

authors. This is an example of how the conclusions of transparent systematic reviews/meta-analyses may be subjective and influenced by methodologic options made by the authors. ■

Ana Barbosa, MS  
Paula Pinto, MS  
EPIUnit—Instituto de Saúde Pública  
Universidade do Porto

Nuno Lunet, PhD  
EPIUnit—Instituto de Saúde Pública  
Departamento de Ciências da Saúde Pública e Forenses e  
Educação Médica  
Faculdade de Medicina da Universidade do Porto  
Porto, Portugal  
[nlunet@med.up.pt](mailto:nlunet@med.up.pt)

The authors report no conflict of interest.

## REFERENCES

1. Yu L, Kronen RJ, Simon LE, Stoll CR, Colditz GA, Tuuli MG. Prophylactic negative-pressure wound therapy after cesarean is associated with reduced risk of surgical site infection: a systematic review and meta-analysis. *Am J Obstet Gynecol* 2017;218:200–10.
2. Smid MC, Dotters-Katz SK, Grace M, et al. Prophylactic negative pressure wound therapy for obese women after cesarean delivery: a systematic review and meta-analysis. *Obstet Gynecol* 2017;130:969–78.
3. Jadad AR, Cook DJ, Browman GP. A guide to interpreting discordant systematic reviews. *Can Med Assoc J* 1997;156:1411–6.
4. Hyldig N. Incisional negative pressure wound therapy: the clinical effect on post-caesarean wound complications in obese women. 1 ed. University of Southern Denmark: University of Southern Denmark; 2016: 133 p.

© 2018 Elsevier Inc. All rights reserved. <https://doi.org/10.1016/j.ajog.2018.04.034>

# Magnetic resonance imaging for diagnosis of placenta accreta spectrum disorders: still useful for real-world practice



TO THE EDITORS: Einerson et al,<sup>1</sup> the leaders of placenta accreta spectrum (PAS) disorders (creta, increta, percreta), showed that magnetic resonance imaging (MRI) after ultrasound frequently leads to an incorrect diagnosis of PAS. MRI revealed clinically meaningful changes in only 19% of cases. They concluded that “MRI should not be used routinely as an adjunct to ultrasound in the diagnosis of PAS ... until evidence is clearly demonstrated by more definitive prospective studies.”

We want to interpret their data differently.

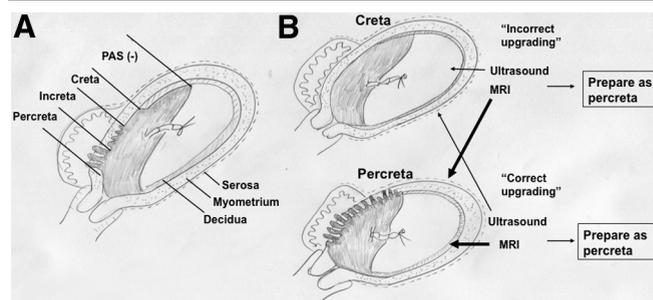
Of 78 patients, MRI altered the ultrasound diagnosis correctly/incorrectly in 15 (19%) and 13 (17%), respectively, being approximately equal. Thus, Einerson et al<sup>1</sup> rejected the adjunctive usefulness of MRI. However, we would like to note that in 7 patients (9%), the diagnosis was correctly upgraded to percreta. MRI, but not ultrasound, identified bladder invasion in 1 patient, for whom cystotomy was performed.

For presurgically diagnosed placenta percreta, we perform cesarean hysterectomy under aortic balloon occlusion and ureteral stent use, whereas for less-degree PAS, we perform it without these presurgery procedures in a case-by-case manner. If bladder invasion is severe, we perform intentional cystotomy using an automatic cutting and stapling device.<sup>2,3</sup> If the bladder invasion is too severe, we use placenta left in situ instead of hysterectomy to avoid life-threatening bleeding. Thus, the preoperative diagnosis of percreta markedly changes the strategy/preparation.

The data of Einerson et al should be interpreted that “as many as 9%” of patients were “correctly upgraded to percreta,” greatly benefitting from MRI. Furthermore, because experienced obstetricians can usually discern percreta

## FIGURE

### Schema of PAS disorders and proposed diagnostic procedures



**A**, In creta, villous tissues attach to the myometrium without interposing decidua (adhesion abnormality), whereas in increta/percreta, villous tissues invade into/beyond the myometrium (invasion abnormality), respectively. **B**, Upper panel indicates creta and lower panel indicates percreta, with both diagnosed histologically. This figure shows an extreme example of upgrading by MRI scenario. In both creta (upper) and percreta (lower), ultrasound indicates creta, whereas MRI indicates percreta. Eventually ultrasound (upper) and MRI (lower), respectively, correctly diagnose the situation, which becomes evident in retrospect. When planning the surgery, adopt severe diagnosis (*bold line*) and disregard the less severe diagnosis (*fine line*) for safety. The final treatment strategy should be decided during surgery (see text).

MRI, magnetic resonance imaging PAS, placenta accreta spectrum.

Matsubara. MRI for accreta. *Am J Obstet Gynecol* 2018.

after laparotomy by directly observing the lesion,<sup>4</sup> preparation for the worst before surgery markedly aids obstetricians.

The worst-case scenario is for obstetricians to encounter percreta unexpectedly after opening the abdomen without an adequate multidisciplinary team or devices. MRI can avoid this scenario in some patients. The same may hold true for any other surgeries, especially difficult surgeries: if the 2 diagnostic modalities provide different disease severity, preparation for the worst may be better.

If a diagnostic procedure has a risk of being harmful to patients, the present discussion may be different. MRI, although requiring some cost, causes no harm to the patient. Practically, we should prepare based on the severer data irrespective whether it is ultrasound or MRI (Figure).

Taken together, until evidence is clearly demonstrated, we recommend MRI to avoid/ameliorate the worst-case scenario. Putting this aside, every effort should be made to improve the diagnostic accuracy of MRI. ■

Shigeki Matsubara, MD, PhD  
Hironori Takahashi, MD, PhD  
Yuji Takei, MD, PhD  
Department of Obstetrics and Gynecology  
Jichi Medical University  
3311-1 Shimotsuke  
Tochigi 329-0498, Japan  
matsushi@jichi.ac.jp

The authors report no conflict of interest.

## REFERENCES

- Einerson BD, Rodriguez CE, Kennedy AM, Woodward PJ, Donnelly MA, Silver RM. Magnetic resonance imaging is often misleading when used as an adjunct to ultrasound in the management of placenta accreta spectrum disorders. *Am J Obstet Gynecol* 2018;218:618.e1-7.
- Matsubara S, Ohkuchi A, Yashi M, et al. Opening the bladder for cesarean hysterectomy for placenta previa percreta with bladder invasion. *J Obstet Gynaecol Res* 2009;35:359-63.
- Matsubara S, Kuwata T, Usui R, et al. Important surgical measures and techniques at cesarean hysterectomy for placenta previa accreta. *Acta Obstet Gynecol Scand* 2013;92:372-7.
- Matsubara S. Re: Moving from intrapartum to prenatal diagnosis of placenta accreta: a quarter of a century in the making but still a long way to go: obstetricians' intra-surgical 'eyes' keep on shining. *BJOG* 2017;124:1287-8.

© 2018 Elsevier Inc. All rights reserved. <https://doi.org/10.1016/j.ajog.2018.04.058>

## REPLY



We appreciate the work of Dr Matsubara and the interest in our research on placenta accreta spectrum disorders (PAS). Thank you for the opportunity to clarify our data and address 2 important points.

First, the percreta detection rate is not the only consideration when ordering magnetic resonance imaging (MRI). That 7 patients (9%) were correctly upgraded to percreta is only part of the

story. In our cohort, MRI incorrectly upgraded 10 cases (13%) to percreta (severe PAS). These patients, if managed differently from PAS, could suffer unnecessary harm from additional procedures or iatrogenic preterm delivery. MRI in these cases, then, could be harmful. Furthermore, in 6 cases (8%), MRI incorrectly confirmed a diagnosis of nonsevere PAS when percreta (severe PAS) was actually present. Here again, MRI was misleading and could result in harm when obstetric and surgical teams are less prepared for the worst-case scenario.

Given the modest predictive ability and unacceptably high false-negative rate of all imaging modalities for percreta (true for both MRI and ultrasound), we propose that all cases of suspected PAS, not just cases of suspected percreta, be managed as though they may be percreta in centers with experience in managing PAS.

Second, even if maximizing the detection rate of percreta were the only consideration when ordering an MRI for PAS, available data do not support the conclusion that MRI is more sensitive than ultrasound. Two recent meta-analyses of ultrasound and MRI for the detection of percreta concluded that ultrasound and MRI are equivalent.<sup>1,2</sup> Moreover, we are not stating that MRI is useless for PAS. Rather, we question whether MRI is useful once a quality ultrasound has been performed. This is relevant in many cases when there is insufficient expertise or resources to perform MRI.

We wholeheartedly agree with Dr Matsubara that the accurate antenatal diagnosis of PAS is highly desirable. Indeed, we look forward to further research toward this goal. We recognize that our data are not definitive and can be interpreted differently within the context of various settings and management strategies. But we stress that the potential added benefit of MRI should be weighed against the risks of overdiagnosis, underdiagnoses, and a misleading change in diagnosis when it is used as an adjunct to ultrasound. ■

Brett D. Einerson, MD, MPH  
Robert M. Silver, MD  
Department of Obstetrics and Gynecology  
Division of Maternal-Fetal Medicine  
University of Utah Health  
30N 1900 East, Room 2B200  
Salt Lake City, UT 84132  
Intermountain Healthcare  
Salt Lake City, UT  
brett.einerson@hsc.utah.edu

Christina E. Rodriguez, MD  
Department of Obstetrics and Gynecology  
Division of Maternal-Fetal Medicine  
University of Colorado School of Medicine  
Aurora, CO

The authors report no conflict of interest.

## REFERENCES

- Pagani G, Cali G, Acharya G, et al. Diagnostic accuracy of ultrasound in detecting the severity of abnormally invasive placentation: a systematic review and meta-analysis. *Acta Obstet Gynecol Scand* 2018;97:25-37.