Mitochondrial diseases are a heterogenous group of disease with many possible peri-operative implications, including pre-disposition to biochemical derangements under stress- and the potential susceptibility to malignant hyperthermia. We present a case of a 36 year-old female with a history of ophthalmoplegia, leukodistrophy and recently diagnosed mitochondrial disease presenting for vaginal hysterectomy. Patient reported prior anesthetics which had used intravenous agents only. In order to avoid any triggering agents, the anesthesia machine was prepared using charcoal filters and induction and maintenance of anesthesia was achieved using a total intravenous technique. Ketamine and magnesium infusions were added to reduce Propofol requirement and provide opioid-sparging analgesia. Arterial blood gases were monitored every thirty minutes to monitor for acidosis. Dextrose 5% in sodium chloride was chosen for maintenance fluids. Patient had an uneventful anesthetic although post-operative laboratory findings were notable for a lactic acidosis and an elevated CK, which resolved after continued fluid administration. This case provides the opportunity to discuss the considerations involved in providing anesthesia in mitochondrial disorders.