Effect of Structured Reporting on Concordance Rates Between Imaging, Operative, and Pathology Diagnoses in Patients with Placenta Accreta Spectrum

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Introduction

- Placenta Accreta Spectrum (PAS) is a range of clinical conditions in which the placenta is pathologically adherent to the uterine myometrium, increasing the risk of severe maternal hemorrhage in the peripartum period.
- When a placentation anomaly is identified or suspected based on ultrasound findings, magnetic resonance imaging (MRI) may serve as an adjunct tool in diagnosis.
- Study aim: elucidate the potential impact of structured reporting for placental MRI may have on patient outcomes in cases of PAS.

Clinical Relevance

- Use of structured reporting in the interpretation of placental MRI may lead to improved concordance rates between imaging, operative, and pathology diagnoses in patients with PAS
- This has the potential to improve patient outcomes and the quality of patient care.

Materials and Methods

- IRB-approved, retrospective, single-institution study. An institutional OB database was accessed to identify all patients with an operative diagnosis of PAS between 2008-2022.
- Inclusion criteria: (a) post-operative pathology report with a diagnosis of PAS (b) history of surgical cesarean delivery.
- Chart review was conducted to identify rate of discordance between MRI findings and operative and pathologic diagnoses in patients undergoing cesarean delivery for PAS. Discordance was defined as a difference in diagnosis between diagnostic modalities. Use of structured reporting was also assessed.

Patient Characteristics	Mean ± SD	n (%)
Age at presentation, years	34.5 ± 5.2	
Gravidity	4.9 ± 2.7	
Parity	2.5 ± 1.6	
BMI	30.5 ± 8.0	
Race		
White		52 (46.4)
Black		42 (37.5)
Hispanic		9 (8.0)
Asian		4 (3.6)
Other		5 (4.5)

Table 1 Patient Demographics

Imaging Findings

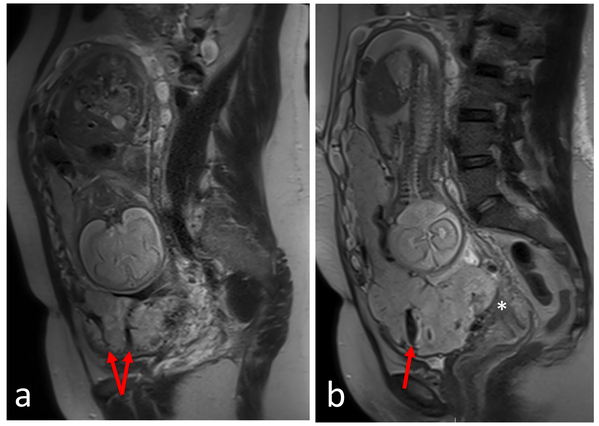

Figure 1 MRI Imaging findings characteristic of Placenta Accreta Spectrum. Sagittal (a-b)) T2-weighted images demonstrating placental bulge and heterogeneity with T2 hypointense bands (arrows) inferiorly and anteriorly. Note is also made of complete placenta previa (asterisk).

Impact of Structured Reporting on Discordance

Of 112 patients meeting inclusion criteria, 59 (52.7%) underwent preoperative MRI.

Imaging Modality	n (%)
Maternal Fetal Medicine Ultrasound	107 (95.5)
Ultrasound with Radiology	12 (10.7)
CTA	2 (1.8)
MRI	59 (52.7)
Uterine Artery Embolization with IR	32 (28.6)

Table 2 Type of Preoperative Imaging Performed

Of the 59 MRIs performed, 8 (13.6%) were interpreted using structured reporting, which was universally adopted at our institution in 2021. Of the 51 unstructured reports, 32 (62.7%) contained one or more discordances (Table 1), while of the 8 structured reports, only 1 (12.5%) contained any discordance (p = .017).

Characteristic	No Structured Report N= 51 (%)	Structured Report N = 8 (%)	p-value
Discordance			
None	19 (37.3)	7 (87.5)	.017
One or More	32 (62.7)	1 (12.5)	

Table 3 Structured Reporting and Relationship to Discordance with Operative or Pathology Diagnoses

Relationship Between Structured Reporting and Clinical Outcomes

Use of structured reporting was also compared to estimated intraoperative blood loss, units of blood transfused, ICU admission rate, and postpartum length of stay. Use of structured reporting was found to be **significantly associated with decrease in ICU admissions** (p=.045), with 19 of the 51 patients without structured reporting requiring ICU admission. 0 of the 8 patients with structured reports were admitted to the ICU.

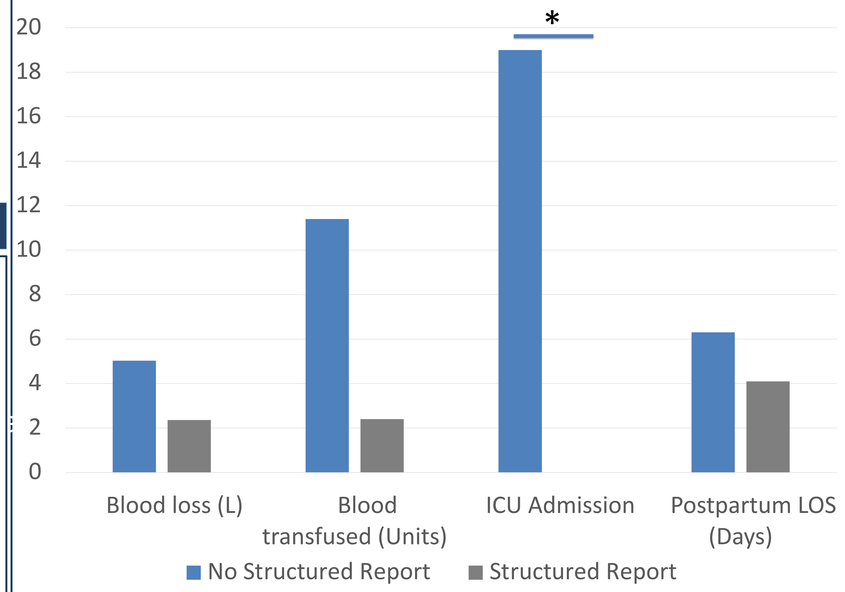

Figure 2 Outcomes in Patients Having Undergone MRI With and Without Use of Structured Reporting

Conclusion

- Use of structured reporting in the interpretation of placental MRI may decrease the amount of discordance between imaging and intraoperative or pathologic diagnoses by promoting an algorithmic image review and highlighting pertinent findings necessary for accurate diagnosis.
- A decrease in discordant image interpretation may lead to improved patient outcomes and quality of patient care by permitting more thorough operative and/or procedural planning.