Role of Race and Ethnicity in the Choice of a Vaginal Trial of Labor After Cesarean

Clinical Perspectives

Elliot M. Levine, M.D., Carlos M. Fernandez, M.D., and Rosally Starr, M.D.

A clinical perspective is offered, suggesting that algorithms, which have become widely used, may have a questionable use of race and ethnicity for the prediction of a successful vaginal trial of labor after previous cesarean section birth. Data showing the inaccuracy of these algorithm predictions should be noted. Medical care should not include the use of race and ethnicity if inaccuracies are evident and harm to selected populations are shown to exist. (J Reprod Med 2021;66:243–244)

Keywords: labor; models, theoretical; predictive factors; pregnancy; vaginal birth after cesarean; vaginal birth after cesarean/statistics & numerical data; trial of labor after cesarean delivery.

The use of racial identity may not be statistically relevant to any of the algorithms used for successful VTOL prediction.

At a time when political protesting regarding racial injustice is commonly seen, medical professionals ought to recognize when racial and ethnic insensitivity may exist in our collective medical practice. A case in point relates to the use of prediction models for successful vaginal trials of labor after cesarean (VTOL).[1-3] Such algorithms can include verifiable correlates to vaginal births after cesarean (VBAC), such as prior vaginal births, estimated fetal weight, persistent cesarean indications, body mass index, and even type of labor onset. The accuracy of these algorithms used to predict successful VBAC in a patient contemplating a VTOL has been recently questioned.[4-6] The inclusion of a racial component may be of questionable value here, since the anthropomorphic indicators of pelvic dimensions are less clear cut,[7] especially when soft tissue description may offer a different correlation to the capacity for vaginal delivery.[8]

Although this last reference examined the obligate contribution of the soft tissues to the birth

From the Department of Obstetrics and Gynecology, University of Illinois at Chicago; and Department of Obstetrics and Gynecology, Advocate Illinois Masonic Medical Center, Chicago, Illinois.

Elliot M. Levine (ORCID ID: 0000-0002-0097-6252).

Carlos M. Fernandez (ORCID ID: 0000-0003-0042-3866).

Rosally Starr (ORCID ID: 0000-0002-0888-3392).

Address correspondence to: Elliot M. Levine, M.D., Department of Obstetrics and Gynecology, Advocate Illinois Masonic Medical Center, 3000 North Halsted, Suite 500, Chicago, IL 60657 (elliot.levine@aah.org).

Financial Disclosure: The authors have no connection to any companies or products mentioned in this article.

0024-7758/21/6609-10–0243/$18.00/0

canal dimensions beyond its bony limitations, it related this to the prediction of soft tissue injuries. It nonetheless describes the consequential role of the pelvic soft tissues as part of the birth canal, unrelated to the possibly genetically determined bony pelvis dimensions. Pertinent to this discussion is the notion that race and ethnicity have a role in determining vaginal delivery capability (e.g., in VBAC) when a sociodemographic basis may be confused with a biologically defined one.

Measurement of the bony pelvic dimensions with magnetic resonance imaging (MRI), relating to an individual's race, has revealed the usual range as would be expected in any population, somewhat correlated with race. Whether these described dimensions (e.g., intertuberous or ischial spinous diameter or pelvic inlet size) meaningfully correlate with the capacity to vaginally deliver is open to some question, since there may be an essential role of the pelvic soft tissues (e.g., the levator muscles of the pelvic floor) with regard to vaginal delivery capability. X-ray pelvimetry, and pelvimetry through other imaging modalities, has long been abandoned as a predictor of the capacity to vaginally deliver, due to its repeated documented failure.[9] So, the inclusion of race or ethnicity in an algorithm used to predict VBAC success may inappropriately be using this demographic indicator. When the use of this specific factor (i.e., race/ethnicity) in a prediction model was shown to not be successful, the interpretation was simply articulated as "not predictive of VBAC success" and "unexpected."[10] In fact, though, the underestimation of the probability of a successful VBAC because of a patient's assignment of ethnicity or race should be highlighted, as the ramifications of such counseling of a low probability of success are significant when it can be shown to be inaccurate.

This is of considerable importance since these prediction models can influence shared decision-making. The tendency to desire having a vaginal birth has been shown to correlate with certain racial/ethnic groups, and this influence is indeed relevant.[11] The relationship of VBAC success prediction in the Latina community is particularly worthy of note, given some reported disparate findings.[11] Interestingly, whatever the complex interactions of the pelvic bony dimensions and soft tissue dynamics are, the vaginal birth statistics do not appear to show significant differences between women in different racial/ethnic groups in the United States.[12] The use of racial identity may not, therefore, be statistically relevant to any of the algorithms used for successful VTOL prediction. If encouragement of vaginal births is desirable, when appropriate, then perhaps this unnecessary racial categorization can be avoided. This has been recently mentioned in light of the recognized racial disparities found to exist in the practice of medicine.[13] At least, we may need to properly establish and validate these algorithms within appropriately selected populations and follow described prediction model development.[14]

References

1. Mardy AH, Ananth CV, Grobman WA, et al: A prediction model of vaginal birth after cesarean in the preterm period. Am J Obstet Gynecol 2016;215:513.e1-7
2. Manzanares S, Ruiz-Duran S, Pinto A, et al: An integrated model with classification criteria to predict vaginal delivery success after cesarean section. J Matern Fetal Neonatal Med 2020;33(2):236-242
3. Schoorel ENC, van Kuijk S, Melman S, et al: Vaginal birth after a caesarean section: Development of a Western European population-based prediction model for deliveries at term. BJOG 2014;121:194-201
4. Harris BS, Heine RP, Park J, et al: Are prediction models for vaginal birth after cesarean accurate? Am J Obstet Gynecol 2019;220:492.e1-7
5. Thornton P: Limitations of vaginal birth after cesarean success prediction. J Midwifery Womens Health 2018;63:115-120
6. Wong JWH, Yoshino KDN, Ahn HJ, et al: Examining the validity of a predictive model for vaginal birth after cesarean. J Perinat Med 2020; 48(1):11-15
7. Handa VL, Lockhart ME, Fielding JR, et al: Racial differences in pelvic anatomy by magnetic resonance imaging. Obstet Gynol 2008;111: 914-920
8. Tracy PV, DeLancey JO, Ashton-Miller JA: A geometric capacity-demand analysis of maternal levator muscle stretch required for vaginal delivery. J Biomech Eng 2016;138(2):021001
9. Pattinson RC, Cuthbert A, Vannevel V: Pelvimetry for fetal cephalic presentations at or near term for deciding on the mode of delivery (Review). Cochrane Database Syst Rev 2017;Issue 3:CD000161
10. Maykin MM, Mularz AJ, Lee LK, et al: Validation of a prediction model for vaginal birth after cesarean delivery reveals unexpected success in a diverse American population. Am J Perinatol Rep 2017;7: e31-e38
11. Mirabal-Beltran R, Strobino DM: Birth mode after primary cesarean among Hispanic and non-Hispanic women at one U.S. institution. Womens Health Issues 2020;30(1):7-15
12. Martin JA, Hamilton BE, Osterman MJK, et al: Births: final data for 2018. Natl Vital Stat Rep 2019;68(13):1-47
13. Green TL, Zapata JY, Brown HW, et al: Rethinking bias to achieve maternal health equity: changing organizations, not just individuals. Obstet Gynecol 2021;137:935-940
14. Pencina MJ, Goldstein BA, D'Agostino RB: Prediction models–Development, evaluation, and clinical application. N Engl J Med 2020;382: 1583-1586