Association of patient characteristics with blood loss during planned cesarean hysterectomy for placenta accreta spectrum: a single-center study

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- In 2018, our hospital adopted a checklist and created a multidisciplinary team to care for patients with placenta accreta spectrum (PAS) who underwent planned cesarean hysterectomy at the time of cesarean delivery (C-HYST).

- The objective of our study was to determine which patient characteristics were associated with blood loss during C-HYST after adoption of this checklist and multidisciplinary team.

Methods

- Retrospective observational study design
- Patients who had planned cesarean hysterectomy at our hospital for placenta accreta spectrum from 2019 to 2024 were included in the study
- Our hospital has a multidisciplinary team and a checklist for cesarean hysterectomy procedures
- High blood loss was defined as QBL greater than 1500 ml
- We performed a bivariate analysis between high and low blood loss cohorts
- We then performed a bivariate logistic regression to predict high blood loss using variables of interest

Delivery

1. Main OR (Large OR due to multiple specialties needed)
2. Services Involved
    a. Accreta Surgeon – (attending and senior resident)
    b. OB Attending or Second Accreta Surgeon
    c. NICU – Delivery Team (5 members)
    d. Anesthesia – attending and resident
    e. OR – scrub and circulator
    f. L&D – circulator
    g. MFM/Urology – place bilateral ureteral stents prior to CD, following spinal anesthesia
3. To Bring from L&D:
    a. NST for fetal monitoring
    b. TAUS probe cover
    c. 4 cord clamps on the field
    d. TXAx 2 from L&D Pyxis
4. Patient in dorsal supine lithotomy position in Allen Leg holders
5. US - use GYN OR US
6. Drapes Needed - under buttocks drape, leg covers, abdominal major drape
7. Urology to place stents prior to case
8. Double suction on field hooked up to Neptune + Suction to under buttocks drape hooked up to Neptune
    a. Be sure to mark Neptune at the following intervals:
        i. Cystoscopy
        ii. Delivery of baby (amniotic fluid)
        iii. Prior to irrigation
9. Blood 2 units in room at beginning of case
10. NICU in room set-up before patient brought from L&D
11. Support person brought to room following Time-Out by L&D nurse/ Anesthesia attending, Dad leaves with NICU
12. CSE for CD followed by GETA for C-hyst
13. TXA to be given at cord clamp + Pitocin 20units in IVF
14. Hemabate 200mcg in 1ml NS on field to inject into uterus
15. Ligasure Impact on field
16. Combat Gauze/ Quick Clot available but not opened
17. Cystoscopy set-up available for after case
18. Suture – 2-0 looped PDS for Whip stitch on uterus, 0 vicryl pop-offs, #1 Looped PDSx2 for fascia, 2-0 vicryl for subcutaneous, 3-0 vicryl for subdermal, 4-0 monocryl

Results

	QBL > 1500 ml (N=17)	QBL ≤ 1500 ml (N=54)	P value
Race			0.65
Asian	*1 (6%)*	*3 (6%)*	
Black	*8 (47%)*	*18 (33%)*	
Hispanic	*2 (12%)*	*15 (28%)*	
Other Race	*0*	*1 (2%)*	
White	*6 (35%)*	*17 (31%)*	
Age (years)	35 ± 4	32 ± 4	**0.03**
BMI (kg/m^2)	32.7 + 6.6	31.4 + 6.8	0.43
Gravidity	4 (3-5)	4 (3-6)	0.68
Parity	2 (2-3)	3 (2-4)	0.59
Abortions	1 (0-1)	1 (0-1)	0.52
Multiple gestation	1 (6%)	2 (4%)	0.57
Prior Cesarean	17 (100%)	51 (94%)	1.00
Prior abd surgery	1 (6%)	2 (4%)	0.57
Any HTN disorder	4 (24%)	14 (26%)	1.00
Preeclampsia	0	3 (6%)	1.00
Gestational HTN	2 (12%)	3 (6%)	0.59
Any glucose abn	4 (24%)	15 (28%)	1.00
Preop diagnosis			**0.10**
Accreta	12 (71%)	46 (85%)	
Increta	0	3 (6%)	
Percreta	5 (29%)	5 (9%)	

	QBL > 1500 ml (N=17)	QBL ≤ 1500 ml (N=54)	P value
TXA (mg)	2000 (2000-3000)	1000 (1000-2000)	0.01
Carboprost tromethamine	5 (29%)	23 (43%)	0.33
Time from incision to wound closure	178 (162-216)	161 (140-209)	0.15
QBL	2330 (1700-2908) [1540-6100]	660 (450-1050) [200-1500]	<0.001
Post op diagnosis			0.047
No PAS	*0*	*3 (6%)*	
Accreta	*4 (24%)*	*29 (54%)*	
Increta	*4 (24%)*	*10 (19%)*	
Percreta	*9 (53%)*	*12 (22%)*	
Implementation year	4 (3-6)	4 (3-5)	0.64
Overall QBL: 200-6100 ml, mean 1197 ml, median 900 ml, IQR 500-1500 ml (not normally distributed)			

Bivariate logistic regression: **preop percreta diagnosis** (aOR 4.96; 95% CI 1.14-21.58; p=0.03) and **two-year increase in age** (aOR 1.38; 95% CI 1.04-1.83; p=0.03) independently associated with QBL > 1500 ml. (c-statistic = 0.73)

Conclusions

- Patients with preoperative diagnosis of placenta percreta five times more likely to have QBL > 1500 ml ml
- A two-year increase in age was associated with an approximately 40% increase in having QBL > 1500
- Previous cesarean delivery was not associated with QBL > 1500 ml
- C-statistic of 0.73 indicates moderate model discrimination
- Limitations: small sample size, single institution
- Checklist, specialty team contributed to overall low QBL

Study	Year	Blood loss
Bey et al	1993	1201 ml (mean)
Briery et al	2007	1963 (mean) (non-emergent) 2597 (mean) (emergent)
Kingdom et al	2020	1200 ml (mean)
Mitts et al	2025	1210 (median) (primary) 1305 (median) (repeat)