

Oxytocin injection and misoprostol tablet compared to oxytocin-ergometrine injection and placebo tablet to prevent bleeding after vaginal delivery

Submission date	Recruitment status	<input checked="" type="checkbox"/> Prospectively registered
03/01/2025	Recruiting	<input checked="" type="checkbox"/> Protocol
Registration date	Overall study status	<input type="checkbox"/> Statistical analysis plan
14/01/2025	Ongoing	<input type="checkbox"/> Results
Last Edited	Condition category	<input type="checkbox"/> Individual participant data
13/01/2025	Pregnancy and Childbirth	<input type="checkbox"/> Record updated in last year

Plain English summary of protocol

Background and study aims

Worldwide, severe bleeding due to childbirth is a primary cause of the death of new mothers accounting for 8 to 20% of the deaths. Severe bleeding can also cause multiple body organs to fail and removal of the womb to control bleeding. The main cause of severe bleeding is the failure of the womb to contract adequately or maintain the contracted state following separation and delivery of the afterbirth. It is standard practice worldwide to routinely give medicines that increase womb contraction immediately at delivery to reduce bleeding. Oxytocin is a natural substance (hormone) released by a part of the brain to quickly and effectively cause womb contraction but it lasts only a short time (minutes) whereas the risk of bleeding if the womb is relaxed persists for many hours. In Malaysia, oxytocin is combined with ergometrine (a slower-acting but longer-lasting medicine to maintain womb contraction) as an injection for a more sustained effect. However, ergometrine can cause side effects like increasing blood pressure which can be of concern as high blood pressure is a common complication during pregnancy. High blood pressure due to pregnancy can show itself for the first time in the hours or days after birth has occurred. Therefore, ergometrine may worsen further the unanticipated high blood pressure that is only revealed after birth.

Misoprostol is a different type of longer-lasting womb contraction-sustaining medicine that can be taken orally. Misoprostol does not appear to cause high blood pressure and likely has a different side effect profile from ergometrine. Both ergometrine and misoprostol are shown to be similarly effective at reducing childbirth-related bleeding in combination with oxytocin. A direct comparative study of oxytocin-misoprostol compared to oxytocin-ergometrine in the context of their use to prevent childbirth-related bleeding based on their side effects and effectiveness in reducing bleeding has not been performed. This study aims to evaluate oxytocin (injection) and misoprostol (tablet) compared to oxytocin-ergometrine (single injection) and placebo (tablet) immediately at vaginal delivery on side effects and blood loss.

Who can participate?

Patients expecting a vaginal delivery, age 18-45 years, term (≥ 37 weeks of pregnancy), single baby in head down presentation, not more than 4 previous births.

What does the study involve?

Only patients who delivered vaginally will receive the trial medicines as randomly assigned by a computer. Oxytocin injection combined with oral misoprostol tablets or fixed-dose single injection of oxytocin and ergometrine (Syntometrine®) with oral placebo (non-active) tablets, given one time only at the delivery of the baby and before the placenta is delivered.

What are the possible benefits and risks of participating?

Oxytocin injection combined with oral misoprostol and a fixed dose single injection of combination oxytocin and ergometrine (Syntometrine®) to prevent childbirth-related bleeding has been evaluated in other studies and shown to be effective and reasonably well tolerated. However, these combinations have not been directly compared within a study. Major benefits or differences in bleeding between them are not anticipated. Any benefit or harm is within their side effects profiles. These side effects are anticipated to be mild and short-lasting only. The study will provide high-quality comparative data to guide future care of universally applied medications during childbirth.

Where is the study run from?

Labour ward, Universiti Malaya Medical Centre

When is the study starting and how long is it expected to run for?

January 2024 to October 2026

Who is funding the study?

Department of Obstetrics and Gynaecology, Universiti Malaya Medical Centre

Who is the main contact?

Dr Hemavahthy Mani, hemavahthymani@gmail.com

Contact information

Type(s)

Public, Scientific, Principal investigator

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Additional identifiers

Clinical Trials Information System (CTIS)

Nil known

ClinicalTrials.gov (NCT)

Nil known

Protocol serial number

Nil known

Study information

Scientific Title

Intramuscular oxytocin & oral misoprostol versus intramuscular fixed dose oxytocin-ergometrine & oral placebo tablet for postpartum haemorrhage prophylaxis following vaginal delivery: a randomised controlled trial

Acronym

MisO Study

Study objectives

We hypothesize that oxytocin 10 IU i.m. plus oral misoprostol 600 mcg compared to fixed dose oxytocin 5 IU-ergometrine 500 mcg i.m. plus oral placebo tablet will have different impact on hypertension and fever in the one hour after delivery

Ethics approval required

Ethics approval required

Ethics approval(s)

approved 07/11/2024, Medical Research Ethics Committee of University of Malaya Medical Centre (Lembah Pantai, Kuala Lumpur, 59100, Malaysia; +80 03-79493209/2251; iresearch@ummc.edu.my), ref: 2024117-13252

Study design

Participant-blinded parallel-group randomized trial

Primary study design

Interventional

Study type(s)

Treatment

Health condition(s) or problem(s) studied

Prevention of postpartum haemorrhage, tolerability of prophylactic agents

Interventions

Patient recruitment will take place in antenatal or labour ward of UMMC. All women admitted for a planned vaginal birth will be assessed for eligibility. A Patient Information Sheet will be provided. Oral questions about the study will be invited and answered by the recruiting provider. Written informed consent will be taken from all who agree to participate.

Participants will be randomised only at vaginal delivery to:

i) i.m. oxytocin 10 IU and oral misoprostol 600 mcg tablet

OR

ii) i.m. syntometrine (fixed dose oxytocin 5 IU and ergometrine 500mcg) plus oral placebo

Given at the delivery of the anterior shoulder or latest before delivery of the placenta.

These prepared interventions will be placed in the sealed opaque numbered randomization envelopes.

Intervention Type

Drug

Phase

Not Applicable

Drug/device/biological/vaccine name(s)

Oxytocin for injection (10 IU), syntometrine for injection (fixed dose oxytocin 5 IU and ergometrine 0.5 mg), oral misoprostol tablet, placebo tablet

Primary outcome(s)

One hour after delivery, the presence of:

1. Hypertension (systolic \geq 140 mmHg and/or diastolic \geq 90 mmHg) measured using a hospital-grade automated blood pressure device
2. Fever (body temperature \geq 37.5 °C) measured using a hospital-grade thermometer

Key secondary outcome(s)

1. Delivery blood loss measured using data collected from participant electronic medical records (EMR) at hospital discharge
2. Use of additional haemostatic intervention (e.g., uterotronics, operative interventions) measured using data collected from EMR at hospital discharge
3. Transfer for a higher level of care (HDU or ICU) measured using data collected from EMR at hospital discharge
4. Blood transfusion measured using data collected from EMR at hospital discharge
5. Women's sense of wellbeing measured using a 0-10 Numerical Rating Scale (NRS) before hospital discharge
6. Satisfaction with the allocated intervention measured using a 0-10 NRS) before hospital discharge
7. Interval to first satisfactory breastfeeding (from maternal perspective); date and time as reported by mother as soon as satisfactory breastfeeding episode achieved
8. Shock ascertained measured using data collected from EMR at hospital discharge
9. Coagulopathy measured using data collected from EMR at hospital discharge
10. Hysterectomy measured using data collected from EMR at hospital discharge
11. Organ dysfunction measured using data collected from EMR at hospital discharge
12. Maternal death measured using data collected from EMR at hospital discharge
13. Adverse effects of hypertension, fever, vomiting, shivering, epigastric discomfort or fullness, diarrhoea, headache, chest pain, palpitation, and shortness of breath measured using data collected through direct questioning within 24 hours of birth and from EMR
14. Composite adverse effects of at least one of hypertension, fever, vomiting, shivering, epigastric discomfort or fullness, diarrhoea, headache, chest pain, palpitation, and shortness of breath measured using data collected from EMR at hospital discharge
15. Major harm measured using data collected from EMR at hospital discharge:
 - 15.1. Haemorrhagic cerebral vascular event due to hypertension
 - 15.2. Maternal febrile convulsion
 - 15.3. Maternal ICU admission for bleeding complications due to uterine atony

Completion date

30/10/2026

Eligibility

Key inclusion criteria

1. Expecting a vaginal delivery
2. Age 18-45 years
3. Term gestation (\geq 37weeks)
4. Single fetus
5. Cephalic presentation
6. Parity <5
7. Final inclusion for randomization: have achieved vaginal delivery

Participant type(s)

Patient

Healthy volunteers allowed

No

Age group

Adult

Lower age limit

18 years

Upper age limit

45 years

Sex

Female

Key exclusion criteria

1. Contraindication to oxytocin, misoprostol and ergometrine
2. Known hypertension, cardiovascular, hepatic or hematologic disorders

Date of first enrolment

01/02/2025

Date of final enrolment

31/03/2026

Locations

Countries of recruitment

Malaysia

Study participating centre

Universiti Malaya Medical Centre

Lembah Pantai, 59100, Kuala Lumpur

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Sponsor information

Organisation

University Malaya Medical Centre

ROR

Funder(s)

Funder type

Hospital/treatment centre

Funder Name

Universiti Malaya

Alternative Name(s)

University of Malaya, University Malaya, Malayan University, King Edward VII College of Medicine, Raffles College, University of Malaya in Singapore, , , , UM

Funding Body Type

Government organisation

Funding Body Subtype

Universities (academic only)

Location

Malaysia

Results and Publications

Individual participant data (IPD) sharing plan

The raw data generated during and/or analyzed during the current study are/will be available upon request from Dr Hemavahthy Mani (hemavahthymani@gmail.com) subject to institutional review board approval 6 months after publication.

The type of data that will be shared: the reported data

Whether consent from participants was required and obtained: yes

Comments on data anonymization: yes

Any ethical or legal restrictions: Data sharing will be subject to ethical review and approval

IPD sharing plan summary

Available on request

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Participant information sheet		09/07/2024	13/01/2025	No	Yes
Participant information sheet	Participant information sheet	11/11/2025	11/11/2025	No	Yes
Protocol file	version 3	09/07/2024	13/01/2025	No	No