

# Case report on morbidly obese patient with cervical spine ankylosing spondylitis presenting with acute spinal shock and complex airway management

Ulrike Berth MD, Shaheen Shaikh MD, Bronwyn Cooper MD, Stephen O. Heard, MD

Department of Anesthesiology, University of Massachusetts Medical School, Worcester, MA, USA

## Introduction

A 67 year old morbidly obese male presented to the ER with weakness in both lower extremities after a fall at home. The patient sustained a T12/ L1 unstable vertebral fractures and cord compression at the thoracolumbar junction with acute traumatic paraplegia.

## Preoperative Evaluation

The patient arrived in the PACU on a backboard and with a cervical collar in place directly from the ER. The review of the patient's chart revealed that he had a history of hypertension, PE / DVT on coumadin, hypothyroidism, NIDDM, bipolar disorder and cervical spine ankylosing spondylitis of his neck. On physical exam the patient was sleepy, but arousable and unable to move his lower extremities, with loss of bladder and bowel control. There was one T2 GIV in place. The airway exam revealed Mallampati Class 4. The patient was hemodynamically unstable with BP ~80/~40 mm HG; HR ~70's/min; SpO<sub>2</sub> ~86-88%. Resuscitation commenced immediately. The patient was started on face mask @ 10 l/m O<sub>2</sub>. One liter of normal saline was administered with minimal effect. A phenylephrine infusion was started. The blood pressure improved to SBP of 120's mm Hg. The O<sub>2</sub> saturation increased to 95%. A methylprednisone drip (30mg/kg iv bolus) was started for treatment of his spinal cord injury. For additional IV access, another 20G IV was placed. Two units of FFP were given to normalize the INR of 2.4. After multiple attempts, a right radial arterial catheter was successfully placed. A right internal jugular (RIJ) central venous catheter was inserted under ultrasound guidance.

## Airway Management

This patient presented with multiple factors that would influence our airway management. The patient had a long standing history of cervical ankylosing spondylitis. The CT scan taken in the ER on the day of admission showed ankylosis of C2-C7 with dextroscoliosis with osteophytes impinging on cervical spinal cord. There was a hyperextension injury of thoracolumbar levels T12- L1 of the spinal cord. The patient was morbidly obese and we anticipated both difficult mask ventilation and a difficult intubation. Hence we decided that the safest way to manage this patient's airway was with an awake fiberoptic intubation, which was accomplished on the first attempt. A 7.5 ETT was inserted, ETCO<sub>2</sub> and bilateral breath sounds were confirmed and general anesthesia was induced uneventfully.



Picture 1: CT: frontal view showing body habitus of patient



Picture 2: CT: Spine: ankylosis of C2-C7 with dextroscoliosis, large posterior body osteophytes (arrow) impinging on spinal cord



Picture 3: CT: lateral view showing body habitus of patient

## Discussion

Ankylosing spondylitis leads to fibrosis, ossification, and ankylosis along the spinal column and can cause significant impact on airway management. Reduction in atlanto-occipital articulation mobility, fixation of cervical vertebrae and temporomandibular joint involvement can further complicate airway management. The cervical spine is also the most susceptible to fractures, particularly in hyperextension, and can lead to damage to the cervical spinal cord during intubation.

This case illustrates the challenges posed by a morbidly obese patient in spinal shock with a stiff neck. The patient needed emergency surgery for traumatic paraplegia, but it was vital to stabilize the patient first. To ensure the most optimum outcome for this patient it was very important to have monitoring in place to be able to treat foreseen and unforeseen events that might emerge during surgery. The entire anesthetic management of this patient was extremely formidable for many reasons. His morbid obesity caused challenging intravenous catheter placement, with additional concerns about securing the airway, high airway pressures and difficult ventilation intraoperatively in the prone position. Preoperative spinal shock, likely caused by shearing forces during the patient's fall causing spinal cord injury well above the anatomical fracture site, resulted in hemodynamic instability. Type II diabetes and anticoagulation (coumadin therapy) were added concerns. The patient was stabilized in the PACU with phenylephrine and methylprednisone infusions, oxygen therapy and FFP transfusion. Longstanding ankylosing spondylitis left the patient with a stiff neck with virtually no movement. Despite no acute fracture in his c-spine, the cervical CT results showed osteophytes pressing against his spinal cord causing spinal cord compression. After considering all factors we felt the safest possible option to secure the airway was an awake fiberoptic intubation.

Studies have shown that the Bullard Laryngoscope, Glidescope and Fastrack LMA can be safely used for the management of a difficult airway in unstable cervical spine patients. Further studies are needed to show their benefit vs. the standard of awake fiberoptic intubation. Trauma patients often have unstable cervical spines and the airway in the ED is often secured by rapid sequence intubation with manual inline stabilization. Our patient however not only had a risk for cervical spine cord compression 2° to the impinging osteophytes but superimposed ankylosing spondylitis and morbid obesity resulting in difficult airway management.

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