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Treatment and outcome of placenta percreta: Primary cesarean hysterectomy *versus* conservative management

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Dear Editor,

Surgical treatment for pregnancy complicated with placenta percreta is associated with high maternal morbidity [1,2]. In an attempt to reduce the surgical morbidity, some surgeons advocate conservative management for placenta percreta [3]. In a review of literature, however, recent findings suggest that the success rate of conservative management for placenta percreta may be lower compared to that of placenta accreta or increta [3,4]. Yet, no previous study has directly compared fetomaternal outcomes of primary cesarean hysterectomy (primary c-hyst) to conservative management for placenta percreta. Here, we examined the outcome of women with placenta percreta based on treatment approach (primary surgery *versus* conservative).

This is an exploratory analysis comparing 12 women with placenta percreta who underwent concurring cesarean delivery followed by hysterectomy (primary c-hyst group) in our institution to 72 women who underwent cesarean delivery followed by conservative

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management that were identified via a literature search and one case in our institution (conservative group, total $n = 73$) [3]. The rationale of this methodological approach, as proposed previously [5], is that placenta percreta is a rare clinical entity making it difficult to conduct a comparison within one cohort.

Upon obtaining the approval by the University of Southern California Institutional Review Board, prospectively collected institutional surgical database was retrospectively queried to identify cases for cesarean hysterectomy that was performed for morbidly adhesive placental disease from 2009 to 2019 (placenta accreta, increta, and percreta). Among 49 cases identified for morbidly adherent placental disease, 12 cases with placenta percreta comprised the primary c-hyst group. We utilized the results of our recent systematic literature review for the conservative group [3]. This systematic reviewed examined placenta percreta that underwent conservative management of placenta percreta after cesarean section from 1990-2016. Patient demographics, surgical, and feto-maternal outcome were compared between the primary c-hyst and the conservative groups.

Patient demographics are shown in Table 1. Women in the primary c-hyst group had more number of cesarean sections ($P = 0.019$) and elective cesarean section (100% *versus* 39.7%, $P = 0.001$) compared to the conservative group. The median gestational age at delivery was similar between the two groups (34 weeks *versus* 35 weeks, $P = 0.209$). Women in the primary c-hyst group had statistically non-significant higher estimated blood loss (EBL; median, 1,650 *versus* 800 mL, $P = 0.119$) with increased risk of hemorrhage (proportion of EBL >2,000mL, 41.7% *versus* 15.1%, $P = 0.150$) compared to the conservative group. One case of transient intraoperative cardiac arrest due to vaginal hemorrhage was noted in the primary c-hyst group that was fully resuscitated during surgery.

Albeit statistically non-significant, there was a trend of increased risk of cystotomy (41.7% *versus* 16.4%, $P = 0.058$), ureteral injury (8.3% *versus* 1.4%, $P = 0.264$), and unexpected return to operating room (8.3% *versus* 0%, $P = 0.141$), whereas there was a decreased trend for sepsis and infectious complications (0% *versus* 13.7%, $P = 0.113$) for the primary c-hyst group compared to the conservative group (Table 1). Approximately one third of women in the conservative group required emergency hysterectomy (37.0%). Overall complication rates were statistically similar between the primary c-hyst group and the conservative group (66.7% *versus* 54.8%, odds ratio 1.650, 95% confidence interval 0.456–5.968, $P = 0.539$).

The results of this exploratory analysis clearly point out that each treatment modality has distinct differences in outcomes. That is, primary cesarean hysterectomy for placenta percreta is associated with hemorrhage and urinary track injury whereas conservative management is associated with infectious and septic complications. Therefore, well-balanced counseling to the patient as well as treatment strategy would be useful when managing placenta percreta. Regardless of treatment approach either with surgical or non-surgical modality, treatment for placenta percreta is associated substantially high complications, warranting multidisciplinary approach for management of this disease.

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Table 1

Patient demographics and outcome.

Characteristic	Conservative management <i>n</i> = 73	Primary cesarean hysterectomy <i>n</i> = 12	<i>P</i> -value
Number			
Age (y)	33.2 (± 4.5)	31.8 (± 5.0)	0.421
<30	8 (11.0%)	4 (33.3%)	
30–34	35 (47.9%)	6 (50.0%)	
35	22 (30.1%)	2 (16.7%)	
Unknown	8 (11.0%)	0	
Prior CS			
0	6 (8.2%)	0	0.019
1	30 (41.1%)	3 (25.0%)	
2	18 (24.7%)	4 (33.3%)	
3	5 (6.8%)	4 (33.3%)	
4	4 (5.5%)	1 (8.34%)	
Unknown	10 (13.7%)	0	
CS plan			
Elective	29 (39.7%)	12 (100%)	0.001
Emergent	21 (28.8%)	0	
Unknown	23 (31.5%)	0	
Hysterectomy			
Elective	4 (5.5%)	11 (91.7%)	<0.001
Emergent	27 (37.0%)	1 (8.3%)	
Not performed	42 (57.5%)	0	
GA at delivery	35 (IQR 33–36)	34 (IQR 33–35)	0.209
32	14 (19.2%)	2 (16.6%)	
33–34	11 (15.1%)	5 (41.7%)	
35–36	26 (35.6%)	4 (33.3%)	
37	12 (16.4%)	1 (8.3%)	
Unknown	10 (13.7%)	0	
Surrounding invasion			

Characteristic	Conservative management	Primary cesarean hysterectomy	P-value
No	16 (22.0%)	6 (50.0%)	0.121
Yes	45 (61.6%)	6 (50.0%)	
Unknown	12 (16.4%)	0	
EBL	800 (IQR 425–1,750)	1,650 (IQR 500–3,500)	0.119
1,000mL	34 (46.6%)	5 (41.7%)	
1001–2000mL	8 (11.0%)	2 (16.6%)	
>2000mL	11 (15.1%)	5 (41.7%)	
Unknown	20 (27.4%)	0	
Cystectomy			
No	61 (83.6%)	7 (58.3%)	0.058
Yes	12 (16.4%)	5 (41.7%)	
Ureteral injury			
No	72 (98.6%)	11 (91.7%)	0.264
Yes	1 (1.4%)	1 (8.3%)	
Sepsis / infectious complication			
No	56 (86.3%)	12 (100%)	0.113
Yes	17 (13.7%)	0	
Disseminated coagulopathy			
No	66 (90.4%)	12 (100%)	0.586
Yes	7 (9.6%)	0	
Unexpected return to OR			
No	73 (100%)	11 (91.7%)	0.141
Yes	0	1 (8.3%)	
Cardiac arrest			
No	73 (100%)	11 (91.7%)	0.141
Yes	0	1 (8.3%)	
Net complication *			
No	33 (45.2%)	4 (33.3%)	0.539
Yes	40 (54.8%)	8 (66.7%)	

Number with percentage per group, mean with standard deviation, or median with IQR are shown. Student *t*-test, Mann-Whitney *U* test, Fisher exact test, or chi-square test for *P*-value.