

# Paraplegia and fatal outcome following cervical fracture and dislocation due to blunt trauma: a case study

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**Cite this article:** Alpaslan M, Baykan N. Paraplegia and fatal outcome following cervical fracture and dislocation due to blunt trauma: a case study. *Intercont J Emerg Med.* 2023;1(1):12-14.

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**Submit Date:** 17/03/2023

**Accept Date:** 30/03/2023

## ABSTRACT

Vertebral traumas are most common in the cervical vertebrae. While most instead of traumas are due to traffic accidents and falling from a height, the rate of cervical fractures secondary to blunt trauma is extremely low. In this case, cervical fracture caused by blunt trauma in the neck region with animal blow and death secondary to paraplegia and other complications that developed afterward were reported. According to the literature, cervical fracture and dislocation are rare traumas with high morbidity and mortality rates. Taking protective measures will always be lifesaving.

**Keywords:** Emergency medicine, cervical fracture, paraplegia

## INTRODUCTION

Vertebral fractures as a result of trauma are common in emergency departments. Early diagnosis and correct treatment methods in the management of patients are very important in reducing the rate of morbidity and mortality. The most common causes of vertebral fractures due to trauma are traffic accidents and falls from a height.<sup>1</sup> Although vertebral traumas are most common in the cervical vertebrae (55%), thoracic, lumbar and lumbosacral traumas are seen at similar frequencies.<sup>2</sup> The rate of fractures and dislocations in the cervical region is less than in other vertebral traumas, and it is essential because the clinical course is more negative.<sup>3</sup> In this case report, sudden paraplegia and complications after cervical vertebral fracture and dislocation due to blunt trauma, which are rare, are mentioned.

## CASE

A 54 year old male patient received blunt trauma to the neck region as a result of the startle of the animal during the slaughter of cattle in the morning hours of the feast of sacrifice and then fell to the ground. The patient was brought to the emergency room by ambulance teams due to urinary incontinence and weakness in the legs after neck trauma. Vital signs were examined and blood pressure was 140/80 mmHg, pulse was 96, fever was 36.7°C, and oxygen saturation was 98. On physical examination, the patient was oriented and cooperative. The patient had neck pain and a feeling of weakness and numbness in the lower

extremities. There was no response to painful stimuli in the lower extremities. Neurological examination revealed a 3/5 loss of motor strength in the legs and hypoesthesia on sensory examination. Urinary incontinence also occurred during the incident. Laboratory tests and computed tomography (CT) scans were performed on the patient. No pathology was detected in the lower extremities on direct X-ray. Anterolisthesis and facet joint locking were observed at the C6 and C7 levels of the cervical vertebrae (**Picture 1**), (**Picture 2**). Magnetic resonance (MR) imaging of the cervical vertebra region was performed on the patient (**Picture 3**). The patient was evaluated by a neurosurgeon and referral to a higher health institution was planned due to advanced tissue damage in the spinal cord and the development of paraplegia in the patient. During this period, analgesic therapy and intravenous 250 mg methylprednisolone therapy were administered. The clinical course of the patient was followed in another center and it was concluded that he did not benefit from the surgical operation and that he was hospitalized in the intensive care unit for a long time due to respiratory failure and aspiration pneumonia approximately two months after the operation. As a result, the patient developed signs of paraplegia and insufficiency of the diaphragm muscles. Tracheostomy was opened to the patient and muscle strengthening studies were started with physical therapy methods. While the patient was living at home depending on the bed and respirator, he died approximately four months after the trauma.





Figure 1. Cervical fracture transverse section tomography image



Figure 2. Cervical fracture and dislocation sagittal tomography image



Figure 3. Cervical fracture and spinal cord compression sagittal MR image

## DISCUSSION

The region most frequently traumatized in the entire vertebra is between C3-C7, which is defined as the lower cervical region, and the morbidity and mortality rate is high.<sup>4,5</sup> The incidence of fracture or dislocation of the cervical vertebrae secondary to blunt trauma is extremely low.<sup>6</sup> Among blunt traumas, cervical region injuries are around 2-5%, and the annual number of cases is approximately 4-5/100,000.<sup>8</sup> It is usually seen after traumas such as traffic accidents, falling from a height and assault. However, in this case, cervical fracture and spinal cord damage occurred due to the blow received by the cattle, which is very rare. Serious complications may occur in patients with cervical region traumas. For this reason, all regions adjacent to the area of pain from the cranial region should be examined in detail. CT is recommended as the gold standard for scans. MRI should be performed to detect spinal cord tissue damage.<sup>8</sup> Cervical vertebral fractures are most commonly seen in the C5-C7 region.<sup>9</sup> In this case, there were fractures and dislocations at the C6 and C7 levels. Dislocation may accompany in most cases by in cervical vertebral fractures. As in this case, in the study of Ozay et al.<sup>7</sup> dislocation was observed in almost all cases with lower cervical vertebral fractures. As result of studies conducted in cervical spine surgery, decompression and stabilization procedures performed in the first 24 hours have proven that more positive results can be obtained.<sup>11,12</sup> The patient in this case report was referred to a higher health institution after trauma, but the surgical procedure was over 24 hours. Exceeding the recommended ideal time may have reduced the rate of benefit from surgery. There was no significant improvement in neurological functions after surgery in this patient. Similarly, in a study, it was observed that 77,8% of the patients did not improve their neurological functions after the surgical procedure after cervical fracture.<sup>7</sup> Although the effectiveness of methylprednisolone treatment in reducing the neurological symptoms seen in post traumatic patients has not been proven yet, there are opinions suggesting that it will benefit from its anti-inflammatory and antiedema effect.<sup>7</sup> Intravenous 250 mg dexamethasone treatment was administered to this patient.

Spinal cord injury and muscle weakness, urinary and stool incontinence, hemiplegia, paraplegia, and in the future, thromboembolism, infections and atelectasis in the lung may occur in vertebral fractures.<sup>9</sup> In this case, spinal cord injury and subsequent paraplegia and urinary incontinence were observed. In the later period, aspiration pneumonia was observed. Studies show that complications such as pneumonia and meningitis develop frequently in patients after surgical operations in the cervical vertebral region due to trauma, and that the process is prolonged in intensive care follow up and there are fatal cases.<sup>7,12,13</sup>

## CONCLUSION

This case is one of the rare cases seen secondary to blunt trauma in cervical vertebral fractures. As in the studies mentioned in the literature, a neurological improvement could not be achieved in this patient, and due to the complications that developed in the advanced stage, the patient first became bedridden and dependent on a ventilator and eventually

died. Although it is not possible to predict when and how the trauma will occur, taking protective measures is always life-saving. In this case, it was observed that the trauma caused by inexperienced, unconscious and careless animal slaughter resulted in mortality.

## ETHICAL DECLARATIONS

**Informed Consent:** All patients signed the free and informed consent form.

**Referee Evaluation Process:** Externally peer-reviewed.

**Conflict of Interest Statement:** The authors have no conflicts of interest to declare.

**Financial Disclosure:** The authors declared that this study has received no financial support.

**Author Contributions:** All of the authors declare that they have all participated in the design, execution, and analysis of the paper, and that they have approved the final version.

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