Haemorrhage Management During Caesarean Deliveries

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Outline

- Background
- Worldwide picture
- UK wide picture/Trend
- Data presentation/ Analysis/ Discussions
- Recommendations
- Discussion/Questions

Background

- **Obstetric haemorrhage** remains a significant cause of maternal morbidity and mortality!
- Worldwide annually: ½ Million Maternal Deaths!
- In the UK the majority of deaths following obstetric haemorrhage are preventable!
- About 58% of cases in 2003-2005 CMACE report received 'sub-standard' care. (RCOG),
- **Primary Postpartum haemorrhage (PPH)** is the most common form of major obstetric haemorrhage.

Primary Postpartum haemorrhage (PPH)

- This is defined by 'a loss of 500mls blood or more from the genital tract within 24 hours of delivery,' or
- More than 1000mls after a Caesarean Section

Classification PPH

- moderate (1000-2000mls)
- severe (>2000mls).

Causes and Risk Factors

- The commonest cause of PPH is **uterine atony**
- other causes :

perineal/vaginal/cervical trauma.
retained placenta/membranes
Coagulopathies

Risk Factors for **uterine atony**:

multiple pregnancies,
uterine fibroids
polyhydramnios,
Grand muliparity,
prolonged first/second stage of labour
augmented labour
retained placenta and placenta accrete.

Key Point

- Most of these risk factors are non-modifiable at the time of delivery.
- However active management of the third stage of labour, aimed at prevention of uterine atony, (for example by the correct use of uterotonics) greatly reduces the risk of PPH.

Deaths From Obstetric Haemorrhage CMACE

Year	2009-2011	2010-2012	2011-2013
Number (%)	14 (0.59%)	11 (0.46%)	13 (0.55%)
N=Maternities	2 379 014	2 401 624	2 373 213

Aims and Objectives

- Assess the unit's management of PPH following caesarean sections
- Against RCOG green top guideline No 52
- Assess compliance/performance
- Analyse trends to encourage discussion and make recommendations.

Methods

- Retrospective
- Case-note data collection
- 46 women
- Inclusion Criterion: 1000mls or more within 24 hours post-caesarean section at GWH
- Study Period: 1st April 2014 and 31st March 2015. (1yr)
- Those with missing notes were excluded (1/47).
- Data collected included
- Maternal demographics info
- Identifiable antenatal risk factors for PPH e.g. Large or multiple fibroids
- Peripartum risk factors e.g. augmentation of labour
- Risk factors developing during delivery e.g. pyrexia, Significant APH etc.
- Event Management data
- Post PPH management data e.g. ITU admission
- Patient recovery Data e.g. length of hospital stay

Data was analysed using basic statistical techniques.

Audit Standard

- **In the RCOG green top guideline No 52 the following sequence of interventions are recommended in the context of PPH, till bleeding is brought under control.**
- Bimanual uterine compression (rubbing up the fundus) to stimulate contractions
- Ensure bladder is empty (Foley catheter, leave in place)
- Syntocinon 5 units by slow intravenous injection (may have repeat dose)
- Ergometrine 0.5 mg by slow intravenous or intramuscular injection (contraindicated in women with hypertension)
- Syntocinon infusion (40 units in 500ml Hartmann's solution at 125ml/hour) unless fluid restriction is necessary
- Carbaprost 0.25 mg by intramuscular injection repeated at intervals of not less than 15 minutes to a maximum of 8 doses (contraindicated in women with asthma)
- Misoprostol 1000 micrograms rectally

Total C/S

Month	Elective CS	Em CS
Total	540	654

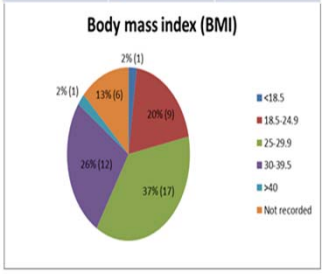
1,194

PPHs form about 3.9% of all caesareans during the study period.

Results-Overview

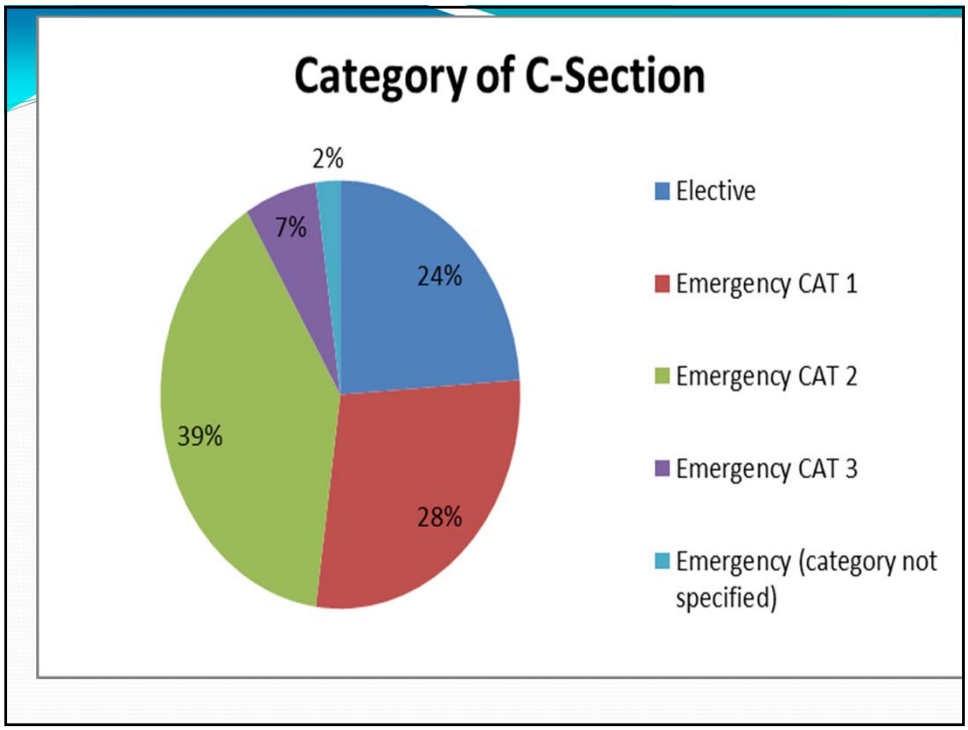
- Most patients were primiparous.
- Of the multiparous patients, 9 had one or more previous C-section.
- Gestation at birth ranged from 27 weeks +3 days to T+ 18 days.
- Most patients had singleton pregnancies (41/46, 89%).
- Average BMI was 28 (see graph 1).
- Only 2 patients had previous abdominal surgery (excluding c-sections) which included one laparotomy and one laparoscopy

Parity	No of Patients	% of all Patients
0	22	48
1	12	26
2	6	13
3	3	6.5
4	3	6.5



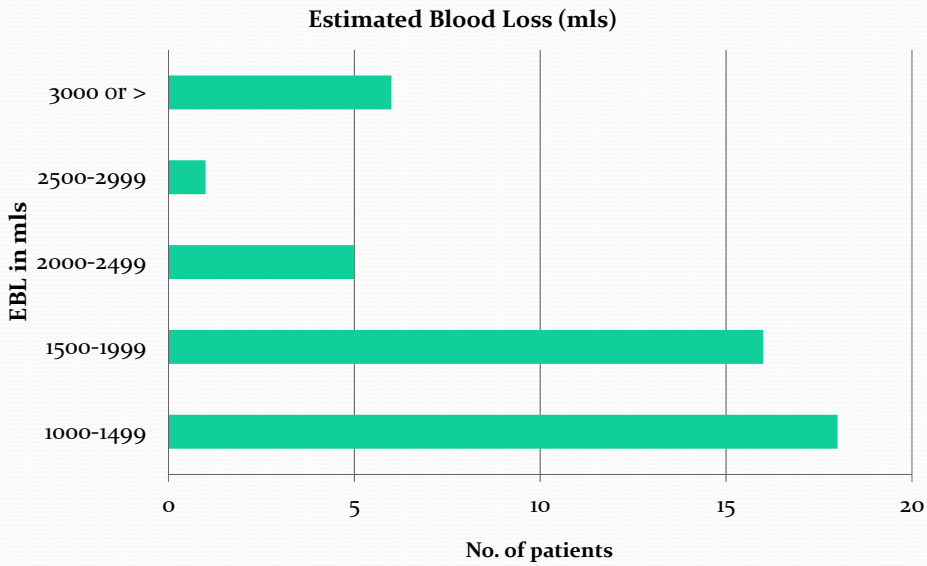
- Most common indication was a **failed trial** (10 out of 46 patients) (22%).
- The majority were category 2 (39%) (Graph 3).
- **Anaesthesia** - spinal or epidural only (30 out of 46)
- GA only (14 out of 46)
- Spinal converted to GA (2 out of 46
- **Seniority of the surgeon**:
- Cons operating with SPR assisting (11 of 46).
- SPR operating with Cons assisting (4 out of 46)
- SPR operating with SHO assisting (25 out of 46)
- SHO operating with Cons assisting (5 out of 46)
- Nb - 1 was not documented.

Indication for Caesarean	Number of patients
Failed Trial	10
Failure to progress	6
Placental Abruption	6
Previous C/S	5
Placenta Praevia	4
Pathological CTG	4
Breech presentation	3
Uterine Rupture	1
Twin pregnancy	2
Bowel pathology	1
Obstructing fibroid	1
Poorly controlled Epilepsy	1
Intrauterine death	1
Ruptured inferior epig artery(on fragmin)	1
Unstable lie	1
Polyhydramnious	1
Macrosomia	1



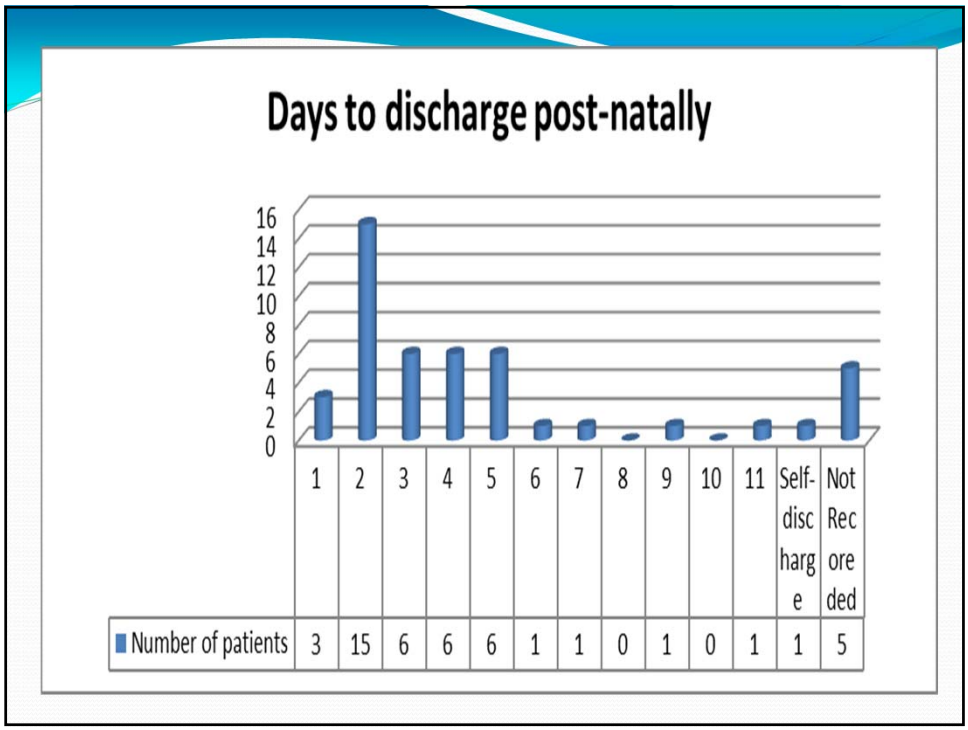
- Average EBL was **1796mls**
- Majority lost between 1000-1499 mls blood (Graph 2)
- **Blood Transfusion**: - 13 patients received blood products.
- Packed red cells given to all 13.
- FFP was given to 6 patients.
- Platelets were given to 2 patients
- Cryoprecipitate was given to 1 patient.
- **Tranexamic acid** - 6 patients received tranexamic acid.
- **Rusch balloon** was used in 8 patients.
- **B Lynch suture** in 2 patients.
- In 5 cases, patients were admitted to the Intensive Care Unit.
- Most patients were discharged 2 days after the C-section (15 out of 46) – see graph 4.
- **Uterotonics** –All patients routinely received bolus syntocinon 5 units and 40units syntocinon infusion. Additional uterotonics were administered on request.
- -There were no caesarean Hysterectomies during the study period!

Blood loss



Post-operative complications	Number of patients	Percentage %
Pyrexia	7	15.2
Failed trial of void without catheter	1	2.2
Disseminated Intra-vascular coagulation	1	2.2
Hypertension	3	6.5
Return to theatre	3	6.5
Urinary tract Infection	2	4.3
Lower Respiratory Tract Infection	1	2.2
None	30	65.2

Table 4- Post-operative complications (n=46)



Pharmacological Management-PPH

1st Uterotonic	2nd Uterotonic	3rd Uterotonic	4th Uterotonic	5th Uterotonic	Number	Percentage %
Not recorded	-	-	-	-	2	
Syntocinon 5 units	-	-	-	-	1	
Syntocinon 5 units	Syntocinon 5 units	-	-	-	1	
Syntocinon 5 units	Syntocinon 10 units		-	-	1	
Syntocinon 5 units	Syntocinon 40 units	-	-	-	1	
Syntocinon 10 units	Syntocinon 40 units	-	-	-	1	
Syntocinon 10 units	Syntocinon 40 units	Misoprostol	Carboprost x1	-	1	
Synotcinon 10 units	Carboprost x2	-	-	-	1	
Synotcinon 10 units	Syntocinon 40 units	Carboprost x2	Syntometrine	-	1	
Syntocinon 40 units	-	-	-	-	4	
Syntocinon 40 units	Syntocinon 10 units	Misoprostol	-		1	
Syntocinon 40 units	Carboprost x2	-	-	-	1	
Syntocinon 5 units	Carboprost x4	Syntometrine	Syntocinon 40 units	-	1	
Syntocinon 5 units	Syntocinon 5 units	Syntocinon 40 units	-	-	3	
Syntocinon 5 units	Syntocinon 5 units	Carboprost x1	Syntocinon 40 units	-	1	
Syntocinon 5 units	Syntocinon 5 units	Syntocinon 40 units	Carboprost x2	-	1	
Syntocinon 5 units	Syntocinon 5 units	Syntocinon 40 units	Carboprost x1	-	1	
Syntocinon 5 units	Syntocinon 5 units	Carboprost x1	-	-	1	

Syntocinon 5 units	Syntocinon 5 units	Carboprost x2	-	-	1	
Syntocinon 5 units	Syntocinon 40 units	Carboprost x1	-	-	5	
Syntocinon 5 units	Syntocinon 40 units	Carboprost x2	-	-	3	
Syntocinon 5 units	Syntocinon 40 units	Syntometrine	-	-	1	
Syntocinon 5 units	Syntocinon 40 units	Syntometrine	Carboprost x1	-	1	
Syntocinon 5 units	Syntocinon 40 units	Misoprostol	Carboprost x1	-	1	
Syntocinon 5 units	Syntocinon 5 units	Misoprostol	Syntocinon 40 units	-	1	
Syntocinon 5 units	Syntocinon 5 units	Syntocinon 40 units	Misoprostol	Carboprost x3	2	
Syntocinon 5 units	Syntocinon 5 units	Syntocinon 40 units	Carboprost x5	Misoprostol	1	
Syntocinon 5 units	Syntocinon 5 units	Syntocinon 40 units	Carboprost x1	Misoprostol	1	
Syntocinon 5 units	Syntocinon 5 units	Syntometrine	Carboprost x2	-	1	
Syntocinon 5 units	Syntocinon 5 units	Syntometrine	Carboprost x1	Syntocinon 40 units	1	
Syntocinon 5 units	Syntocinon 40 units	Syntometrine	Carboprost x1	-	1	
Syntocinon 5 units	Syntocinon 40 units	Syntometrine x2	Carboprost x 4	Misoprostol	1	
Syntocinon 5 units	Syntometrine	Syntocinon 40 units	Carboprost x1	-	1	

1st Uterotonic	2nd Uterotonic	3rd Uterotonic	4th Uterotonic	5th Uterotonic	Number	Percentage %
Not recorded	-	-	-	-	2	
Syntocinon 5 units	-	-	-	-	1	
Syntocinon 5 units	Syntocinon 5 units	-	-	-	1	
Syntocinon 5 units	Syntocinon 10 units	-	-	-	1	
Syntocinon 5 units	Syntocinon 40 units	-	-	-	1	
Syntocinon 10 units	Syntocinon 40 units	-	-	-	1	
Syntocinon 10 units	Syntocinon 40 units	Misoprostol	Carboprost x1	-	1	
Synotcinon 10 units	Carboprost x2	-	-	-	1	
Synotcinon 10 units	Syntocinon 40 units	Carboprost x2	Syntometrine	-	1	
Syntocinon 40 units	-	-	-	-	4	
Syntocinon 40 units	Syntocinon 10 units	Misoprostol	-		1	
Syntocinon 40 units	Carboprost x2	-	-	-	1	
Syntocinon 5 units	Carboprost x4	Syntometrine	Syntocinon 40 units	-	1	
Syntocinon 5 units	Syntocinon 5 units	Syntocinon 40 units	-	-	3	
Syntocinon 5 units	Syntocinon 5 units	Carboprost x1	Syntocinon 40 units	-	1	
Syntocinon 5 units	Syntocinon 5 units	Syntocinon 40 units	Carboprost x2	-	1	
Syntocinon 5 units	Syntocinon 5 units	Syntocinon 40 units	Carboprost x1	-	1	
Syntocinon 5 units	Syntocinon 5 units	Carboprost x1	-	-	1	
Syntocinon 5 units	Syntocinon 5 units	Carboprost x2	-	-	1	
Syntocinon 5 units	Syntocinon 40 units	Carboprost x1	-	-	5	
Syntocinon 5 units	Syntocinon 40 units	Carboprost x2	-	-	3	
Syntocinon 5 units	Syntocinon 40 units	Syntometrine	-	-	1	
Syntocinon 5 units	Syntocinon 40 units	Syntometrine	Carboprost x1	-	1	

Discussion

- Active management of the 3rd stage reduces the risk of PPH.
- Following CS in this unit syntocinon (oxytocinon) is routinely used and was administered in 100% of cases in this audit. In all cases syntocinon was administered intravenously after delivery either as 5iu, 10iu or a 40iu/ hr infusion.
- Other medications have been effectively and safely used - carbetocin and syntometrine (oxytocinon and ergometrine)
- A study of Carbetocin vs syntocinon after CS showed a reduction in need for further uterotonics.
- Tranexamic acid is probably underused (only 13%). It has been shown to be effective in reducing blood loss at CS, without an increase in thromboembolic events .

Discussion

- 2nd stage CS has a higher risk of major haemorrhage. longer hospital stay, greater risk of bladder trauma, and extension tears of the uterine angle leading to broad ligament haematoma .
- Delivery of the head may be technically challenging leading to extensions
- Secondly a long labour increases the risk of atony

Conclusions/Recommendations

- The most common indication for CS resulting in PPH is a failed trial.
- 2nd stage CS should be recognised as high risk for PPH.
- Consideration should be given to ensuring availability of cross matched blood and senior medical staff. Use of cell salvage should also be considered.

Conclusions/Recommendations

- Relative liberal use of Rusch Balloon probably contributes significantly to avoidance of caesarean hysterectomies.

Conclusion

- Post-partum haemorrhage remains a significant cause of maternal morbidity and mortality worldwide.
- Appropriate early management and the availability of senior medical staff is essential in order to obtain favourable outcomes.

Recommendations

- 1) Regular training of medical staff in the management of PPH following Caesarean section.
- 2) 2ND stage Caesarean section is relatively high risk for PPH and this eventuality should be prepared for, prior to delivery, including rapid availability of cross matched blood, especially where additional risk factors exist.