Executive Summary: Tong BME Design Award, BME 402

Model For Retained Placenta Extraction

Aaron Sonderman, Alex McCunn, Bridget Smith, Zach Katsulis
Advisor: Professor Thomas Yen
Client: Dr. Lee Dresang

Postpartum hemorrhaging, often caused by placenta accreta, accounts for 25% of maternal deaths worldwide. Placenta accreta, a condition where the placenta has fused with the uterine wall, requires immediate surgical intervention and is one potential form of a medical condition known as retained placenta. Typically, after birth the placenta is no longer needed and is expelled from the uterus of the mother naturally; however, in approximately 3% of births, the placenta does not detach from the uterine wall and must be manually extracted by the physician.

Due to the rarity of this condition, textbooks remain the primary source for training on the subject. However, the severity of this issue deems it necessary that there be a training simulator. A training model allows physicians to practice placental removal so that they are prepared and able to recognize the condition. There are many different expensive birthing models and simulators currently on the market, but they do not accurately represent the physiology or tactile feel of the body. With currently no accurate, affordable model on the market, many healthcare organizations with an obstetrics department will be interested. This model is a low cost, physiologically accurate representation of a retained placenta procedure and could have implications for improved physician confidence and maternal health globally.