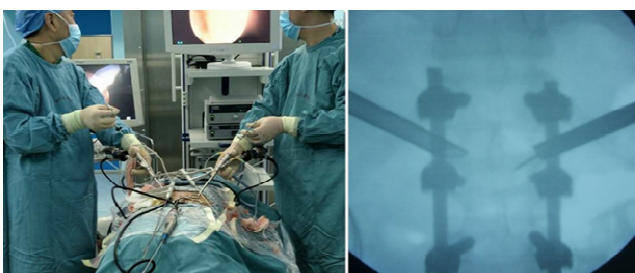


Figure 3: On each side, the spine endoscope was pushed to the intracanal bone fragment of L1

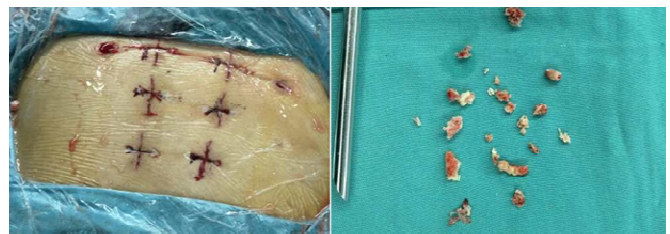


Figure 4. Using the electric grinder of the percutaneous endoscopic, intracanal bone fragment was removed from both sides

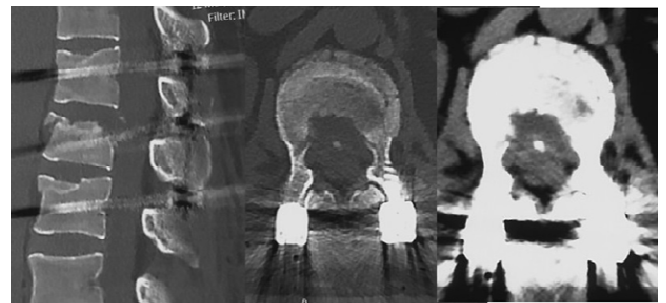


Figure 5. The postoperative CT presented that the intracanal bone fragment was removed

DISCUSSION

Unstable compression fractures with accompanying canal compromise are usually treated with open decompression and stabilization under general anesthesia [Lorente, 2017]. The adequate decompression is very important, but it is almost impossible for T12-L1 because of the conus medullaris is directly behind the intracanal bone fragment [Zhao et al., 2016]. For this case, dysuria existed, but the lower extremities muscular strength and muscular tone were normal and straight-leg raising test was negative. We felt that an open operation of decompression and stabilization would be more risky and traumatic that may lead to further neurologic deterioration [Wu, 2015].

With advancement of percutaneous minimally invasive techniques, however, it is technically feasible and safe with the advancement of percutaneous and endoscopic techniques brought to China by Endoscopic Pioneers from the USA and Germany [Yeung, 2014]. In this case of unstable compression fracture of lumbar with accompanying canal compromise, percutaneous fusion with percutaneous pedicle screw fixation system placement made it safe and feasible for experienced endoscopic surgeons. The local anesthesia allowed the patient to tell the surgeon of his feeling, so it is safer than general anesthesia [Cosman et al., 2017]. The decompression was carried out by the percutaneous minimally invasive endoscopic technique after the fixation by the percutaneous pedicle screw fixation technique [Yeung, 2011; Yeung, 2011]. No study has yet reported two techniques applied to one case of unstable compression fracture of lumbar with accompanying canal compromise

Conclusion

In some cases, the percutaneous minimally invasive technique could be thought more safely and effectively than the open operation of decompression and stabilization.

Acknowledgement

Deeply thanks to Dr Anthony Yeung, because the percutaneous minimally invasive techniques adopted in China are mostly influenced by Anthony Yeung of the United States for the transforaminal visualized YESS technique. Now the endoscopic MIS surgery is being increasingly welcomed by Chinese doctors and patients, because of the many advantages of endoscopic techniques, such as fewer traumas, rapid recovery, and a minimal complication rate. Also, I would like to thank Leiming Zhang for the patient's doctor in charge, Zexing Zhu for data collection and paper writing. Last but not the least, I would like to thank Yankang Liu and Heng Yuan, who completed this case as assistants.

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