

## **A Rare Case of Lubag Syndrome and Its Anesthetic Considerations**

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### **Abstract body**

We present a case of a 40-year-old Filipino male with Lubag dystonia who was scheduled for a direct laryngoscopy and biopsy of a vocal cord polyp for which he had symptoms of dysphonia and mild dysphagia. Lubag syndrome, also known as X-linked dystonia Parkinsonism, is a rare adult onset progressive neurodegenerative movement disorder and is endemic to the Filipino island of Panay. The prevalence rate in the Philippines is 0.31 per 100,000, but increases to 5.74 per 100,000 on the island of Panay. It is inherited in an X-linked recessive manner and affects primarily men with a gender ratio of 100:1. The diagnosis is usually made in the patients' third or fourth decade of life when symptoms surface and death usually occurs when they are in their 50's. Most patients present with progressive and severe focal dystonia which lead to combined dystonia and Parkinson symptoms. There is no cure for this disease and care is focused on symptomatic treatment. Patients with Lubag syndrome should be managed similarly to patients with other dystonias and neurodegenerative disorders. Timing and administration of anti-psychotic medications and dopamine agonists are important to prevent worsening in symptoms and complications resulting in neuroleptic malignant syndrome. Additionally, patients with sialorrhea can be given glycopyrrolate and aspiration precautions should be considered in those with dysphagia. Although monitored anesthesia care was provided for this patient, general anesthesia is usually safe for patients with severe dystonia. Frequent repositioning may be necessary to prevent further rigidity.

## **Intubation Setup for Large Cervical Myelomeningocele Neck Mass**

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### **Abstract body**

**Introduction:** Neural tube defects account for 5.5 per 10,000 live births in the United States. Of these, it is estimated that only 3-6% involve the cervical region. Depending on the location and contents, a rupture of these defects can cause surgical emergencies or infections. Most require repair within days of delivery, while some can be done intrauterine.

**Case Presentation:** We present an otherwise healthy 5 day old term male born via spontaneous vaginal delivery with an undiagnosed large posterior neck mass requiring removal. After delivery, he was placed prone to prevent rupture of the mass. MRI on first day of life showed a midline fusion defect at C6 with a 7mm spinal cord widening at C6-C7 and extension into a posterior fusion lesion measuring 6.1 x 3.1 x 3.0 cm, consistent with a myelomeningocele.

For the operation, several towels were placed to elevate the infant in a supine position with an open area to allow minimal pressure on the mass (Images available). After preoxygenating and IV induction, the patient was intubated with no difficulty via a C-Mac Miller 1 laryngoscope. Resection of the mass was uncomplicated. Patient was transported intubated back to the NICU and extubated same-day while being kept in a prone position for incision healing.

**Discussion:** Congenital neck masses presenting at birth may require special precautions during the delivery and perioperative period. If selected, we plan on further discussing the incidence and location of these lesions as well as their anesthetic, obstetric and neurosurgical implications.

## **Erector Spinae Block in Ventilator Weaning to Assist in Discharge to Home Hospice**

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**Contributing Authors:** Dr. Susanna Byrne, DO; Dr. Barret Sowers, MD; Dr. Lynne Sterni, MD; Dr. Anthony Scherschel, MD

### **Abstract body**

**Background:** The erector spinae plane block (ESPB) has been used for analgesia in a variety of perioperative settings. We describe the case of a 70 y/o male with rib fractures s/p CPR weaned from the ventilator after ESPBs.

**Case:** A 70 y/o with a history of severe Parkinson's Disease and multiple comorbidities was admitted for bacteremia and recurrent bradycardia. On hospital day 2, the patient developed bradycardia deteriorating into PEA arrest. After CPR, ROSC was achieved. The patient was intubated and subsequently failed multiple extubation trials secondary to splinting. Imaging confirmed bilateral rib fractures. The regional anesthesia team was consulted to assist with pain control. Considering his anti-coagulation status, bilateral ESPBs were performed at T4 and T6 with liposomal bupivacaine and 0.5% bupivacaine. Within 12 hours, the patient was successfully extubated. He was discharged 2 days later with family to home hospice care.

**Discussion:** At this institution, ESPBs have been used for analgesia in rib fracture cases on multiple occasions. This is the first known use of ESPB for mechanical ventilation weaning. The addition of liposomal bupivacaine appears to extend duration of analgesia to 48-72 hours allowing near normal ventilator mechanics after resolution of the blocks. Additionally, this demonstrates the potential of ESPBs as part of a palliative care pathway, whereby extubation and pain control enabled fulfillment of the patient/family's wishes for home end-of-life care.

## **Erector Spinae Plane Block for Axillary Hidradenitis Suppurativa Flap Procedure**

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**Contributing Authors:** Deborah Martins, MD; Matthias Braehler, MD; University of California, San Francisco

### **Abstract body**

#### Introduction

Hidradenitis suppurativa (HS) is an inflammatory skin disease that can lead to chronic pain and diminished quality of life. Patients who undergo surgery for HS often suffer from chronic pain, necessitating thoughtful plans for pain management in the perioperative period.

Erector spinae plane blocks (ESPB) have recently been described as an effective technique for management of postoperative pain. We present a patient with severe postoperative pain following axillary HS excision where we performed a ESPB at level of T2 transverse process for pain control prior to a staged right-sided axillary flap procedure.

#### Case Report

Our patient is a 33-year-old male with history of severe HS, Crohn's disease, and daily smoking who underwent axilla excision followed by flap procedure.

His postoperative course following his first surgery was notable for severe pain. His NRS pain scores ranged from 3-7/10. He was unable to be weaned from opioids. In anticipation of worsening pain following his second procedure, we opted to perform a single shot ESPB with 0.5% ropivacaine at the T2 transverse process. Shortly after the block, the patient reported that the ESPB had completely relieved his pain. Pain scores remained low for about 48 hours postoperatively. Opioid consumption following the ESPB remained comparable to the first surgery; however, the flap procedure was more extensive.

#### Discussion

The ESPB provided satisfactory analgesia in a patient with severe pain following axillary HS excision and graft placement. Further studies are needed to determine whether ESPBs are an effective technique for pain control and reduction of opioid consumption.

## **Intraoperative anaphylactic shock to fresh frozen plasma during posterior lumbar spine decompression and fusion**

**Presenting Author:** QiLiang Chen, MD, PhD

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### **Abstract body**

Anaphylactic shock is a rare but serious complication of blood transfusion. Delayed treatment carries a significant rate morbidity and mortality, thus early and accurate diagnosis is essential. Here we report a case of intraoperative life-threatening anaphylactic shock in a 68-year-old female patient during a lumbar spine decompression and fusion. The onset of the reaction was most consistent with the timing of fresh frozen plasma (FFP) infusion. Although this patient reported a history of asthma and an extensive list of food and drug allergies, she had no previous incidents of anaphylaxis or transfusion reaction. Other differential diagnoses were also considered, including acute blood loss, myocardial infarction, and pulmonary embolism, given the duration of the case, tranexamic acid administration, and the patient's stroke history. Transesophageal echocardiogram revealed hyperdynamic cardiac motion and low systemic vascular resistance without evidence of embolism, and serial serum tryptase levels were elevated, which together support the diagnosis of anaphylactic shock to FFP. Intravenous epinephrine, diphenhydramine and hydrocortisone were given, and the patient was quickly stabilized with minimal presser support. Anaphylaxis related to IgA deficiency was unlikely in this patient, given she had no complications with blood transfusion in the past. Post-hoc review by the blood bank showed no mismatched blood products were given. It was speculated that either the patient was hypersensitive to plasma-containing products, or the FFP that triggered the anaphylactic shock contained residual allergens inherited from the donor. Despite the rare occurrence, this case highlights the importance of early recognition and treatment for intraoperative transfusion-related anaphylaxis

## **Indeterminate COVID-19 Test Results And Effect On Perioperative Protocols**

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Institution: UCSF

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### **Abstract body**

COVID-19 has presented new challenges and problems that the medical community has had to address quickly. Universal testing of all surgical candidates has been established. Here we present a case of an otherwise healthy patient with an indeterminate COVID-19 test result. A 22-year-old, G1P0, presented with an undesired pregnancy at 21 weeks 2 days and was scheduled for a dilation and evacuation (D&E). Given the pandemic, hospital protocol required preoperative COVID-19 testing via PCR four days prior and her result was indeterminate, which per laboratory guidelines, was treated as a presumptive positive. UCSF's D&E procedure guidelines dictated that osmotic dilators were placed one day prior to her surgery. On arrival to Labor and Delivery, a staff member donning contact/droplet personal protective equipment (PPE) (surgical mask, gown, gloves, eye protection) brought her a surgical mask and escorted her to a single room under respiratory isolation. Her dilators were placed and she was discharged. The same protocol was used the following day for her D&E, which was performed in an OR designated for COVID patients. The anesthetic plan involved a neuraxial block followed by minimal sedation. Spontaneous ventilation was maintained, her procedure was completed without any complications, and the patient was discharged home after recovery.

## **Intraoperative Seizure Provoked by Transcranial Motor Evoked Potentials in a Burst-Suppressed Patient Undergoing Open Aneurysm Clipping**

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### Background

The incidence of seizures in cranial procedures is ~1.8%. Transcranial electrical stimulation (TES) vs. direct cortical stimulation (DCS) is much less likely to provoke seizures, with an incidence of 0.7% to 5.4%, respectively. In a series of 59 aneurysm clippings, 5 intraoperative seizures occurred, all in the context of DCS. No literature describes an intraoperative seizure triggered by TES in the setting of electroencephalographic (EEG) burst suppression.

### Case Description

A 38 year-old male required open aneurysmal clipping for MCA aneurysm with associated daughter aneurysm. Induction of anesthesia was uncomplicated, and levetiracetam was administered for seizure prophylaxis. Maintenance was achieved with propofol and remifentanyl infusions, resulting in burst suppression.

The daughter aneurysm was clipped without incident, followed by TES-MEPs (Motor Evoked Potentials). Four minutes later, tachycardia, hypertension, and a generalized tonic-clonic seizure ensued. On EEG, epileptiform activity of bifrontal origin with diffuse spread was identified. Midazolam and propofol were administered, with rapid resolution.

Upon clipping the primary aneurysm, another MEPs were run and the above pattern recurred. Post-resolution EEG signals suggested a post-ictal state. MEPs were discontinued, the remainder of the surgery progressed without further incident. No further epileptiform activity was noted post-operatively.

### Discussion

Anesthesiologists must quickly identify seizure provocation by TES, recognizing that the benefits of intraoperative neuromonitoring typically outweigh the risk of such a rare event. Unique to this case is that on-going burst suppression was maintained prior to seizure onset, a scenario not previously described. Anti-epileptic therapy after such an event will vary on a case-by-case basis.

## **Anesthetic Challenges in an Obstetric Patient with Body Mass Index of 109 Presenting for Repeat Caesarian Section**

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### **Abstract body**

**Background:** Morbidly obese obstetric patients undergoing anesthesia present unique challenges. We present the anesthetic management of a super morbidly obese obstetric patient with body mass index (BMI) of 109.

**Case Description:** 27 year old female, G4P3003, with an intrauterine pregnancy at 38 weeks, presented for fourth caesarian section. She had a history of obstructive sleep apnea, hypertension, atrial fibrillation, and type 2 diabetes. Her previous caesarean sections were performed under neuraxial anesthesia; however, her last caesarean section was complicated by intraoperative cardiac arrest requiring cardiopulmonary resuscitation. She refused neuraxial anesthesia due to her prior traumatic experience. Preoperative preparation involved multidisciplinary planning. Although neuraxial anesthesia is preferred over general anesthesia for caesarean section, her inability to lay flat, poor anatomical landmarks, unknown length of surgery, and increased risk for hemorrhage led us to elect for general anesthesia. Surprisingly, her airway examination was reassuring. Adequate intravenous and arterial line access was obtained prior to induction. With optimum patient positioning and preoxygenation, airway was secured by direct laryngoscopy. A healthy baby was delivered without significant intraoperative complications. Lung protective strategy with recruitment maneuvers, multimodal analgesia, and postoperative continuous positive airway pressure aided in successful extubation. Pulmonary toilet, early mobilization, physical therapy, and venous thromboembolism prophylaxis were employed. Her postoperative course was complicated by severe preeclampsia and pulmonary embolism, which were managed successfully in the intensive care unit. She was discharged to rehabilitation followed by home. This case highlights the complexities and individualized approach in managing the super morbidly obese obstetric patients.

## **Multidisciplinary Approach to Pain Management in Patients with Stiff Person Syndrome—A Rare Disorder**

**Presenting Author:** Jenny Kan, MD

Institution: Kaweah Delta Medical Center

**Contributing Authors:**

### **Abstract body**

Stiff Person Syndrome (SPS) is a rare neurological disorder characterized by progressive muscle weakness and rigidity associated with extremely painful spasms. These muscle spasms are often set off by emotional stress, sudden movement or noise. The proposed pathophysiology of SPS suggests an autoimmune process where auto-antibodies are directed against glutamic acid decarboxylase, the rate-limiting enzyme for the production of  $\gamma$ -aminobutyric acid (GABA), resulting in the loss of neural inhibition in the central nervous system. Patients diagnosed with SPS often suffer from chronic pain, requiring unusually high doses of benzodiazepines and narcotics daily for pain control.

Our patient is a 27 year-old woman with history of SPS diagnosed one year prior to presentation for impacted wisdom teeth extraction under monitored anesthesia care. She has intermittent muscle stiffness in the neck and extremities for which she takes multiple pain medications, including marijuana, hydromorphone (4mg) and diazepam (15-30mg) dosed every 6-8 hours daily. Her previous postoperative course was complicated by intense pain and prolonged stiffness aggravated by anxiety. The providers communicated with the patient two weeks before the current scheduled surgery to understand her baseline pain requirement. We solicited advice from other anesthesiologists who have cared for patients with SPS, discussed anxiety management with the perioperative nursing teams, notified pharmacy and the patient's admitting hospitalist to ensure timely delivery of pain medications. The patient reported excellent pain control throughout surgery and in the PACU.

Pain management in patients with SPS requires understanding of the disease process and special considerations for the amount of medications needed to prevent a catastrophic pain crisis. Their dependence on benzodiazepines and narcotics is not an addition but rather the appropriate treatment for a rare disorder. A multidisciplinary approach is crucial for these patients to overcome barriers from receiving adequate care in the perioperative setting.

## **Merry AnaphylaXmas**

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### **Abstract body**

Case Description:

A 60-year-old patient with PMH of ESRD on HD and CABG presented for renal transplant on Christmas Day. Anesthesia was induced uneventfully. Forty minutes after induction but before incision, 2g of cefazolin were given and methylprednisolone infusion initiated. Within four minutes NIBP was unmeasurable and EtCO<sub>2</sub> dropped to 16mmHg. 200mg phenylephrine was administered and a NIBP of 49/18mmHg was obtained. Inspiratory pressures increased and breath sounds were nearly absent. Inhaled albuterol and 4x10mcg IV epinephrine boluses were administered over the next 10 minutes. An epinephrine infusion was titrated at a range of 0.03-0.2mcg/kg/min along with additional boluses. BP responded promptly and ventilation stabilized over the next 15 minutes. The intubated patient was transported to the ICU one hour after onset with epinephrine infusion. In the ICU, an erythematous macular eruption was noted. Tryptase was elevated to 64mcg/L. Troponin I rose, suggesting NSTEMI. 3 days later, discharge occurred in excellent condition. Follow-up allergy testing revealed a significant reaction to cefazolin, though a persistently elevated tryptase raised concern for underlying mastocytosis.

Conclusions:

1. Cefazolin is the most common cause of peri-operative anaphylaxis in the US [1]. Our patient had received cefazolin for numerous procedures in the past. However, new IgE-mediated sensitizations can occur at any time.
2. Immediate hypersensitivity reactions to corticosteroids and their preservatives have a prevalence as high as 0.3% [2].
3. Optimal dosing of epinephrine is difficult but critical to avoid consequences of under- or over-dosing [3]. Excessive administration of epinephrine could have contributed to the NSTEMI.

## **Surgical Tracheostomy in the Unanticipated Difficult Airway in a Patient with a Dissecting Neck Hematoma**

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### **Abstract body**

In the unanticipated difficult airway, invasive airway techniques such as surgical tracheostomy are last-resort measures. This case report discusses the difficult airway algorithm as well as the consideration for a fiberoptic intubation in a patient with a difficult airway that required a surgical tracheostomy.

A 76 year old male with history of hypertension and left squamous cell carcinoma of his left pre-auricular region status post excision of the ulcerative lesion with left parotidectomy and left external auditory canal sleeve returned to the OR emergently on POD1 for evacuation of neck hematoma resulting in respiratory distress and dysphagia. Due to uncertain NPO status and history of prior easy airway the day before, a rapid sequence intubation (RSI) was planned with propofol and succinylcholine. Video laryngoscopy and fiberoptic bronchoscopy were prepared in case of failed direct laryngoscopy. Patient was pre-oxygenated and following induction with closer assessment of patient's extensive neck hematoma, video laryngoscopy was utilized. Due to profuse airway edema, copious secretions and blood in the oropharynx as well as distortion of airway anatomy secondary to the hematoma, no structures were identified to facilitate passage of endotracheal tube (ETT). Subsequent airway attempts between manual ventilation periods included direct laryngoscopy with MAC4 blade, fiberoptic bronchoscopy and repeat video laryngoscopy as well as a bougie by two attending anesthesiologists with significant edema resulting in difficult laryngoscopy and failed intubation. Ultimately, due to patient desaturation with increasingly difficult mask ventilation and multiple failed intubations, a surgical tracheostomy became necessary. The hematoma was evacuated and hemorrhage controlled and patient was admitted to ICU for respiratory monitoring and remained on the ventilator for several days before downgrading without any additional complications. His tracheostomy was eventually decannulated on POD9 and was discharged the following day without concerns.

This case illustrates the value of an airway history balanced against the emergent nature of the surgical procedure and the uncertain NPO status with an anesthetic plan carefully chosen to address these issues. However, as the patient's airway was unanticipated to be difficult, an alternative approach is considered to manage the airway in light of the aforementioned complicating factors while preventing invasive surgical airway techniques.

## **Perioperative Decision Making in Patients with Positive Urine Amphetamines**

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Institution: Stanford University

**Contributing Authors:** Erin K. Hennessey, MD, Stanford University, Marianne C. Chen, MD, Stanford University

### **Abstract body**

**Background:** In 2018 an estimated 31.9 million people age 12 or older reported illicit drug use in the past month, 1 million of which had used methamphetamine.<sup>1</sup> Substance use disorders present many unique challenges in the perioperative period. Patients with a history of amphetamine use are at an increased risk of hemodynamic instability, cardiopulmonary dysfunction, and withdrawal symptoms.<sup>2</sup>

**Case Description:** A 63-year-old male with a history of ADHD presented with presumptive septic arthritis of the knee. On admission he denied illicit drug use and claimed the amphetamine positive urinary toxicology result was due to Desoxyn (methamphetamine), legally prescribed for his ADHD. After evaluation of California's controlled substance database and contacting the physician and pharmacies given to us by the patient, we were unable to find documentation of any ADHD prescription.

**Discussion:** Current laboratory testing for amphetamines is prone to false positives, which can lead to uncertainty in perioperative decision making.<sup>3</sup> Commonly used substances that can lead to a false positive immunoassay include ranitidine, pseudoephedrine, phenylephrine, trazodone, fenofibrate, bupropion and labetalol.<sup>3</sup> Urinary confirmation testing at our institution includes presence of MDA, MDMA, methamphetamine, phentermine, and pseudoephedrine/ephedrine. Our patient's confirmation test reaffirmed that his urine contained methamphetamine, which we strongly suspect had been obtained illicitly. The question of whether the risk of hemodynamic lability or other perioperative complications would differ, and should alter preoperative decision making, in a patient taking methamphetamine that is legally (Desoxyn) versus illicitly obtained is unclear.

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## **Comparison of Infrared Pupillometry with iPhone App in Measurement of Pupillary Light Reflex**

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**Contributing Authors:** Rachel Eshima McKay, MD (UCSF) and Merlin Larson, MD (UCSF)

### **Abstract body**

**Introduction:** Pupil size and the pupillary light reflex (PLR) are often measured to assess brain stem function in clinical settings. Recently, applications marketed to the general public on smartphone platforms claim the ability to measure PLR using a cell phone camera. To assess this validity, we measured pupil size and PLR simultaneously in both eyes using a smartphone application and the gold-standard infrared pupillometer, hypothesizing that values should differ  $\leq 10\%$  for the smartphone application to offer potential clinical value.

**Methods:** After obtaining IRB approval and written informed consent, 30 adult volunteers were recruited. Simultaneous size and PLR measurements were made holding a Neuroptics pupilometer and an iPhone with the BrightLamp Reflex<sup>®</sup> application over each eye. Measurements were then repeated. The stimulating light source was a 100-ms flash from the iPhone camera.

**Results:** In 7 subjects, the smartphone application registered error messages during attempted use. In the remaining subjects, differences between device pupil diameter readings were  $0.7 \pm 0.4$  mm (19.3%) and  $0.8 \pm 0.5$  mm (21.3%) on the first and second measurements ( $p < 0.0001$ ). PLR amplitude differed  $0.39 \pm 0.32$  mm (61.7%) and  $0.35 \pm 0.22$  mm (40.3%), ( $p < 0.0001$ ). Variance between first and second scan in each subject was 17% with the traditional pupillometer versus 34% with the smartphone application ( $p = 0.0037$ ).

**Conclusions:** The smartphone application measurements were not consistent with those from a traditional infrared pupillometer to meet clinical use criteria. At the present time, clinicians should avoid relying on smartphone-based pupillometry data for important clinical decision-making without additional evidence.

## **A Case of Rhabdomyolysis Following an Uncomplicated Endoscopic Procedure**

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**Contributing Authors:** Emily B. Goldenberg, M.D., Kevin S. Park, M.D.

### **Abstract body**

Background:

Rhabdomyolysis, the breakdown of damaged skeletal muscle with release of electrolytes and proteins into the bloodstream, has been linked to the anesthetic administrations of succinylcholine, halogenated agents, and propofol. These events are often related to underlying risk factors, such as malignant hyperthermia (MH) and/or neuromuscular disease. Its occurrence in adults without such conditions, however, is rare.

We present an uncommon case of rhabdomyolysis in a 34-year-old female after an uncomplicated EGD with wireless Bravo esophageal pH monitoring placement. Her medical history included severe GERD and hypothyroidism, and prior surgeries included appendectomy and caesarean section. She denied personal or family history of anesthetic complications, neuromuscular/mitochondrial diseases, or drug allergies. She received fentanyl 100 mcg, lidocaine 50 mg, propofol 150 mg, and succinylcholine 80 mg for induction, and was maintained with propofol infusion at 250 mcg·kg<sup>-1</sup>·min<sup>-1</sup> during the thirty-minute case.

Although her vitals remained stable throughout the case and postoperatively, she reported diffuse muscle aches and bloody urine two hours post-procedure. Lab findings, notably CK >20,000 U/L, were consistent with a diagnosis of rhabdomyolysis, and she was treated with aggressive hydration. Her vital signs remained stable, and she was discharged on postoperative day three after her CK decreased and muscle aches resolved. She has declined recommendations for further follow-up.

Discussion:

Our patient most likely exhibited succinylcholine-induced rhabdomyolysis despite her uncomplicated procedure and lack of prior risk factors. Thus, we must be aware of rhabdomyolysis as a risk after succinylcholine administration in all patients, and test susceptible patients for possible underlying conditions.

## **A Case of Traumatic Central Cord Syndrome Requiring General Anesthesia**

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**Contributing Authors:** Robert Naruse, MD (Cedars-Sinai Medical Center)

### **Abstract body**

A 53-year-old female presented to the hospital with a headache, weakness, and tingling in her upper and lower extremities for four days following a traumatic axial load injury. The patient had dived into a pool and soon after, another individual jumped off and landed directly on her head. Over the next few days, she continued to have paresthesias and weakness of her bilateral arms and legs. Upon admission, she was found to have central cord syndrome, multiple cervical and thoracic spine fractures, and stenosis at C5-C6. She was scheduled to undergo an anterior cervical discectomy and fusion of C4-C6. Due to her symptomatic myelopathy, she underwent an awake nasal fiberoptic intubation, which allowed the anesthesiologists to maintain the C-spine in a neutral position and assess her neurological function prior to the induction of general anesthesia.