Hollow-organ perforation following thoracolumbar spinal injuries of fall from height

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**ABSTRACT**

INTRODUCTION: Spinal trauma is the cause of high mortality and morbidity, the fall from height as mechanism that can cause a wide variety of lesions, associated both with the direct impact on the ground and with the deceleration. In such fall cases greater heights and higher mortality are involved.

PRESENTATION OF CASE: We report the successful management of life-threatening hollow-organ perforation following thoracolumbar spinal injury.

DISCUSSION: Perforation of the hollow-organ in the setting of thoracolumbar trauma may delay the diagnosis and can have devastating consequences.

CONCLUSIONS: This case supports the recommendation for neurosurgeon in the setting of thoracolumbar injury that perforation of the hollow-organ can have devastating consequences. It is vital to achieve an early diagnosis to improve survival rate.

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1. Introduction

The incidence of hollow-organ injury are not very common sequel following spinal trauma but has increased steadily. It has become difficult to diagnose apparent that the clinical sign of hollow-organ injury may be delayed considerably. Clinical sign of spinal cord injury beside hollow organ perforations can challenge the attending neurosurgeon for diagnostic [1,2,6–8].

In this case reports we describe the diagnosis and treatment of hollow-organ perforation following thoracolumbar spinal injury.

2. Case 1

A male 28 years old, malay, fall from building at 8 m height. There was no immediate loss of consciousness and initial examination at the scene revealed that her pupils were equal and reactive to light and he was moving upper limbs and lower limbs was 4/5. On arrival at A&E her heart rate was 110 beats/min and blood pressure was 120/90 mm Hg. The Glasgow Coma Scale was 15/15. Thoracic plain X-ray revealed Spondilolisthesis and foraminal also canals stenosis VL1-2 (Fig 1A). After 30 min arrival at the hospital the patient complaint a diffusely tender abdomen, on examination by digestive surgeon suspected diffuse peritonitis, because we have no insurance and limited patient funding we did not performed MRI examination. A midline for laparotomy was performed to identify an intra-abdominal hollow organ perforation canals stenosis VL1-2 (Fig 1B).
revealed jejunal perforation. (Fig 2A). After laparotomy the patient change to prone position and we performed midline incision for laminectomy decompression and posterior stabilisation with pedicle screw.

3. Case 2

A male 40 years old, malay, fall from 10 m building height. There was no immediate loss of consciousness and initial examination at the scene revealed that her pupils were equal and reactive to light and he was moving upper limbs and lower limbs was 3/5. On arrival at A&E her heart rate was 120 beats/min and blood pressure was 110/90 mm Hg. The Glasgow Coma Scale was 15/15. Thoracolumbar plain X-ray revealed burst fracture on first lumbar vertebrae and canal and foraminal stenosis (Fig 1B) because we have no insurance and limited patient funding we did not performed MRI examination. The patient complaint a abdominal pain during transfer from primary to our hospital, on arrival examination by digestive surgeon revealed diffusely tender abdominal and suspected diffuse peritonitis. The patient was transferred to the operating theatre 45 min after arrival at the hospital. A midline for laparotomy was performed to identify an intra-abdominal hollow organ perforation revealed ileum perforation. (Fig 2B). After laparotomy the patient change to prone position and we performed midline incision for laminectomy decompression and posterior stabilisation with pedicle screw.

4. Discussion

In patients of fall from height, the kinetic energy experienced by the body, depends on its mass and the height (as a determinant of the velocity), Ek = (0.5)(m)(v)^2, there was energy exchange between the ground and the body determines injury in variable severity. Several factors involved such as height, mechanism of body hits the ground and the velocity. Several lesion was significantly more frequent in patients of falls among them fractures of pelvis and spinal trauma [3].

The severity of injury can be inferred by the higher frequency of spinal cord injury, fracture of pelvis and fracture sof long bone [4,5]. In recent study observed that fall from height was the mechanism of injury 12.2% of trauma victims in Brazil, another study in Taiwan from 1996–1999 fall causing 38.2% of fatal injuries among men and 39.2% fatalities among women. In Singapore fall from height cause of injuries were 10.35% among various type of injury. The fall from height can cause a wide variety of lesions, associated both with the direct impact on the surface and with the deceleration, in such cases, falls from greater heights usually involved higher mortality rates and other factors is height, landing site and head, thoracic and abdominal lesions [3,6,7]. The mechanism of hollow organ perforation following blunt thoracoabdominal is the theory suggests that these injuries may arise due to the shear stress exerted on the hollow organ wall. Other theories disruption of the ileum blood supply resulting in ischemia and late perforation, or a blast effect caused by a concomitant spine injury [9].

An excellent functional outcome was achieved for these patient the first Patients have motoric improvement 5/5 and second patient have motoric improvement 4/5 six months following surgery with no abdominal discomfort. The severity of the spine and hollow-organ injury combined with transfer time to the superspeciality hospital mandated immediate, definitive intervention locally before transfer. The with neurosurgical team contacted were at all times fully informed of the patient’s progress and consulted on management decisions. The operating digestive and neurosurgeon was familiar with the operation required and emergent laparotomy and laminectomy was successfully undertaken as recommended by the neurosurgical team consulted.

5. Conclusion

This case supports the recommendation for neurosurgeon in the setting of thoracolumbar injury that perforation of the hollow-organ can have devastating consequences. It is vital to achieve an early diagnosis to improve survival rate.

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