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Case Report

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Intubation of a Patient in Prone Position with the Videolaryngoscope in a Street Trauma

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Abstract

Major road trauma in the prone position, when the victim cannot be released or retrieved due to intense pain, is a rare event. We present a case of a young patient who was incarcerated with his right lower limb in the prone position in a bulldozer. The impossibility of being able to extract him in a short time and the very intense pain, not responsive to high doses of analgesics, led us to perform an induction and intubation in the prone position with video laryngoscope. The success of the maneuver allowed us to release the patient in a short time with excellent outcome in terms of recovery of the lower limb.

Keywords: Prone Position; Video laryngoscope; Trauma.

Introduction

Embedded work trauma is a fairly common occurrence and, even in the prone position, can often be released fairly quickly, or at least by performing deep combined analgesia and sedation. The authors present a case of a 50-year-old male patient who, while descending from the bulldozer on which he was working, became wedged under the silhouette lap of an excavator with his right leg. The unfavourable position of the patient who could not be freed, due to low external temperatures, and his intense pain that could not be controlled by high doses of analgesics, led the operators to perform an induction and intubation in the prone position with a C-MAC video laryngoscope. The single successful attempt allowed the patient to be freed quickly and transported to hospital for treatment. In the literature, at present, cases of intubation in the prone position in a protected hospital environment with different devices (laryngoscope, fast track, video laryngoscope) are described [1,2],but cases of intubation at the scene of a prehospital patient incarcerated in the prone position with video laryngoscope are not described.

Case Presentation

On 10/11/2020 ambulance service at 09:03 accesses 50 year old male patient, approximately 60Kg. The scene is a construction site; a small bulldozer is hovering over a pit approximately 3 feet deep; outside temperature approximately 8 degrees. The patient, trying to get off the bulldozer still active, slips on the track and becomes incarcerated in the prone with the right leg under the cabin. The right leg is hyperextended under the scraper cab and the left leg flexed at 90 degrees in a hole of about 1 meter (Figure 1), the scene was not safe for the patient. First the environment was secured by stabilizing the bulldozer. The rescuers performed ABCDE of the patient and the inspection of the wedged leg showed a bleeding limb, a non-palpable pedal artery but pink and well perfused foot. Toe sensitivity and motility were maintained (Figure 2). There was no possibility to observe other injuries as the limb was wedged and covered by the bulldozer. The patient showed high agitation and pain with SVA=10. It was absolutely impossible, due to the position and pain, to supinate or rotate him slightly. Hemodynamic and respiratory parameters were stable. A tourniquet was applied to the right lower limb, venous access was applied to the left hand and warming was commenced.

Any attempt to move the scraper cab or the patient caused intense pain and therefore initial analgesia with 100 gamma of fentanyl administered was effectiveness. This was followed by ketamine 0.5 mg/kg ev and midazolam 2 mg ev; 1 g of tranexamic acid is administered. The uncontrollable pain required the administration of further doses of ketamine ev 20mg + 20mg + 30mg but without success. At 10:00, after about 60 minutes, considering the uncontrollable pain, the impossibility of freeing the limb in a short time due to technical problems, and the low external temperature, it was decided to induce and intubate in the prone position. The patient reported to have eaten one hour before.

The patient was placed on a spinal board and pre-oxygenated 100% for about 6 minutes. Mallanpati 2 was evaluated. 100 gamma of fentanyl, 18 mg of etomidate, 75 mg of succinylcholine were administered; RSI without ventilation was performed. The resuscitating doctor placed himself to the right of the patient who was about 1 meter from the ground as he was supported by a spinal board on the pit. A fireman held the chest slightly raised; a rescuer held the patient's head grasping the neck and the nape of the neck. The doctor opened the mouth, inserted the C-MAC blade 4 video laryngoscope which allowed immediate visualization of the epiglottis. With a downward loading movement, the vocal cords were visualized with a Cormack 1 and a 7.5 OD or tracheal tube was inserted at the first attempt (Figure 3). After intubation, the patient's chest and head were placed on a pillow and 5 mg of midazolam + 50 mg of rocuronium were administered (Figure 4). The patient was ventilated with an automatic ventilator in CMV: TV 500 ml, FR=14, PEEP=5, FiO2=50%. After induction a complete rotational movement of the bucket was performed (this maneuver was not possible when the patient was awake because of the very high perceived pain). In a few minutes the patient's right leg was freed with multiple fractures and bone exposure. He was then supinated on the ambulance stretcher and transported intubated to the Civico Hospital of Lugano for treatment.

The patient required a subsequent operation with application of external fixators to the right leg without vascular or nerve lesions. His slow but progressive recovery allowed, at the date 03/2021, his ability to walk independently with crutches. Interviewed by us, the patient reported that he only remembered the moment of the fall and then woke up in intensive care.

Figure 1: The accident scene with the patient incarcerated prone and the firemen trying to free him.

Figure 2: The foot incarcerated under the cabin.

Figure 3: The intubation of the patient with the video laryngoscope.

Figure 4: The patient intubated and sleeping placed on the pillow.

Discussion

In the literature, there are similar cases of prone intubation in hospital with videolaringoscope or fibro scope. All cases described until now were intubated in good and protected working condition [3]. No cases are described in trauma patients intubated prone at the scene. Most embedded traumas usually allow rapid release or antalgic treatment in spontaneous breathing patients with the possibility of being able to work in serenity for extrication. We found a patient stuck in an unsafe environment with uncontrollable pain and impossibility to free him in a short time. The highly ineffective analgesia + sedation and the impossibility of freeing the patient quickly, forced the rescue team to perform a prone induction and intubation (RSI) with video laryngoscope. The maneuver was carried out successfully on the first attempt.

With this case we wanted to demonstrate that the use of the video laryngoscope in prone intubation at the scene was optimal and allowed a maneuver without problems; we believe, with this case, that the video laryngoscope should be a device present on all emergency services in the prehospital setting. The video laryngoscope is a device that helps considerably during difficult intubations, but we have shown that it is essential in an extreme management of the airway as described in this case.

Patient's Perspective

I remember only when I fell. I was very scared regarding the situation but I felt safe with the emergency team. After the administration of the drugs, I had no recall of memory. I've commenced a difficult rehabilitation when I woke in Intensive Care Unit. According to my point of view, every part of multidiscipline team was excellent. That allowed my fast physical and psychological recovery. In fact now I can walk with only the aid of a crutch.

Conclusions

In conclusion we report a case of trauma embedded in prone position that could not be released quickly. Induction and intubation with video laryngoscope allowed rapid management and rapid transport to hospital. We have shown that the use of the video laryngoscope even with road trauma in the prone position is essential for rapid and uncomplicated intubation and should be a device present on all out-of-hospital rescue vehicles. It will be necessary, if possible, to evaluate its effectiveness in patients in prone position with more unfavourable intubation indices.

Disclosure

Funding: This case report received no external funding.

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study. Written informed consent has been obtained from the patient to publish this paper.

Data Availability Statement: Data supporting the study results can be provided followed by request sent to the corresponding author's e-mail.

Conflicts of Interest: None.

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