

# Obstetric Anesthesia for Cesarean Section in Kampala, Uganda

Erin McKay, MD<sup>1</sup>, Emmanuel Ayabale, MB BS<sup>2</sup>, Caroline Castillo, MD<sup>3</sup>,  
Bruno DeCaria, MD<sup>4</sup> & Gerald Dubowitz, MD<sup>1</sup>

UCSF

University of California, San Francisco, Departments of Anesthesiology & Perioperative Care<sup>1</sup> and Family Medicine<sup>3</sup>, Department of Anesthesia, Mulago Hospital, Makerere University<sup>2</sup>, Northwestern University Department of Anesthesiology<sup>4</sup>



## Introduction

In low-income countries and particularly sub-Saharan Africa, maternal and neonatal morbidity and mortality are unacceptably high. Safe obstetric anesthesia has the potential to improve both maternal and neonatal outcomes. Currently there is a paucity of data documenting the particular type of anesthesia used for cesarean sections in sub-Saharan Africa. Our goal is to characterize the type of anesthesia (spinal or general) and the indications for that particular anesthetic used for caesarean section at Mulago Hospital, an academic tertiary referral center in Kampala, Uganda. We hypothesized that the rate of general anesthesia for cesarean section at Mulago is too high and that this may contribute to maternal and neonatal morbidity and mortality.

## Methods

This study was a collaboration between residents at UCSF, Northwestern, and Mulago Hospital. We conducted a chart review of every patient undergoing C-section for any indication from November 1, 2012 to December 1, 2012 at Mulago Hospital. Demographic data for each mother was recorded as well as the indication for the cesarean section, the anesthetic technique and maternal and neonatal outcomes. This included maternal transfer to the high dependency unit for any indication, neonatal APGARs, and neonatal transfer to a higher level of care for any indication.

## Results

We reviewed 489 charts during the thirty-day period. Forty-one women (8.3%) underwent general anesthesia for cesarean section for any indication. The reasons were diverse (see Figure 1). Uterine rupture or impending uterine rupture, cord prolapse, obstructed labor, and failed spinal accounted for the vast majority of general anesthetics administered. General anesthesia was used in 6.5% of elective cases and 7% of emergent cases.

Indications for General Anesthesia

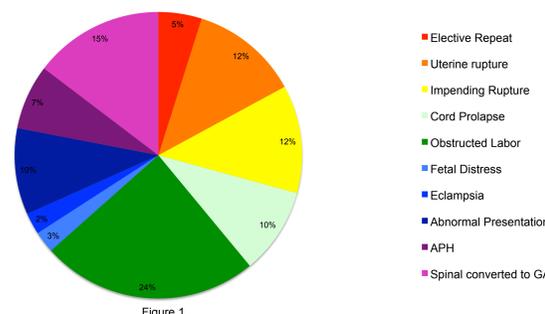


Figure 1

Indications for Spinal Anesthesia

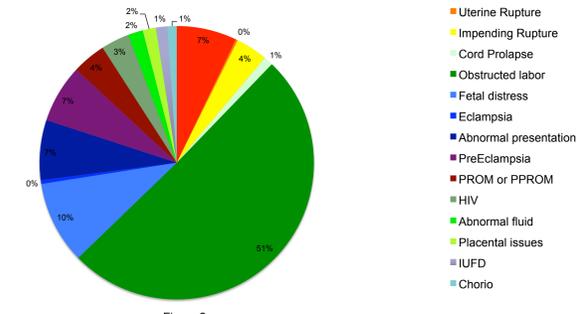


Figure 2

## Discussion

Rates of general anesthesia used for cesarean section at Mulago Hospital are similar to those in United States and other developed nations.<sup>1,2</sup> The clinical indications for a general anesthetic were often concordant with those considered reasonable in our current anesthetic practice; however, many were seemingly random. Additionally, many were clustered on the same day suggesting that there are certain providers who use general anesthesia far more than others. Targeted education of specific providers may further ensure the indications are appropriate. Although general anesthesia was associated with more adverse outcomes (68%) than spinal anesthesia (20%), the use of general anesthesia was also associated with a higher percentage of high-risk situations including uterine rupture or impending rupture, antepartum hemorrhage, and cord prolapse. Because our two cohorts are neither randomized nor independent it is difficult to draw statistical significance from this data; however, it does not appear that general anesthesia alone contributes significantly to maternal and neonatal morbidity and mortality at Mulago Hospital.

## References

1. Bloom et al. Complications of anesthesia for cesarean delivery. *Obstetrics Gynecology* 2005;106:281-7  
2. Pandey et al. Conversion from regional to general anaesthesia: are we meeting the standards? *Anaesthesia* 2012;67:550-1