Perimortem Caesarean section for the non-obstetrician

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Incidence

• 1: 30,000 pregnancies
• Normally young ‘healthy’ adults
• 241 women during pregnancy or within 42 of end of pregnancy
  • 41 coincidental
  • 200 maternal deaths
    • 135 gave birth to 141 infants
    • 253 other children left without mothers
Maternal Mortality 2012-14

Dark bars indicate indirect causes of death, pale bars show direct causes of death;
*Rate for direct sepsis (genital tract sepsis and other pregnancy related infections) is shown in pale and rate for indirect sepsis (influenza, pneumonia, others) in dark bar
**Rate for suicides is shown in pale and rate for indirect psychiatric causes (drugs/alcohol) in dark bar
Source: MBRRACE-UK
Questions - 5 Ws (and 1 H)

• Who?
• What?
• When?
• Where?
• Why?
• How
Who?

- IF >20 weeks (above level of umbilicus)
  - foetus potentially viable >24 weeks
  - 20-24 weeks foetus → IVC compression
WHAT – Good resuscitation?

• Get help
• Airway management and ventilation
• CPR
• ALS cycles, drugs, IV access, monitoring
• Uterine displacement...
- specialist tilting table
- Reduced CPR effectiveness
Pull rather than push
WHAT – Good resuscitation?

• Get help!
• Airway management and ventilation
• CPR
• ALS cycles, drugs, IV access, monitoring
• Uterine displacement...
• Perimortem c-section..
WHEN?

• Aim to deliver foetus within 5 mins of cardiac arrest
  • Postulated 1986
    • Based on 4-6 minutes before brain damage occurs following anoxic arrest

• In some cases immediate delivery appropriate
  • injuries to mother unsurvivable
  • In cardiac arrest on arrival in dept
94 cases from extensive literature search
Mean gestation 33/40 (median 35, 10-42)
ROSC - 60%
Mean time to delivery 16 mins (range 1-60)
4/94 cases delivery was in less than 4 minutes
Maternal Survival

• 51/94 (54.3%)
• 40/51 *CPC 1 or 2
• Timing relates to outcome (p<0.001)
  • Survivors: 10 minutes (1-37) (median 9)
  • Deaths: 23 minutes (4-60) (median 20)

*CPC – Cerebral Performance Category
Fetal Survival

• 42/66 (63.6%)
• Timing relates to outcome (p=0.016)
  • Survivors: 14 minutes (1-47) (median 10)
  • Deaths: 22 minutes (4-60) (median 20)
‘It’s Contraindicated more than 5 minutes since cardiac arrest’ is EXPIRED ADVICE
WHERE?

• WHERE THE PATIENT COLLAPSES
• The woman should not be transported to an operating room for PMCD during the management of an in-hospital maternal cardiac arrest (Class IIa; Level of Evidence B).

• Specialist equipment not needed, can start with just a scalpel.

Why Do It?

- Recruitment of utero-placental blood flow accounting for 30% of cardiac output
- More effective CPR
- Relief of IVC obstruction
- 30-80% improvement in cardiac output
- Improved maternal and fetal survival

- Small print: if resuscitation fails it gives the family the opportunity to hold the baby prior to burial/cremation
Why Might You Not Do It?

• I haven’t done one before
• I’m not a surgeon/obstetrician
• I don’t have the right equipment
• It might be futile
• It’s brutal for the family to witness

• There’s no good reason!
How to Do It

- Vertical midline incision with a scalpel
- Top of curve to pubic symphysis
- Down to peritoneum
- Make hole in peritoneum with fingers just below umbilicus, extend with scissors to symphysis
Once through the peritoneum

- Expose the uterus; you can pull it out
- Vertical or LSCS incision on lower uterus with the scalpel
- Cutting the baby is not uncommon in obstetric practice. Don’t let fear of this put you off
- Suction++
- Complete with scissors
Delivery

- Fundal pressure to extract the baby; pull it out
- Clamp and cut cord
- Hand over the baby to a colleague to resuscitate
Third stage

• Deliver placenta

• Uterus
  • Squash placenta between hands.
  • Can pack with swabs
  • Haemostatics?

• Drugs
  • TXA - Yes
  • Oxytocin – Cardiac arrhythmias and hypotension
  • Ergometerine → hypertension
In Summary

- Rapid decision required – if you’re not sure just do it
- You only need a scalpel and scissors
- Continue resuscitation throughout
- Simulate it.

- And Finally...
  - Look after yourself and your team
Any Questions