

# AN UNUSUAL CASE OF A PATIENT WITH EXTREME FIXED NECK FLEXION PRESENTING FOR EMERGENCY ABDOMINAL SURGERY

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## Abstract

Patients with a known difficult airway for intubation who present with intestinal obstruction are at an increased risk for receiving general anesthesia. It may be necessary to perform an awake fiberoptic intubation, or possibly a tracheostomy if an awake intubation cannot be performed. In some cases, an awake tracheostomy may not be possible due to the anatomy. We report a case in which a patient with extreme fixed neck flexion deformity in whom a tracheostomy would not have been possible, presented for emergency abdominal surgery.

## Case Report

A 77 year-old man presented for emergency herniorrhaphy of an incarcerated left inguinal hernia with small bowel obstruction. He was complaining of nausea and vomiting. Past medical history included arthritis, hypertension, Parkinson's disease, enlarged prostate and colorectal cancer s/p chemotherapy and radiation therapy. Medications included finasteride, carbidopa/levodopa, and mirtazapine.

On physical exam, his neck was in a 90 degree flexed position, and was immobile. He did have a good mouth opening, and his airway classification was Mallampati 3. His thyromental distance was 6 cm. His abdomen was distended, and he had an incarcerated left inguinal hernia.

Once in the operating room, he was propped up on a ramp created with pillows and padding.

*Fig. 1  
The patient is positioned for surgery, with padding to stabilize the head in a vertical position. The chin is juxtaposed on the chest. The nasotracheal tube is in position.*



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No financial support or financial relationships.

Glycopyrrolate 0.2 mg was administered to decrease secretions. Airway topicalization was accomplished with the use of 4% lidocaine by nebulizer and then atomizer. It was not possible to perform a cricothyroid puncture for tracheal anesthesia, due to the extreme neck flexion. The nares were prepped with lidocaine/phenylephrine.

The nasal passageway was then dilated with a 6.0 nasal airway which had been lubricated with 2% viscous lidocaine. Following removal of the nasal airway, a 7.0 ID soft nasotracheal tube (Portex, Kenne, NH) was passed via the nares into the pharynx. While standing in front of the patient, the fiberscope was passed through the endotracheal tube. Once the patient's vocal cords were visualized, an epidural catheter was advanced via the working channel of the fiberscope, and 4 ml of 4% lidocaine was administered via the epidural catheter. The fiberscope was then advanced into the trachea, and the endotracheal tube was passed over the fiberscope into the trachea. General anesthesia was then induced. Following completion of surgery, the patient was extubated, and had a good recovery. A photograph of the patient following tracheal intubation and induction of anesthesia can be seen in the Fig. 1.

## Discussion

Extreme neck flexion may cause difficulty with endotracheal intubation. We have described an unusual case of a patient with a severe fixed flexed neck deformity, presenting for emergency surgery. A tracheostomy was not possible. A cricothyroid puncture for transtracheal topicalization was also not possible.

Awake fiberoptic intubation appeared to be the safest technique. The technique of passing an epidural catheter through the working channel of the fiberoptic bronchoscope was utilized, which has been previously described<sup>1</sup>.

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Prior to the advent of modern airway techniques, a method of using a hook to pull the endotracheal tube anteriorly was described in 1965, in a patient with severe neck flexion<sup>2</sup>. In a recent case with a severe fixed neck flexion deformity, an upside down intubation technique with an intubating laryngeal mask airway (LMA) was described<sup>3</sup>. In that case, the intubating LMA was inserted with the handle facing cephalad, so the handle of the LMA would not be blocked by the juxtaposed chest. The LMA was then rotated 180 degrees, and advanced into the proper position. The LMA was used as a conduit for endotracheal intubation. The GlideScope has been utilized for endotracheal intubation of patients with ankylosing spondylitis<sup>4</sup>. In our case, it did not seem possible that the GlideScope would be able to be positioned properly for tracheal intubation, and it was not attempted.

Positioning is an important consideration in the patient with a fixed neck flexion. Although the patient was supine, the extreme neck flexion oriented the head in a vertical position. Padding was necessary to stabilize the head in this position throughout surgery. The use of the sitting position was recently reported in a patient with an expanding neck mass<sup>5</sup>. In our case, it was technically easier to approach the intubation from the front of the patient, rather than the traditional approach of standing behind the supine patient. The view that is obtained is upside down, compared with the view when utilizing the traditional approach from the head of the table.

In conclusion, awake fiberoptic intubation may be the safest approach for placement of an endotracheal tube in a patient with severe neck flexion. Cricothyroid puncture for topicalization and/or establishing an airway may not be possible. In these patients, a frontal approach may be the best option as opposed to attempting intubation with the anesthesiologist standing at the head of the table.