

Invasive Placental Disease: The Impact of a Multi-Disciplinary Approach to Management

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Published In/Presented At

Smulian, JC., Pascual, A., H. Hesham, H., Qureshey, E., Thomas, MB., Depuy, AM., Flicker, AB., & Scorza, WE. (2016, January 31). *Invasive Placental Disease: The Impact of a Multi-Disciplinary Approach to Management*. Poster presented at: Society of Maternal Fetal Medicine Annual Scientific Meeting, Atlanta, GA.

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Invasive Placental Disease: The Impact of a Multi-Disciplinary Approach to Management

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ABSTRACT

Objective: There are current recommendations to refer pregnancies complicated by invasive placental disease (IPD-accreta, increta and percreta), to special centers with the resources and experience to optimize care. However, the specific management approach may influence outcomes. We examined the impact of implementing a structured multi-disciplinary plan for management of IPD that was strictly followed with a specified team at our tertiary referral center.

Study Design: Women having peripartum hysterectomies were identified and charts were reviewed to identify all cases with clinical and/or pathologic confirmation of IPD over a 6.5 year period. For the most recent 2.5 years, a structured multidisciplinary committee (MDC) reviewed each suspected case, created a management plan, and implemented that plan. Core team members included Maternal Fetal Medicine, Gynecologic Oncology, Urology, Interventional Radiology, Anesthesiology, Neonatology, nursing, and operating room staff. Outcomes were compared between cases delivered prior to and after the MDC process was started. To be included in the MDC group for analysis, the plan that was established must have been followed.

Results: There were 44 pregnancies with IPD, of which 28 (63.6%) were suspected antenatally and 37 (84.1%) had a prior uterine surgery. An MDC approach was performed in 17(38.6%) cases. There was a borderline higher rate of placenta previa in the MDC group, 14 (87.5%) vs 17 (60.7%), P=0.06. Delivery situation was unscheduled, scheduled-emergent and scheduled-delivered per plan in 6.3%, 25.0% and 68.8% for the MDC group and 28.6%,10.7% and 60.7% in the No-MDC group, P=0.14. No differences were found for ICU admissions, hospital length of stay, bladder/ureteral/bowel injuries or neonatal outcomes.

Conclusion: Cases of IPD managed using an MDC approach were associated with less placenta removal attempts, blood loss, fewer blood product transfusions, and higher intraoperative mean arterial pressures. These improvements suggest that although surgical times were increased (likely related to greater use of interventional radiology procedures and ureteral stent placements), the MDC cases were more stable intraoperatively, which over a larger number of patients, should translate into improved outcomes.

	MDC	No MDC	p-value
Delivery EGA (wks)	33.1	35.1	0.17
Placenta removal attempt	2 (12.5%)	20 (71.4%)	0.004
IR embolization	9 (56.3%)	4 (14.3%)	0.006
Ureteral stent	12 (75%)	6 (21.4%)	0.001
Surgical time (min)	249	181	0.001
EBL (ml)	1250	2500	0.03
Blood product given	8 (50%)	24 (85.7%)	0.01
Lowest MAP	59.1	49.7	0.05

	MDC (N=16)	No MDC (N=28)	P
Age (years)	34.0 ± 5.5	34.1 ± 5.4	0.95
Gravidity	5 (1,10)	4 (1,11)	0.07
Parity	2 (0,5)	2 (0,7)	0.04
Race			0.24
Caucasian	10 (62.5%)	19 (67.9%)	
Hispanic, not African American	4 (25.0%)	8 (28.6%)	
African American	2 (12.5%)	0	
Other	0	1 (3.6%)	
BMI (kg/m2)	28.3 ± 5.9	28.3 ± 7.6	0.93
ART	1 (6.3%)	4 (14.3%)	0.64
Prior C-Section	13 (81.3%)	16 (57.1%)	0.10
Prior D&C	8 (50.0%)	12 (42.9%)	0.79
Any Uterine Surgery	16 (100%)	21 (75.0%)	0.03
Elevated MSAFP	2/12 (16.7%)	4/20 (20.0%)	0.82
Prior Postpartum Hemorrhage	2 (12.5%)	7 (25.0%)	0.27
Prior Retained POC	1 (6.3%)	3 (10.7%)	0.57
Comorbidities	10 (62.5%)	15 (53.6%)	0.57
Antenatal Bleeding	9 (56.3%)	14 (50.0%)	0.69
Placenta Previa	14 (87.5%)	17 (60.7%)	0.05
IPD Suspected Antepartum	16 (100%)	12 (42.9%)	0.0002

Background

A peripartum hysterectomy for invasive placental disease (IPD) can be a planned or an unexpected emergency procedure. Unplanned hysterectomies are associated with significant morbidity and mortality when compared with planned procedures. Identifying women likely to have IPD allows physicians the opportunity to integrate a multidisciplinary, multispecialty approach for delivery in order to collectively construct an optimal management plan. LVHN implemented a formal multidisciplinary team process for suspected IPD cases in 10/2012.

Hypothesis

For women requiring a peripartum hysterectomy for IPD, having a structured multi-disciplinary plan for surgical management using a specified team is associated with improved operative outcomes.

Study Design

- Single center retrospective cohort study (12/2007 - 6/2014)
- All peripartum hysterectomies for IPD
- IPD confirmed in specimen
- Control group (12/2007 – 9/2012)
 - Pre-multidisciplinary committee planning (No MDC)
- Study group (10/2012 – 6/2014)
 - Post-multidisciplinary committee planning (MDC)
 - MDC plan must have been followed
- Comparison of demographics, risk factors and outcomes
- MDC team
 - Maternal Fetal Medicine, Gynecologic Oncology, Urology, Interventional Radiology, Anesthesiology, Neonatology, nursing, and operating room staff

Results

- 44 pregnancies with IPD
 - 28 (63.6%) were suspected antenatally
 - 37 (84.1%) had a prior uterine surgery
 - An MDC approach was performed in 16 (36.4%) cases.

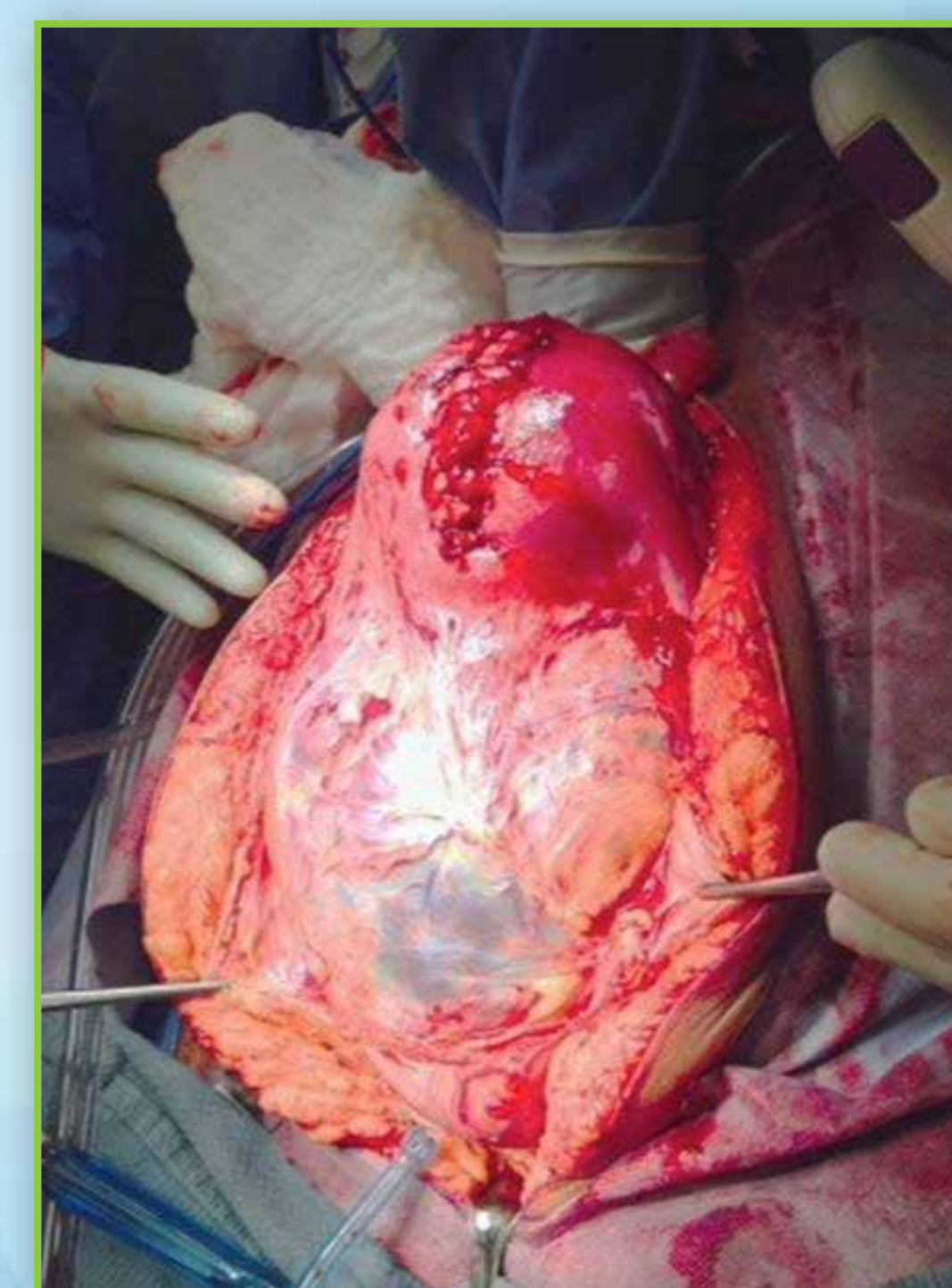


FIGURE 1. Intraoperative appearance of placenta previa with an invasive placenta.

	MDC (N=16)	No MDC (N=28)	P
EGA Admission (wks)	32.5 ± 4.2	34.4 ± 5.2	0.20
EGA Delivery (wks)	33.1 ± 4.2	35.1 ± 4.7	0.17
Delivery Situation			0.14
Unscheduled	1 (6.3%)	8 (28.6%)	
Scheduled-Emerg	4 (25.0%)	3 (10.7%)	
Scheduled-Planned	11 (68.8%)	17 (60.7%)	
Cesarean Section	16 (100%)	24 (85.7%)	0.28
Surgical Time (min)	249 ± 66	181 ± 57	0.001
Lowest Temp (C)	35.7 ± 1.2	35.3 ± 1.5	0.51
Lowest MAP (mmHg)	58 (47, 94)	48 (21, 98)	0.05
EBL (ml)	1250 (500, 7000)	2500 (300, 10000)	0.03
Crystalloid (ml)	6,100 (2,000-13,000)	5450 (2,000-13,000)	0.66
Blood Products	8 (50.0%)	24 (85.7%)	0.01
PRBC (units)	0 (0, 16)	4 (0, 25)	0.07
FFP (units)	0 (0, 16)	0 (0, 12)	0.83
Platelets (SD packs)	0 (0, 3)	0 (0, 3)	0.45
Cryoprecip (units)	0 (0, 0)	0 (0, 20)	0.12
Factor VII (doses)	0 (0, 1)	0 (0, 3)	0.18

	MDC (N=16)	No MDC (N=28)	P
Placenta Removal Attempted	2 (12.5%)	20 (71.4%)	0.004
IR Procedure	9 (56.3%)	4 (14.3%)	0.006
Ureteral Stents Placed	12 (75.0%)	6 (21.4%)	0.001
Bladder Injury/*intentional	4/*3 (25.0%)	5/*1 (17.9%)	0.70
Ureter Injury	0	1 (3.6%)	0.99
Ventilator >12 hrs	2 (12.5%)	7 (25.9%)	0.45
Pulmonary Edema	0	2 (7.1%)	0.53
ICU Admission	8 (50.0%)	17 (63.0%)	0.40
ICU Length of Stay (days)	0.5 (0, 4)	1 (0, 8)	0.13
Total Length of Stay (days)	6.5 (4, 18)	5 (2, 34)	0.36
PP Length of Stay (days)	4 (3, 7)	4 (2, 14)	0.49

	MDC (N=16)	No MDC (N=28)	P
Birthweight (g)	2348 ± 600	2657 ± 699	0.15
Apgars at 5 min	8 (4, 9)	9 (2, 9)	0.31
pH	7.27 ± 0.08	7.26 ± 0.07	0.87
Base Deficit	2.3 (0, 8.8)	1.8 (0.2, 10.3)	0.71
NICU admission	11 (68.8%)	13 (50.0%)	0.23
NICU length of stay (days)	6 (0, 55)	0.5 (0, 38)	0.12

Conclusions

- Cases of IPD managed using an MDC approach were associated with less placenta removal attempts, less blood loss, less blood product use, and higher intraoperative mean arterial pressures.
- These improvements suggest that although surgical times were increased (likely related to greater use of interventional radiology procedures and ureteral stent placements), the MDC cases were more stable intraoperatively, which over a larger number of patients, should translate into improved outcomes.

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