Reviewer's report

Title: Genetic evidence of multiple loci in dystocia - difficult labour

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Reviewer: Aaron Caughey

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1) Abstract: The background immediately suggests that the researchers may be attempting to oversimplify a clinical question and diagnosis that they are trying to address. “Dystocia” is a complex condition that can be attributed to three general causes, or the three “P”s in obstetrics: power, passenger, pelvis. Power is the amount of force that the uterus can generate in labor, the passenger is fetal size, and the pelvis is pelvic size and shape with a strong association with maternal height. It is unclear why finding women at 286 days or beyond has anything to do with dystocia, and often, these women are induced which can lead to a cesarean delivery for failed induction often miscoded as dystocia.

2) Background: This introduction is a bit cursory and fails to capture the important clinical aspects of labor dystocia, I would suggest the authors collaborate with someone with an understanding of pregnancy and birth. For example, why would the authors discuss fetal asphyxia along with dystocia – what is the relationship there?

3) Background: The authors should mention that, in turn, once a first cesarean delivery is performed, future pregnancies are at increased risk of stillbirth (Smith G in Lancet) and previa/accrete (Silver R in OB Gyn).

4) Background: The sentence with “major psychologicial trauma” needs to be fixed grammatically. Also, “major psychologicial trauma” should be defined – this is a bit vague.

5) Background: More importantly, operative vaginal deliveries are associated with pelvic floor trauma and long-term outcomes like urinary and fecal incontinence.

6) Methods: As noted above, choosing women at or beyond 41 weeks of gestation is a mistake, what you are looking at is a subset of women with prolonged gestation. Furthermore, many of these women are induced and “diagnosed” potentially with dystocia, but may not really have dystocia. Rather, this is a dystocia caused by inpatient clinicians.

7) Methods: Further, if you are going to use dystocia as the outcome, patients can not usually confirm this diagnosis. They rarely understand all of the factors that go into such a diagnosis such as adequate uterine contractions, active phase of labor, etc...we find that, as clinicians, when we take such a history it is rarely confirmatory. Such a diagnosis should be taken from charts. Further, since such a small sample size was needed, why not just recruit prospectively?

8) Methods: Why exclude 5000 gm babies. Since part of the genetics of dystocia would be related to creating a baby too big to fit, it seems like you wouldn’t want
to include. If you are just interested in dystocia due to inadequate uterine contractions, then this makes sense, but then you should be more clear about this in the Background and Methods.

9) Methods: Why was induction of labor used in the suspicion of dystocia? Again, this speaks to a poor understanding of labor/obstetrics/labor dystocia or it is being explained poorly.

10) Results: Reasonably presented. Hard to give much credibility to given all of the methodological problems above.

11) Discussion – should include limitations of the science of which there are many – diagnostic bias being a large problem, power another.

12) Discussion – the authors suggest that it might be useful to know that a woman’s mother/sister had dystocia if there was a genetic component. I would disagree. Such information generally biases clinicians to lower their threshold to perform more cesarean deliveries. If we were in an age of a 3% cesarean rate, perhaps the authors would be correct, that raising the rate might improve outcomes, but in the current environment, while such information is interesting to me as an epidemiologist and clinical researcher, I have misgivings about the effect it would have on the typical clinician. I suggest they spend more time in their Discussion on how “dystocia” may be genetically linked. Given their current diagnosis, there is more there about prolonged gestation, maternal height or pelvis shape than actual labor issues, but this would be more germane than the clinical comment.

**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:** Yes, but I do not feel adequately qualified to assess the statistics.

**Declaration of competing interests:**

I declare that I have no competing interests