ASSOCIATION OF PATIENT AND CLINICAL CHARACTERISTICS WITH SUCCESSFUL EXTERNAL CEPHALIC VERSION: A SINGLE-CENTER RETROSPECTIVE STUDY

D. Sader,[a] J. Schuster,[a] B. Kohl-Thomas,[a] D. Villazana-Kretzer,[a] J.C. Ehrig,[a] E.E. Sharpe,[b] M.P. Hofkamp[a]
a. Baylor Scott & White Medical Center, b. Mayo Clinic-Rochester

- **Objectives:** The primary aim of our study was to identify patient and clinical characteristics that were associated with successful external cephalic version (ECV) at our hospital.

Methods

- We used a retrospective observational study design. Patients at our hospital who underwent ECV from February 1, 2014 to December 31, 2024
- We performed a bivariate analysis between patients who did and did not have successful ECV
- We then performed a multivariate logistic regression with variables of interest to determine which variables were independently associated with successful ECV.

Results

Table 1. Demographic, physical, and clinical characteristics of the cohorts

Variable	Successful external cephalic version (N=93)	Unsuccessful external cephalic version (N=154)	P value
Race			0.49
American Indian or Alaskan Native	*0*	*1 (1%)*	
Asian	*2 (2%)*	*8 (5%)*	
Biracial	*1 (1%)*	*0*	
Black or African American only	*8 (9%)*	*7 (5%)*	
Hispanic	*28 (30%)*	*46 (30%)*	
Native Hawaiian or Other Pacific Islander	*1 (1%)*	*1 (1%)*	
White or Caucasian only	*53 (57%)*	*91 (59%)*	
Age (years) (median (IQR))	29 (26-33)	28 (25-33)	0.18
Height (cm) (median (IQR))	165.0 (157.5-167.6)	162.3 (157.5-167.6)	0.22
Weight (kg) (median (IQR))	83.7 (74.8-93.2)	84.6 (75.5-99.9)	0.20
Body mass index (kg/m^2) (median (IQR))	31.4 (28.3-34.8)	32.6 (29.5-37.4)	0.08
Gravidity (median (IQR))	2 (2-4)	2 (1-3)	0.001
Parity (median (IQR))	1 (0-2)	1 (0-1)	<0.001
History of cesarean delivery (yes)	8 (9%)	11 (7%)	0.68
Gestational age at time of ECV (weeks) (median (IQR))	37.2 (37.0-38.2)	37.2 (37.0-37.6)	0.33
Placenta location			0.07
Anterior	*15 (16%)*	*40 (26%)*	
Non-anterior	*78 (84%)*	*114 (74%)*	
Ruptured membranes at time of ECV (yes)	2 (2%)	5 (3%)	0.71
Tocolytic administered (yes)	89 (96%)	152 (99%)	0.20
Neuraxial anesthesia administered (yes)	37 (40%)	33 (21%)	0.002
Type of neuraxial anesthesia			0.49
Single injection spinal or combined spinal epidural	*29 (78%)*	*28 (85%)*	
Epidural	*8 (22%)*	*5 (15%)*	
Attempts (median (IQR))	2 (1-3)	3 (2-4)	<0.001
Emergency cesarean delivery at time of ECV (yes)	1 (1%)	3 (2%)	1.00
Mode of delivery			<0.001
Spontaneous vaginal delivery	*69 (74%)*	*10 (6%)*	
Forceps assisted vaginal delivery	*1 (1%)*	*0*	
Cesarean delivery	*23 (25%)*	*144 (94%)*	

Table 2. Multivariate logistic regression to predict which patient and clinical characteristics were associated with successful external cephalic version

Variable	Units	Odds ratio	95% Confidence intervals		P value
Age (years)	5	1.02	0.75	1.38	0.90
Body mass index (kg/m^2)	2	0.95	0.88	1.03	0.25
Parity	1	1.27	0.99	1.62	0.06
Anterior placenta	Yes	0.66	0.30	4.45	0.30
Neuraxial anesthesia administered	Yes	2.10	1.07	4.14	0.03
Number of attempts	1	0.39	0.29	0.54	<0.001

A multivariate logistic regression that used variables of interest as co-variates determined that parity (aOR 1.26; 95% CI 1.01-1.57; p=0.04), administration of neuraxial anesthesia (aOR 2.08; 95% CI 1.06-4.07; p=0.03), and number of ECV attempts (aOR 0.40; 95% CI 0.30-0.54; p<0.001) were independently associated with successful ECV. The c-statistic for the multivariate logistic regression was 0.80.

Conclusion

- Patients who received neuraxial anesthesia were twice as likely to have successful ECV compared to patients who did not receive neuraxial anesthesia, and each additional attempt at ECV was associated with a 60% decrease in the chance of successful ECV.
- A one unit increase in parity was associated with a 26% increase in the success of ECV
- Our multivariate logistic regression c-statistic of 0.81 which indicates good predictability.
- Limitations of our study included small sample size and evolving clinical practice over 11 years.
- An additional limitation was that we did not have complete data on the experience of the attending obstetrician who performed the ECV.
- Results from this study can potentially inform clinicians of the best practices for successful ECV at our hospital.