



Introducing ROTEM to our Tertiary Obstetric Unit

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Introduction

Massive Obstetric Haemorrhage (MOH) is a leading direct cause of maternal death in the UK. MBRRACE reports have highlighted the problem of slow processing times for coagulation tests delaying blood product administration.¹ This is an ongoing issue in our unit, which delivers 5000 babies per year.

Point of care coagulation testing (POCCT) is recommended by the AAGBI, OAA and RCOA² as a tool to speed up recognition and treatment of coagulation disorders in MOH.

After agreement in principle with the maternity leadership team to introduce POCCT we reviewed our local MOH management to support the bid.

Methods

Approval for a retrospective survey of reported MOH in 2021 was granted by the Trust governance committee. We reviewed the case notes of each patient who had a MOH and compared findings with 2018 data.



Identifying frequency of MOH's



Quantifying blood loss



Blood products transfused and wasted



Modes and place of MOHs



Cost of blood products



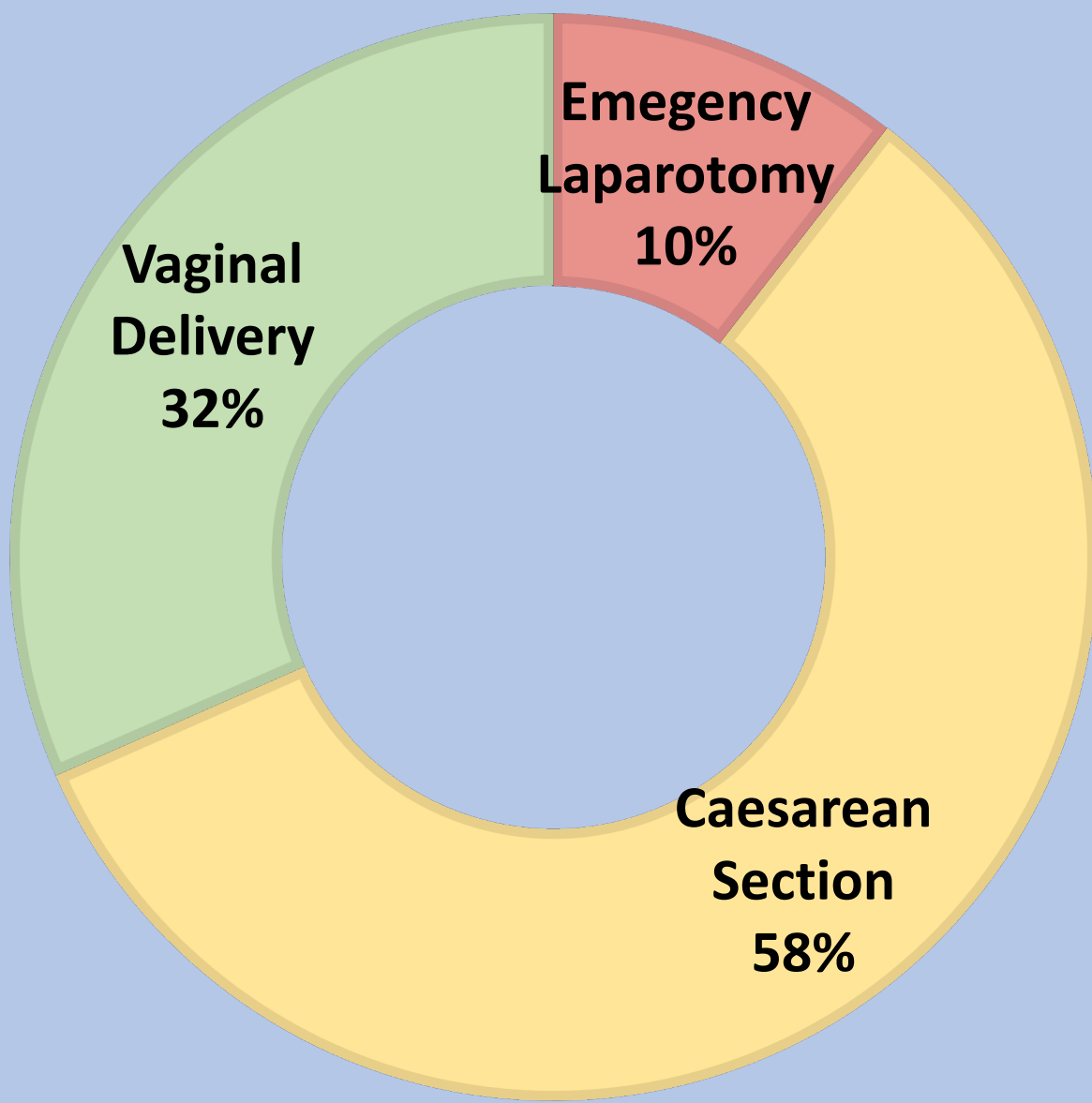
Time taken to process coagulation test

References

1. Knight M, Bunch K, Tuffnell D, et al on behalf of MBRRACE-UK. Saving Lives, Improving Mothers' Care - Lessons learned to inform maternity care from the UK and Ireland Confidential Enquiries into Maternal Deaths and Morbidity 2017-19. Oxford: National Perinatal Epidemiology Unit, University of Oxford 2021
2. Bamber J, Lucas N, Riley M et al. Guidelines for the Provision of Anaesthesia Services (GPAS). Chapter 9. Guidance on the Provision of Anaesthesia Services for Obstetric Anaesthesia Services 2022. Guideline 2.7.

Results

- Our documented MOH incidence in our unit has risen - 19 cases were declared in 2021 compared with 11 cases in 2018
- QBL was over the local MOH threshold of 1.5L in 84% of cases (Range 1-5 – 7.4L)



- 47% of MOH's occurred during "out of hours" (6pm to 8am)
- 16% occurred in elective theatres, the remainder in delivery suite/emergency theatre.
- Three unplanned hysterectomies and one admission to ICU

2021 RJMH MOH	Units Ordered	Units Transfused	Units Wasted	Cost per Unit(£)
Packed Red Cells	122	54	3 (2.5%)	150.41
Fresh Frozen Plasma	84	43	31 (36%)	54.33
Platelets	7	6	0	301.12
Cryoprecipitate	10	8	2 (20%)	230.67

Blood products used and wasted during 2021 MOHs

- Time taken to receive a coagulation profile deteriorated from a mean of 88 minutes (2018) to **106 minutes** (2021).
- Wasted products cost on average **£133 per patient**.

Discussion

MOH and its management remained problematic in our unit. It is a major factor in our patient morbidity, including unplanned hysterectomies, ICU admission, massive or inappropriate transfusion along with the risk of transfusion related adverse outcomes.



Blood products are a valuable resource and Northern Ireland is currently in a 'pre-amber' alert with low stocks available.

Our results show considerable delay in processing a coagulation profile during a MOH which may cause inappropriate transfusion or waste.

POCCT can yield results in 10-30 minutes and this project has helped support our bid for a ROTEM machine. Funding has now been approved, staff training has been carried out and ROTEM was installed to our unit in March 2023.

ROTEM training has involved:

- Anaesthetists, anaesthetic nurses, obstetricians, midwives, critical care scientists, haemovigilance team
- Online modules and face to face teaching
- Didactic lectures and multidisciplinary simulation training.

Changes to practice have included:

- Introduction of a ROTEM-guided MOH algorithm
- Modification of local MOH guideline
- Authorised immediate access to fibrinogen concentrate.

These measures will help to guide our rapid accurate management of coagulopathy during MOH as we embed their use into the culture and practice of our unit.

Acknowledgements

Thanks to the OBS Cymru Study group for the use of their validated ROTEM protocol in our local ROTEM-guided MOH algorithm

