This is a repository copy of *Magnetic resonance spectroscopy of the placenta: A feasibility study*.

White Rose Research Online URL for this paper:
http://eprints.whiterose.ac.uk/132010/

Version: Accepted Version

Proceedings Paper:
Beaumont, C. and Whitby, E. (2018) Magnetic resonance spectroscopy of the placenta: A feasibility study. In: BJOG: An International Journal of Obstetrics and Gynaecology. British Maternal & Fetal Medicine Society (BMFMS) 20th Annual Conference 2018., 19-20 Apr 2018, Brighton, UK. Wiley , p. 15.

https://doi.org/10.1111/1471-0528.15189

This is the peer reviewed version of the following article: Beaumont, C. and Whitby, E. Magnetic resonance spectroscopy of the placenta: A feasibility study, BJOG: Int J Obstet Gy, 125: 15, which has been published in final form at https://doi.org/10.1111/1471-0528.15189. This article may be used for non-commercial purposes in accordance with Wiley Terms and Conditions for Self-Archiving.

Reuse
Items deposited in White Rose Research Online are protected by copyright, with all rights reserved unless indicated otherwise. They may be downloaded and/or printed for private study, or other acts as permitted by national copyright laws. The publisher or other rights holders may allow further reproduction and re-use of the full text version. This is indicated by the licence information on the White Rose Research Online record for the item.

Takedown
If you consider content in White Rose Research Online to be in breach of UK law, please notify us by emailing eprints@whiterose.ac.uk including the URL of the record and the reason for the withdrawal request.

eprints@whiterose.ac.uk
https://eprints.whiterose.ac.uk/

BMFMS 2018 Abstract

Your abstract should include:

'**Objectives:**' State the primary objective of the paper and the major hypothesis tested or research question posed.
'**Design:**' Describe the design of the study and the rationale for the procedures adopted.
'**Method:**' Describe how participants were selected and the number of participants (if documentary data used, state how these were selected), materials employed (if appropriate), methods of data collection and analysis.
'**Results:**' Include numerical and/or textual data. This should be kept to a minimum and should not include tables or figures. For qualitative analyses briefly describe your findings (e.g. identified themes, categories).
'**Conclusions:**' State the conclusions that can be drawn from the study (including for future research, practice, policy and/or theory)

(Max 250 Words - Including headings)

Objectives: Placental proton magnetic resonance spectroscopy (^{1}H MRS) is a newly emerging technique with the potential to noninvasively assess the function of the placenta in vivo. Previous studies utilising this technique have been limited. This study aimed to investigate whether this tool could be feasible for routine clinical use.

Design: Prospective cohort study in a tertiary referral clincial MRI center. Procedure adopted to reflect clinical practice

Method: In utero placental MR spectra were obtained from women (n=43) referred for fetal MRI following abnormal ultrasound scans. Participants were of varying gestational age (GA) and exhibited a wide range of fetal pathologies unrelated to placental function. Spectra quality was assessed both qualitatively and quantitatively, with the potential influence of GA and placental Grannum grade (GG) also considered.

Results: Almost 75% of spectra obtained were considered good quality, with substantial agreement between assessors (Fleiss Kappa: K=0.646) and were therefore considered suitable for diagnostic interpretation. Neither GA (Anova: P>0.05) nor GG significantly influenced visual spectra quality. Signal-to- noise ratio also appeared unaffected by the GA (Regression: P>0.05) and GG (Anova: P>0.05) of participants. Lipid contamination due to fetal movement negatively affected spectra obtained from participants of low GA. No visible trend was observed between GA or GG and spectral metabolites.

Conclusions: In vivo placental ^{1}H MRS is feasible in routine clinical practice and warrants further investigation. The spectra obtained do not appear to be influenced by either the GA or GG in terms of quality or spectral metabolites. Future studies establishing metabolite thresholds profiles for conditions, and confirming our conclusions regarding the influence of potential confounding variables would be beneficial.