Reviewer's report

Title: Prediction of fetal acidemia in placental abruption

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Reviewer: Mairead Black

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The authors describe a case control study in a selected population of women retrospectively diagnosed with placental abruption. The study aims to assess the relationship between a number of clinical factors and the eventual diagnosis of fetal acidaemia. The particular approach used appears novel. To its credit, this study demonstrates the potential for research into relatively rare events using perinatal networks (94 institutions across Japan). It is likely that including ultrasound assessment in cases of severe abruption will be considered by many readers to be unsafe and certainly contradicts the investigation and management of antepartum haemorrhage suggested by the Royal College of Obstetricians and Gynaecologists1. Placental abruption is an important diagnosis which is considered on a daily basis in acute obstetrics, so interest in this topic is likely to be significant. Due to the strict inclusion criteria of this study, the generalisability is low which may reduce interest in the study.

Major compulsory revisions

1) The study population includes 222 subjects, but it is not clear whether this study is powered to detect any significant potential predictor. This is particularly relevant as there are only 43 ‘cases’, with more than 30 variables assessed for their value as a predictor of fetal acidaemia. I assume there to be categories with small numbers (or zero), as suggested by the use of the Fisher’s exact test.

2) A clear list of all variables studied would be useful.

3) There is no mention of missing data, or how this was handled. It is not clear why chronic abruptions were excluded.

4) I have concern regarding the external validity (generalisability) of the study. Given the inclusion criteria, the study is based only on cases where a diagnosis of abruption is confirmed according to placental appearance just after delivery (all ‘healthy’ placentas excluded), and has excluded all cases where the fetus is dead at presentation. The latter is understandable given some of the parameters being studied. However, the retrospective diagnosis of abruption means that this tool cannot be used before delivery. If the tool is designed to be used immediately after delivery, then this should be stated early in the manuscript, as it has important implications for future prospective validation of the tool. The purpose of the tool should also be made clearer. There is a danger of the findings being misconstrued unless great care is taken to present the findings in such a way that the narrow remit of this study is very clear. ie. the tool is not intended to be used in cases of suspected abruption, but instead once diagnosis
is certain after delivery.

Minor essential revisions

5) It is not clear exactly how data were obtained from case records and by whom, so accuracy of data is not known.

6) The table headings ‘confounding factors’ (table 2 and 3) appear to be inaccurate, as they refer to the variables as potential predictors, not confounders.

7) Apgar score is not a risk factor for fetal acidaemia.

8) There appears to be some contradiction regarding how the diagnosis of abruption was made, as in the methods section it is stated that the suspected clinical diagnosis was ‘confirmed’ based on placental appearance, while in the discussion section, it is stated that diagnosis was based on ‘classic symptoms and signs’.

9) I am not sure that it is appropriate to say that the tool created as a result of this study can be used to aid diagnosis of abruption when considering the exclusion criteria ie. the low generalisability.

10) Some of the limitations are clearly stated, but generalisability should be elaborated on (see above).

11) There are a few minor issues with the use of the English language. Specifically, there is one sentence in the introduction which may prove difficult to understand; ‘It has been reported that placental abruption is as reliable a predictive factor for fetal acidemia as FHR abnormality in both preterm and term infants’, although it appears simply to be due to inappropriate use of the plural ‘factors’. I believe the term ‘multivariable’ should be used rather than ‘multivariate’.

Discretionary revisions

12) The authors may wish to clarify that the same blood–gas analyser was used in all 94 institutes.

13) The authors have not stated that this is a case-control study (subjects categorised according to outcome data).

14) The authors could clarify how they are building on similar work in this area.


Level of interest: An article whose findings are important to those with closely related research interests

Quality of written English: Needs some language corrections before being published

Statistical review: No, the manuscript does not need to be seen by a statistician.
Declaration of competing interests:

I declare that I have no competing interests.