MR Imaging with True FISP and HASTE Sequences in Cases of Placenta Accreta: Evaluation of the Uteroplacental Interface

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SYNOPSIS. Placenta accreta is direct adherence of the placenta to the myometrium and may result in significant intrapartum morbidity and mortality. MRI has been useful when ultrasound findings are equivocal [1,2]. HASTE sequence has provided good resolution minimizing fetal and maternal motion artifacts [3]. True FISP has been reported to provide image quality superior to that of the HASTE due to less blurring effect in the fetal CNS [4]. We speculate that fast T2-weighted imaging with both sequences can improve visualization of the uteroplacental interface. We reviewed the MRI with both sequences retrospectively in four cases of suspected placenta accreta.

OBJECTIVE. This study evaluates the visualization of the uteroplacental interface in cases of placenta accreta with MRI using true FISP and HASTE sequences and also demonstrates MR findings of placenta accreta.

SUBJECTS AND METHODS. Four patients underwent MRI with HASTE (n=4) and/or true FISP (n=3) sequences for placenta accreta. Retrospective review of MR findings was performed to define the location and extent of the implantation abnormality. The visualization of the uteroplacental interface was evaluated according to the visualization of the inner myometrium, outer myometrium and uterine serosa. Four cases underwent cesarean hysterectomy (n=3) or cesarean delivery (n=1). MRI findings were compared with follow-up data from surgery or pathology.

RESULTS. The uteroplacental interface was visualized as three layers on both sequences. Inner low signal intensity layer of endometrium and inner myometrium, outer high signal intensity layer of outer myometrium and outer low signal intensity layer of uterine serosa. Of the four cases evaluated, three cases were diagnosed with placenta accreta on MRI. In all the three cases, focal obliteration of the inner low signal intensity layer was demonstrated. True FISP and HASTE sequences demonstrated consistent findings in two of the three cases in which both were performed. In one case with marked myometrial thinning, the outer myometrium and uterine serosa were better delineated with true FISP than with HASTE. Three patients subsequently underwent cesarean hysterectomy and the diagnosis of placenta accreta was confirmed. The location and extent of the implantational abnormalities by MRI were consistent with the surgical and pathological findings.

CONCLUSION. MRI with true FISP and HASTE sequences provided precise anatomical evaluation of the uteroplacental interface. The finding of focal obliteration of the inner low signal intensity layer on T2-weighted images provided the diagnosis of placenta accreta. True FISP can be better than HASTE in cases with marked thinning and scarring of the myometrium.

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