



Diagnostic usefulness of MRI using a structured scoring system in cases with suspected placenta accreta spectrum

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Introduction

Placenta accreta spectrum(PAS) is an important topic affecting maternal health worldwide, and its incidence is also increasing.

Due to the limitations of ultrasound-based diagnosis, Magnetic resonance imaging (MRI) is being considered as an adjunctive. Despite the common use of MRI, the additional value of MRI for the diagnosis of PAS has not been proven.

Accordingly, we aim to assess usefulness of a structured scoring system consisting of 13 signs to diagnose PAS in suspected cases to the existing reading system.

Methods

We evaluated 21 cases of suspected PAS who taken MRI on the basis of a history of previous cesarean delivery, ultrasound findings, or both between 2019 and 2021 at Asan Medical Center, Seoul, Korea. Diagnosis was confirmed during surgery. The diagnostic value of conventional MRI readings and the readings using a structure scoring system in detecting PAS was assessed. In the readings using a structured scoring system, PAS was diagnosed when 4 or more of 13 signs were satisfied.

Box. Descriptors for MRI findings in PAS

- Placenta previa
- Loss of demarcation line/retro-placental T2 dark zone
- Lacunae
- Uterine bulging
- Bladder invasion
- Myometrial Thickness LUS ≤ 6 mm
- Intraplacental dark bands
- Heterogeneous signal intensity within the placenta
- Focal interruptions in myometrial wall
- Placental thickness at low segment > 0
- Maximal placental thickness > 50 mm
- Serosal invasion
- Tenting of bladder

*LUS=Lower uterine segment



Figure. A 28-year-old women at 37+0 weeks gestation. Sagittal T2 shows intraplacental dark bands (arrow) and heterogeneous signal intensity within the placenta.

Table I. Maternal characteristics and obstetrical outcomes

	Total (N= 21)
Age (years)	35 (27-40)
Nullipara	7 (33%)
History of previous C/S	11 (52%)
Anterior placenta location	16 (76%)
GA at delivery (weeks)	37.06 (35.4-38.4)
Operation time (min)	81.09 (35-310)
Transfusion	17 (80%)
Uterine artery embolization	10 (47%)
Hysterectomy	3 (14%)
Confirmed PAS	15(71%)

*GA=Gestational age

*PAS=Placenta accreta spectrum

Table 2. Validation test according to MRI reading system

	Conventional MRI reading	MRI reading using a structured scoring system
Sensitivity	100%	100%
Specificity	33%	50%
PPV	79%	83%
NPV	100%	100%

*PPV=Positive predictive value

*NPV =Negative predictive value

Results

MRI was performed between 27.5 to 37.1 weeks of gestation(Median=33.1wks). All patients underwent cesarean delivery. Of the 21 cases assessed, 15 were confirmed with PAS during cesarean delivery(71%).

Conclusion

Compared with conventional MRI reading, MRI reading using a structured scoring system might reduce overdiagnosis of PAS with higher specificity and positive predictive value.