Utility of Bedside Ultrasound in Identifying Undiagnosed Malpresentation Upon Admission to Labor and Delivery: A Quality Improvement Project

Kristen Daugherty M.D., Gloria Wang M.D., Samantha McLean D.O., Jeffrey Johnson M.D., Kelly Mosher M.D., Kimberly Swan M.D.

Background

- Accurate identification of fetal presentation is important for making informed clinical decisions regarding delivery mode[1].
  - Induction of a malpresented fetus carries increased risks to both mother and fetus.
  - Cesarean delivery is recommended for fetal malpresentation.

- Traditional methods, such as Leopold maneuvers and digital vaginal examinations, may have limitations in accuracy and can be uncomfortable for the patient[2].

- Bedside ultrasound offers a non-invasive and reliable alternative for confirming fetal presentation.

- Misdiagnosis of fetal presentation or delayed identification of fetal malpresentation can result in unnecessary obstetric interventions and unfavorable obstetric outcomes[1].

- OB/Gyn residents are a potential resource for performing these ultrasounds on the Labor and Delivery floor and are involved in select private practice groups for deliveries.

Purpose

- The primary objective of this quality improvement project is to implement and assess the impact of utilizing routine bedside ultrasound for identifying fetal vertex or malpresentation in pregnant patients presenting at the time of admission for induction to the Labor and Delivery unit.

Hypothesis

- The implementation of routine bedside ultrasound for fetal presentation upon admission to Labor and Delivery will improve detection of fetal malpresentation and decrease unplanned cesarean sections during labor.
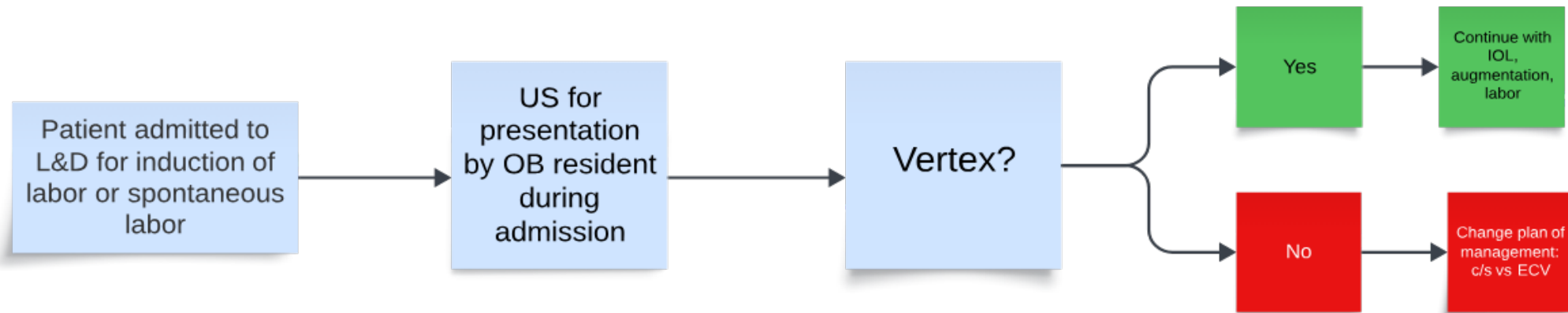
Methods

- Training and Education of Residents

  o All residents trained and signed-off during their first year via formal obstetrics ultrasounds during their first year.

- Protocol Standardization

  o In patients managed by resident physicians, all patients received a bedside ultrasound while on the Labor and Delivery unit prior to the start of any induction of labor intervention. Fetal presentation was documented on electronic medical record.

    ▪ Patients that were confirmed to be vertex would undergo induction or augmentation of labor.

    ▪ Patients that were not vertex were discussed options of ECV (if applicable) or cesarean delivery.

  o Patients that were not managed by residents would have their induction and decision for ultrasound determined by the attending physician responsible for the patient at the time.

- Equipment Accessibility

  o Bedside ultrasound equipment was ensured to be easily accessible within the Labor and Delivery unit.

Process Map

Methods

- Data Collection and Analysis

  - Intervention was implemented in February 2021 at Overland Park Regional Medical Center.

  - All patients who were induced or augmented and then had a cesarean section for malpresentation were evaluated 1 year pre- and post- intervention.

    - patients with multifetal gestation were excluded

  - Chart review was performed for each patient to assess if they had an ultrasound for presentation (and fetal presentation if done), confirmed that they were induced or augmented, and confirm that they had a cesarean section during labor for malpresentation.

Results

- Pre-Intervention (February 2020 – January 2021)

  - **8 patients** were induced and ended up having a cesarean section for malpresentation

    - **1 patient:** face presentation, mentum posterior

    - **3 patients:** vertex scan on admission, baby flipped during induction

    - **4 patients:** no scan on admission, malpresentation found during labor

- Post-intervention (February 2021 – January 2022)

  - **7 patients** were induced and ended up having a cesarean section for malpresentation

    - **4 patients:** vertex on admission, baby flipped during induction

    - **3 patients:** no scan on admission, malpresentation found during labor

      - **Residents were not involved in any of these cases**

Results

- Of the patients who had a cesarean section for malpresentation after induction of labor

  - Pre-intervention (February 2020 - January 2021): 50% of those patients did not have an ultrasound on admission

  - Post-intervention (February 2021 - January 2022): 43% of those patients did not have an ultrasound on admission

Conclusion/Discussion

- There was not a large difference in the number of patients who had a cesarean section after induction of labor for malpresentation and did not have an ultrasound on admission between the pre- and post-intervention data.

  - For the post-intervention data, none of these patients had resident involvement.

- Initial bedside ultrasound identified some cases of fetal malpresentation but could not prevent changing fetal lie in all cases.

- Small sample size.

Future Work

- Standardizing protocol for fetal presentation assessment across entire L&D unit, not just for patients who have residents involved in their care.

- Consider training nursing staff to utilize bedside ultrasound to confirm fetal presentation when residents are not involved.

- Conduct a larger study to assess the utility of bedside ultrasound in identifying undiagnosed malpresentation upon admission to labor and delivery that includes all patients presenting for IOL and in spontaneous labor and a longer review period.

References

1. Gimovsky AC. Intrapartum ultrasound for the diagnosis of Cephalic Malpositions and malpresentations. *American Journal of Obstetrics & Gynecology MFM*. 2021;3(6):100438. doi:10.1016/j.ajogmf.2021.100438

2. Udompornthanakij P, Kongsomboon K, Hanprasertpong T. Accuracy and factors influencing Leopold's manoeuvres in determining vertex presentation during late third trimester of pregnancy. *Journal of Obstetrics and Gynaecology*. 2019;40(5):639-643. doi:10.1080/01443615.2019.1645102