

Effect of a Multidisciplinary Clinic on Staffing and Outcomes for Cesarean Hysterectomy for Placenta Accreta Spectrum

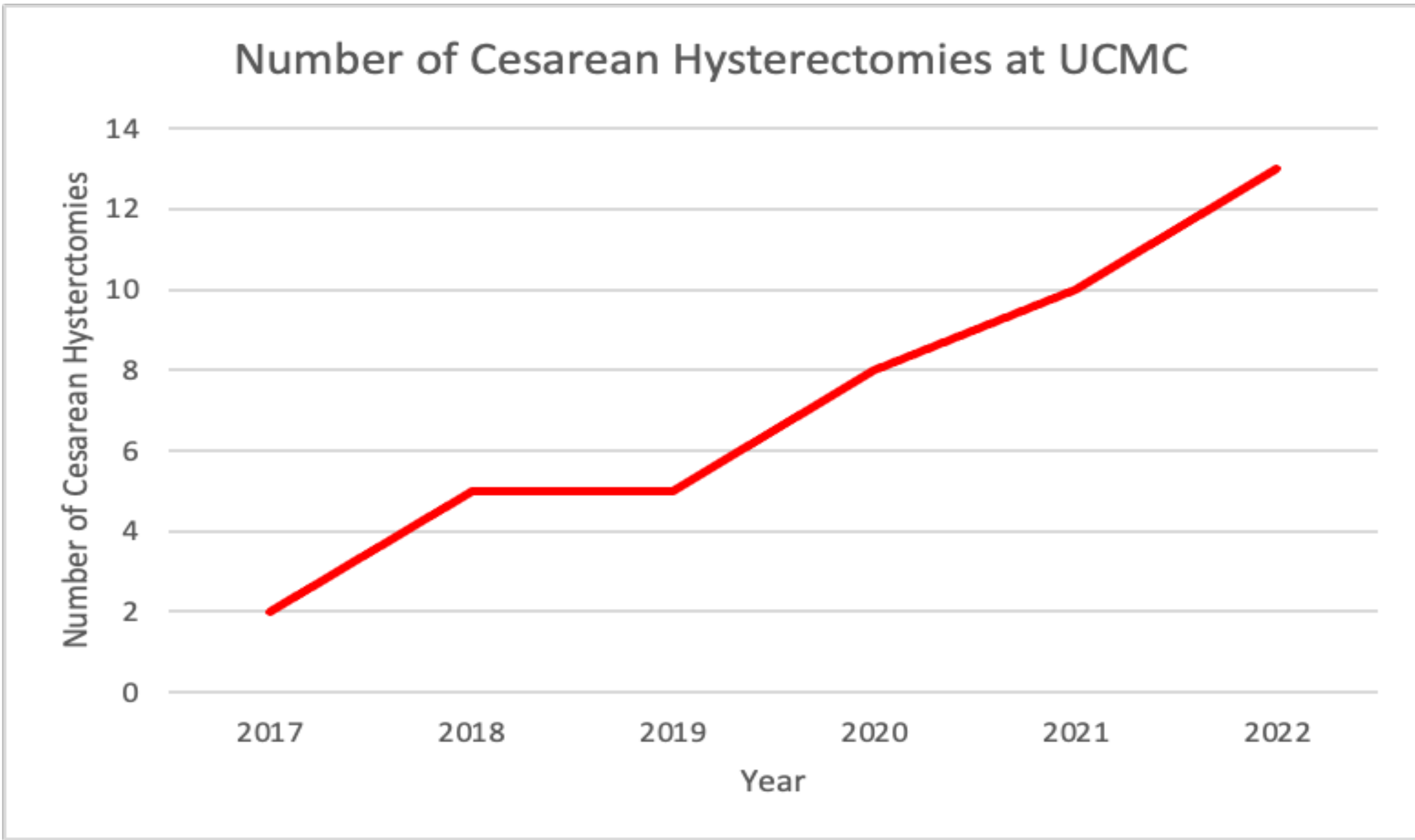
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Introduction:

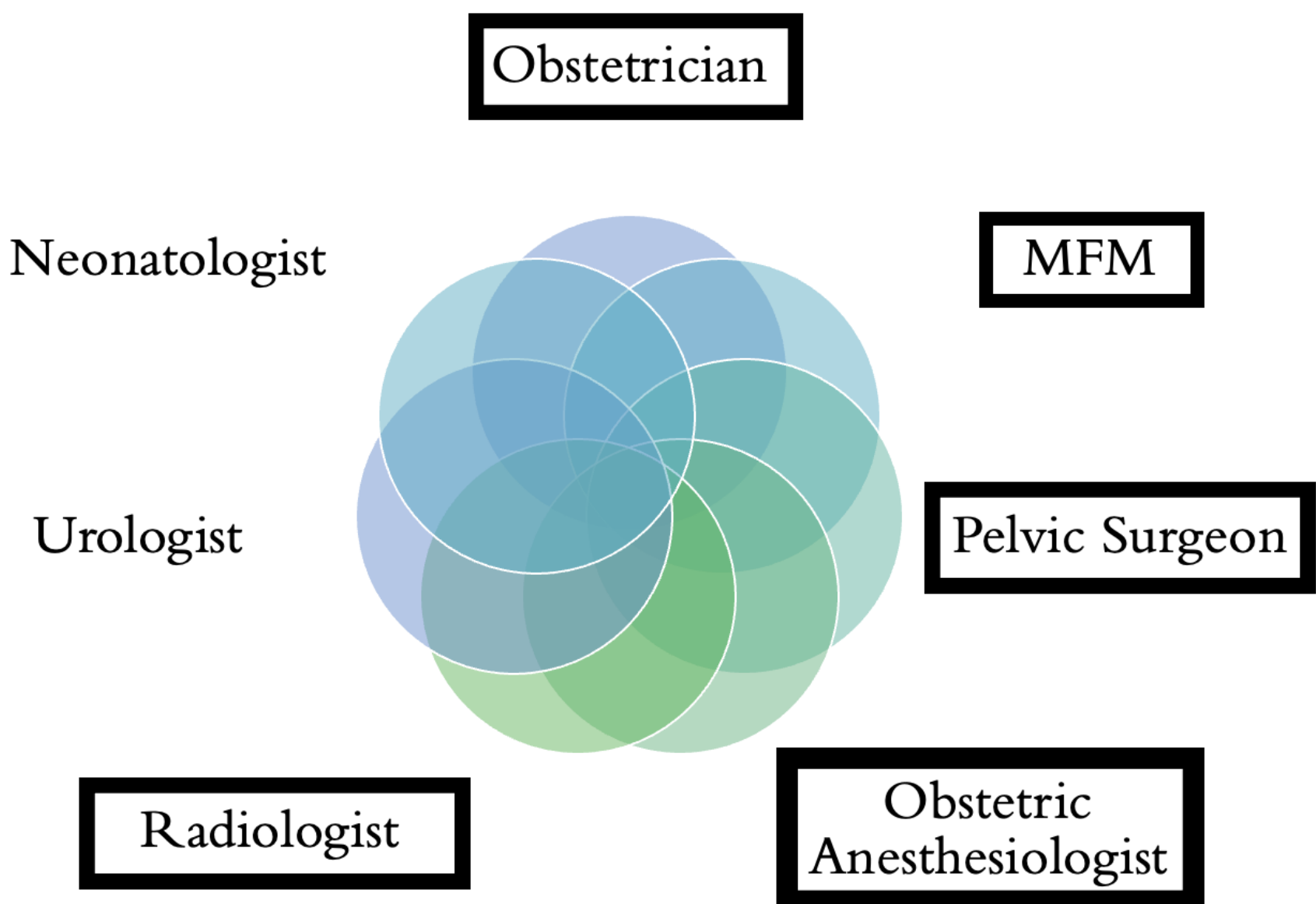
- Placenta accreta spectrum (PAS) is increasing in incidence. We have noticed an increased incidence at our hospital.
- PAS is associated with significant morbidity and mortality.¹
- Outcomes for PAS patients are improved when cared for at a tertiary care institution with strong multidisciplinary care.^{2,3}
- We sought to improve our management of patients with PAS by becoming a Placenta Accreta Center of Excellence.
- We instituted a Placenta Accreta Spectrum clinic in June 2020.

Year	# of cases
2017	2
2018	5
2019	5
2020	8
2021	10
2022	13



Interventions:

- Multidisciplinary PAS clinic with care plan
- Clear criteria for use of neuraxial anesthesia
- Monthly emails to OB anesthesia team after clinic
- Anesthesia clinical care pathway
- Emails to department for inpatients
- Monthly emails from MFM fellow with clinic patient updates
- NICU out of room for induction (noise reduction)
- Pre-surgery team huddles → abandoned



Data Analysis Methods:

- Retrospective data was collected on patients who had cesarean hysterectomies for PAS.
- Information collected included patient demographics, anesthesia types and staffing, obstetric outcomes, and blood loss and transfusion data.
- Statistical comparisons were performed using student *t-test* and *Chi-squared test* for continuous and categorical data, respectively.

Figure 1: Clinical pathway for cesarean sections and hysterectomy

Clinical Pathway for Cesarean Sections + Hysterectomy

By Thomas James, MD and Mary Roberts, MD (10/4/22)

Important Phone Numbers

MFM Fellow: 504-6099
OB Chief Resident: 967-9187
L&D Charge Nurse: 688-5125
GYN/ONC Fellow: 584-6373, pager 0918
NICU Nurse Practitioner or MD: 688-5122
UCMC Lab: 584-3700
UCMC Blood bank: 584-7888

Pacific Interpreters: 855-448-4332
UCMC Interpreters: 513-476-5682

Quick Summary: Cesarean hysterectomies are usually performed for Placenta Accreta Spectrum. The severity of bleeding is usually determined by the degree of invasion of the placenta. Placenta PERCRETA is usually the most severe.

Case Order of Events:

- ☐ Patient enters OR
- ☐ Neuraxial procedure (if applicable)
- ☐ Position patient
- ☐ Time Out
- ☐ Induction of GA if no neuraxial
- ☐ Urology will sometimes place ureteral stents prior to the start of the case to aid in identification of the ureters during surgery.
- ☐ Prep and drape
- ☐ Incision
- ☐ Baby Delivered
- ☐ Induction of GA if neuraxial used (drapes will be up)
- ☐ Uterus closed and isolated. Once the baby is delivered, they will close the uterus WITHOUT removing the placenta. We usually do not use [oxytocin](#) but they may ask [TXA](#) (1 g available in the OB hemorrhage kit).
- ☐ Uterus removed
- ☐ Close patient
- ☐ TAP blocks (if applicable)
- ☐ To SICU vs PACU depending on bleeding and resuscitation

Quick Read Checklist:

- ☐ Labs: recent CBC and active type and screen +/- starting coags (PT/INR, fibrinogen, TEG)
- ☐ Special equipment:
 - o C-section wedge
 - o NEURAXIAL = spinal kit or epidural kit + CSE kit; pinprick or cold tester
 - o GENERAL ANESTHESIA = glidescope + smaller ETT
- ☐ Special medications: Spinal bupivacaine (0.75%), OB hemorrhage kit (red tackle box from OB L&D unit) - nurse should bring down from OB
- ☐ Blood in room (at least 4 pRBCs + 4 FFP)
- ☐ Cell saver should be available/used - ask circulator to call perfusion to set up
- ☐ IV access: minimum 2-3 PIVs (at least 2 LARGE bore) +/- mac catheter depending on expected blood loss and PIV access
- ☐ Arterial line
- ☐ Fluid sets: 1-2 hot lines, at least 1 cold line
- ☐ For cases under neuraxial: confirm T4 level with pinprick or cold test prior to prep
- ☐ For cases under GA: make sure urology and OB is in the room and fetal heart rate monitors are on PRIOR to induction
- ☐ Consider consent for TAP blocks if time allows

Common Drugs that are Safe during Pregnancy:

- **Versed (midazolam)** - may cause fetal sedation on delivery, use with discretion
- **Propofol and inhaled anesthetics** – equally safe to use for GA, may cause fetal sedation
 - o usually try to deliver baby within 3 minutes or over 15 minutes after induction to minimize sedation to baby
 - o after baby delivered, may reduce inhaled anesthetics to about 0.5 MAC to minimize uterine atony (may combine with nitrous oxide to maintain full GA)
- **Nitrous oxide** – helps supplement depth of anesthesia after baby delivered to minimize uterine atony
- **Acetaminophen (Tylenol)** is safe. **Avoid NSAIDs** until baby delivered.
- **Neuromuscular blockers** (succinylcholine, rocuronium, vecuronium, etc.) safe in pregnancy (these do not cross the placental barrier).
- **Opioids** – may cause fetal sedation but benefits usually outweigh risks to fetus. Minimal transfer to breastmilk. Avoid meperidine.

Figure 2: Accreta clinic care plan

UCMC Placenta Accreta Spectrum Care Plan				Fetal Monitoring:	Spinal GETA	Brief episode post spinal placement as long as normotensive Until prep and drape
Patient Name		Referring provider				
MRN		GA at diagnosis				
Gravida/Para		Plan GA at delivery				
Physicians				Preoperative REBOA		
Referring Provider:		MFM at diagnosis		Preoperative ureteral stent		
Gynecologic-Oncologist		MFM for delivery		Pre-hysterotomy ultrasound mapping		
Consulting anesthesiologist		Other planned physicians		Attempt at placenta removal	No	
				Post-delivery pitocin	Not indicated	
Patient History				Special instrument request		
Diagnosis/imaging summary:	Medical History	Surgical History	Medications	Transfusion plan	TXA, Cell Saver	
			Allergies	Planned cystoscopy		
				Postoperative care location	SICU/ L and D overnight	
				OHIO HYSTERECTOMY FORM FILLED OUT?		
				Other special notes		
Risk factors/considerations				Considerations for unscheduled delivery		
Prior pelvic/abdominal surgeries				Phone List:		
Known bladder invasion				1. MFM Fellow 504-6099		
Antibody screen				2. Main OR/Anesthesia		
Objections to blood transfusion				-Main Desk: 584-1944		
If objection, alternative resuscitation plan:				-Main Anesthesia: 513-519-1111		
Vascular invasion				-OB Anesthesia 1: 513-312-3365		
Infectious concerns				-OB Anesthesia 2: 513-312-7580		
Preoperative anemia				3. Gyn Onc		
Other concerns				Billingsley: 843-324-7959		
				Jackson: 843-906-6222		
				Herzog: 646-942-1786		
				4. Urology pager: 513-473-8787		
				5. Blood Bank -584-7888		
				6. Consider Trauma Stat (pager 513-577-0195)		
Antepartum Coordination of Care						
Surgical Date/GA at delivery	Scheduled? Conflict concerns?	Corticosteroid dates	Completed?			
Planned admission date	Preoperative admission plans (Le type and cross, AZT, consults					
Consulting services	Y/N	Scheduled	Completed (provider, date, recommendations)			
Urology						
Vascular						
NICU						
Trauma						
Interventional radiology						
Transfusion Medicine						
Other						
Intraoperative Care Plan						
Scheduled plan						
Location (if main OR, L&D informed?)						
Intravenous access						
Invasive lines						
Patient positioning						
Route of Anesthesia						

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Table 1: Outcomes pre- and post-institution of a multidisciplinary accreta program

	Pre-Accreta Program (n = 19)	Post-Accreta Program (n=24)	p-value
General Anesthesia Final, n (%)	18 (94.7)	24 (100.0)	0.26
Spinal Anesthesia First, n (%)	6 (31.6)	10 (41.7)	0.50
Obstetrical Anesthesiologist	8 (42.1)	16 (66.8)	0.11
Average of PIVs	2.0 ± 0.2	2.8 ± 0.2	0.00
Number of PIVs			0.03
#1	7 (36.8)	1 (4.2)	
#2	5 (26.3)	7 (29.2)	
#3	7 (36.8)	13 (54.2)	
#4	0 (0)	3 (12.5)	
Arterial Lines	17 (89.5)	21 (87.5)	0.84
Central Lines	13 (68.4)	8 (33.3)	0.02
Video laryngoscopy used	10 (52.6)	20 (83.3)	0.05
Intrathecal Opiods given	6 (31.6)	10 (41.7)	0.50
Fentanyl Dose, mcg	163.4 ± 25.2	67.1 ± 12.4	0.00
Morphine Dose, mg	0.8 ± 0.4	0	0.03
Ketorolac Dose, mg	3.2 ± 2.2	4.4 ± 2.1	0.69
Acetaminophen Dose, mg	207.9 ± 94.9	291.7 ± 94.8	0.54
Tranexamic Acid Given	7 (36.8)	13 (54.2)	0.26
Extubated in OR	15 (79.0)	19 (79.1)	0.50
TAP block	6 (31.6)	5 (20.8)	0.42
Estimated Blood Loss	4,098 ± 612	3,570 ± 712	0.59
Transfusion			
pRBC, units	5.2 ± 1.1	4.5 ± 1.1	0.66
FFP, units	4.2 ± 1.1	3.6 ± 1.0	0.70
Platelets, units	1.1 ± 0.6	0.5 ± 0.2	0.25
Cryoprecipitate, units	0.4 ± 0.1	0.6 ± 0.2	0.35
Crystalloid Volume, mL	4,158 ± 490	3,450 ± 280	0.20
Estimated Blood Loss (excluding EBL >10L)	3,714 ± 504	2,380 ± 305	0.02
pRBC, units	4.7 ± 1.1	2.8 ± 0.6	0.12
Cell Saver Used	0	6 (25.0)	0.02
Cell Saver, mL transfused	0	178.0 ± 104.8	0.14
SICU Admission	11 (57.9)	14 (58.3)	0.98
Length of ICU Admission	0.7 ± 0.2	0.8 ± 0.2	0.76
Length of Stay	4 ± 0.2	4.6 ± 0.3	0.15
Gestational age (wk) (mean)	32.7 ± 0.7	32.5 ± 0.8	0.86
Birthweight (g)	2078 ± 133	2183 ± 164	0.64
Neonatal Outcomes			
1-min APGAR	5.8 ± 0.5	5.0 ± 0.5	0.23
5-min APGAR	6.5 ± 0.5	6.8 ± 0.5	0.69
EBL if spinal first	3,018 ± 911	2,823 ± 1,065	0.90
EBL if no spinal first	4,596 ± 771	4,103 ± 961	0.70

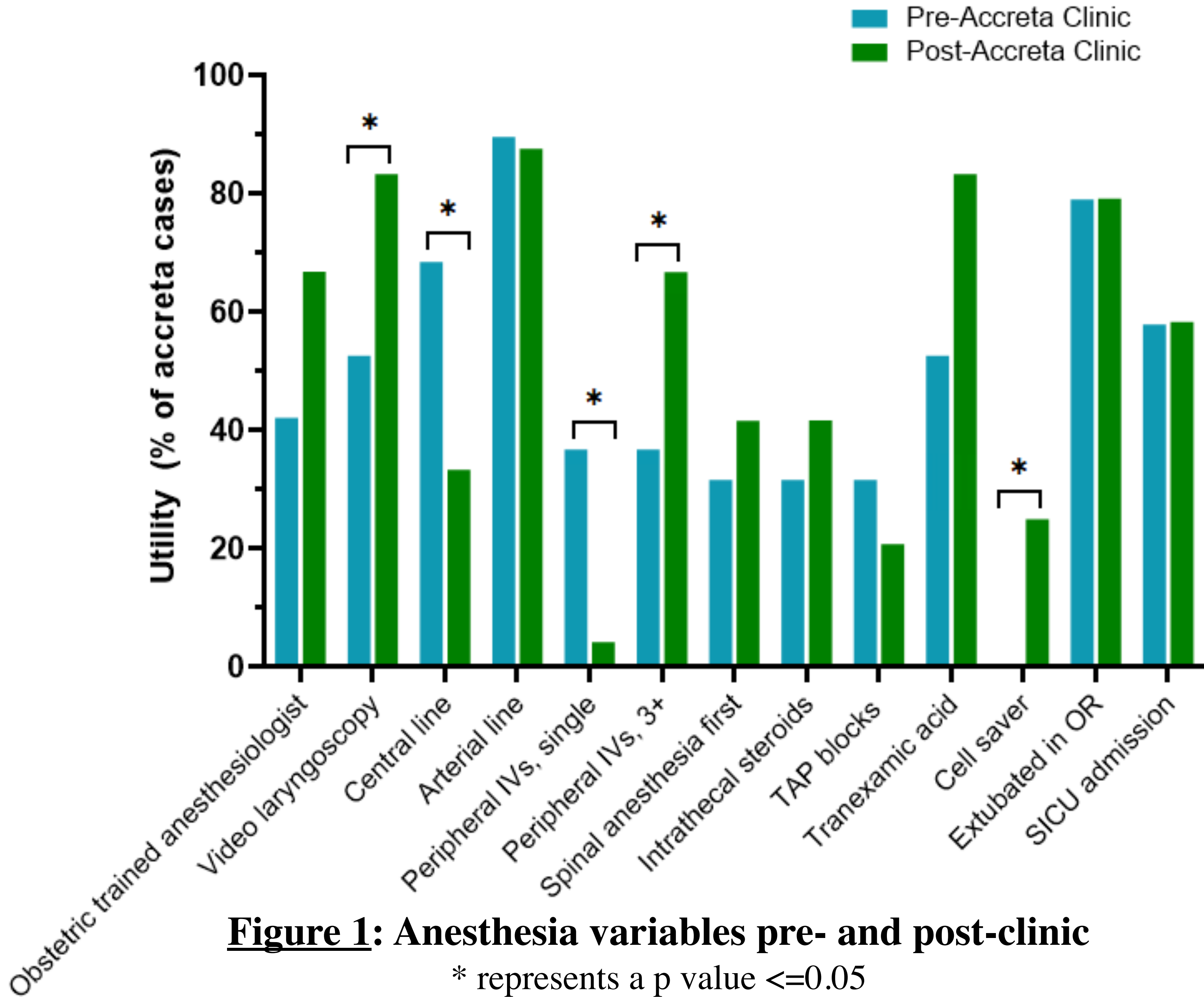


Figure 1: Anesthesia variables pre- and post-clinic

* represents a p value <=0.05

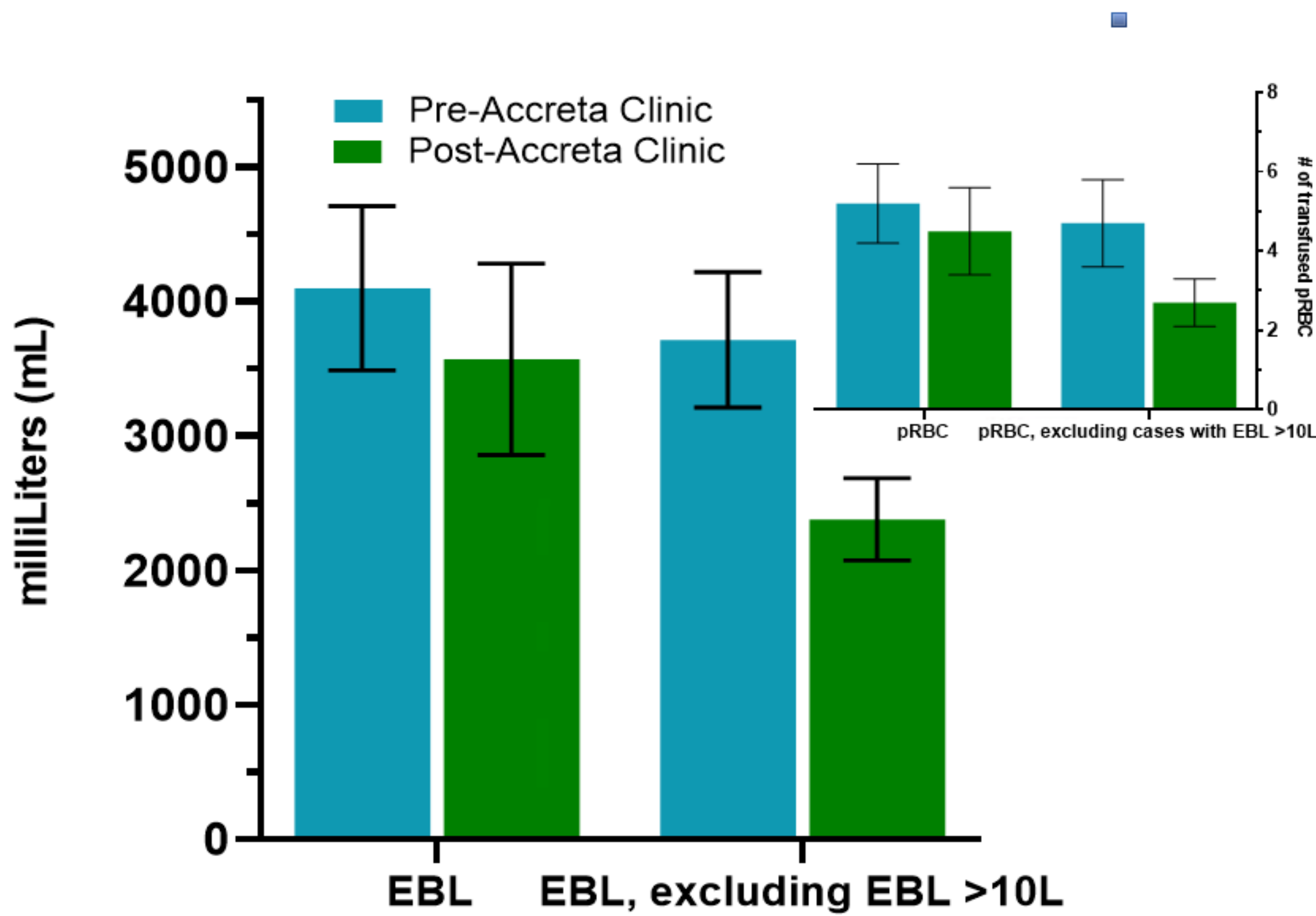


Figure 2: Estimated blood loss (EBL) and pRBCs transfused pre- and post-clinic

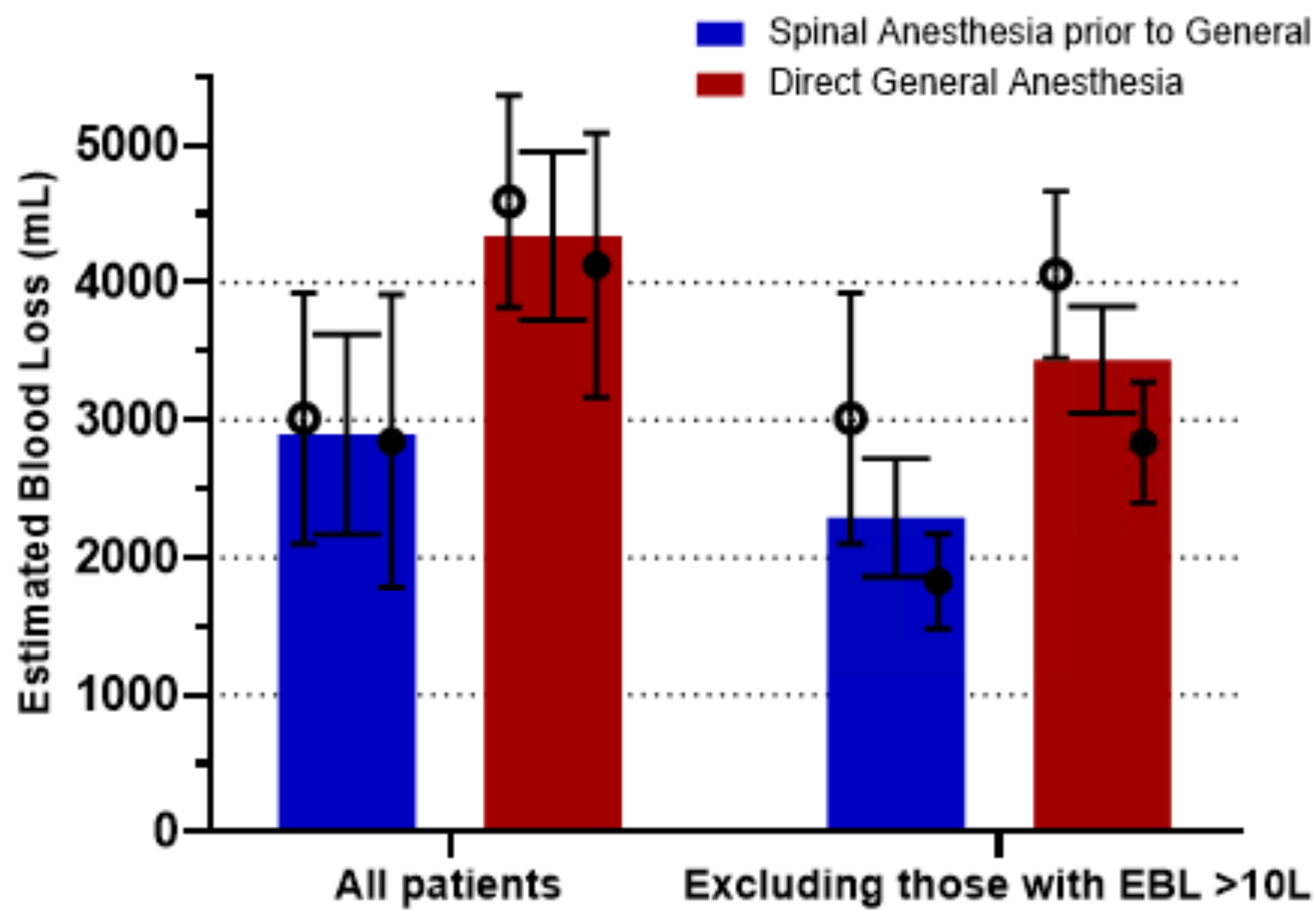


Figure 3: Estimated blood loss (EBL) by type of anesthesia, in entire PAS cohort and in those excluding blood loss >10L. Pre-clinic cohort defined with open circles; post-clinic cohort defined with closed circles.

Conclusion:

- There were no significant differences in patient demographics before and after clinic establishment
- The establishment of a multidisciplinary PAS clinic was associated with:
 - Increased cases staffed by OB specialized anesthesiologists
 - Decreased number of central lines
 - Increased number of peripheral IVs
- When excluding outliers of EBL > 10L, there is a significant decrease in EBL and a trend towards a significant decrease in average number of pRBCs.
- The establishment of a multidisciplinary clinic was associated with improved patient outcomes.

References:

