Juvenile myasthenia gravis (JMG) is an autoimmune disease where antibodies are directed at the acetylcholine receptors at the NMJ, resulting in muscular weakness. Anesthetic concerns for these patients are multiple, including: responses to neuromuscular blockade, volatile anesthetics effects, and pre-op/intra-op use of anticholinesterases. If medical therapy fails, patients may present for surgical thymectomy. Traditionally, the surgical approach involves median sternotomy. However, minimally invasive approaches have gained popularity. We report a case of a pediatric robotic thymectomy with the da Vinci© surgical system.

A 9 year-old girl, diagnosed with JMG presented for robotic thymectomy. She was diagnosed with JMG at 18 months of age, after noted ptosis and ophthalmoplegia. Pyridostigmine and steroid therapy were initiated, but ocular fatigue continued and she was referred for robotic thymectomy. On the day of surgery, after premedication with midazolam, the patient was taken to the OR and standard ASA monitors were applied. After mask induction with sevoflurane, 2 peripheral IVs and an arterial line were placed. A 5.5 mm cuffed, oral endotracheal tube was secured, with a bronchial blocker available. The patient was positioned supine with a shoulder roll and the right arm abducted. Surgery was initiated with a 5 mm trocar inserted at the right lower 6th intercostal space. CO2 insufflation to 6mmHg resulted in hypotension and bradycardia. Consequently, the insufflation pressure was reduced from 6 to 4 mm Hg which allowed for adequate anterior mediastium visualization without the need for one-lung ventilation (OLV). A total of 4 trocars were placed within the 3rd, 4th, 5th and 6th intercostal spaces. PCV with a high respiratory rate and low tidal volume was maintained with sevoflurane and oxygen for the 3 hours of surgery. Anesthetic adjuncts included fentanyl, with intentional avoidance of NMBD. The patient was successfully extubated in the OR with minimal pain from a right sided thoracostomy drain, requiring some morphine PRN in the PICU. She tolerated a general diet several hours after surgery and on POD 1 the patient was transitioned to PO acetaminophen. She was discharged home on POD 2.

To our knowledge, this is the first reported case of a pediatric robotic thymectomy. Robotic technology has been used successfully since 2001 for pediatric cases. The development of minimally invasive surgical techniques introduces specific anesthetic concerns in children, especially when surgery involves the thorax. Anesthetic concerns include: possible need for OLV, CO2 insufflation into the thoracic cavity with ensuing hemodynamic compromise. Robotic surgery also has numerous potential benefits: faster return to normal activities, decreased postoperative pain, and shorter hospital stays. As robotic surgery continues to expand into the pediatric population, it is imperative that we remain vigilant to the anesthetic concerns in children.

References: