comorbidities. What will need to happen going forward is for the potential risks and benefits to be identified and a prospective trial of randomizing patients to being managed with the screening tool versus usual care in order to ascertain whether there is potential benefit from such an approach.—ABC

Timing of Delivery in Women With Diabetes: A Population-Based Study

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ABSTRACT

Pregestational and gestational diabetes have been associated with an increased risk of neonatal morbidity and mortality, including higher rates of macrosomia, shoulder dystocia, and other birth injuries. While it has been hypothesized that delivery at earlier term gestation may reduce the risk of neonatal complications associated with diabetes in pregnancy, there have been very few studies to examine the timing of delivery among women with diabetes. This study aims to quantify the week-specific risks of maternal and neonatal morbidity and mortality among women with diabetes who delivered iatrogenically compared with those who were expectantly managed.

In this population-based cohort study, data were obtained from the Canadian Institute of Health Information Discharge Abstract Database. The study compared women who delivered a singleton infant at ≥36 weeks with type 1, type 2, or gestational diabetes to a group of women without diabetes delivering in the same gestational age range. In order to imitate real-life clinical decisions, the observed outcome rate was calculated per 100 deliveries following iatrogenic delivery and per 100 ongoing pregnancies following expectant management for each gestational age. Multivariate logistic regression was used to calculate the absolute predicted risks for each outcome at each week of gestation, adjusted risk ratios, and risk differences. The primary outcomes were a composite of maternal mortality or severe maternal morbidity and neonatal mortality or severe neonatal morbidity.

In total, 2,707,471 women were included in the study: 5889 with type 1 diabetes, 9422 with type 2 diabetes, 138,917 with gestational diabetes, and a comparison group of 2,553,243. Overall, women with any type of diabetes were more likely to have an iatrogenic delivery and experience an adverse outcome than women without diabetes in the comparison group. Among women with diabetes, there were no significant differences in gestational age–specific rates of severe maternal morbidity and mortality between iatrogenic and expectantly managed deliveries. However, in women without diabetes, iatrogenic delivery was correlated with a significantly higher adjusted risk of severe maternal morbidity/mortality at 36, 37, 38, and 39 weeks when compared with expectant management. Among the comparison group and women diagnosed with gestational diabetes, iatrogenic delivery was associated with an increased adjusted risk of neonatal morbidity and mortality at 36 and 37 weeks of gestation and a lower adjusted risk of neonatal morbidity and mortality at 38, 39, and 40 weeks of gestation compared with expectant management. There was an increased risk of neonatal morbidity/mortality observed after iatrogenic delivery in women with type 1 diabetes at 36 and 37 weeks of gestation and in women with type 2 diabetes at 36 weeks of gestation.

Based on this study’s results, iatrogenic delivery at 38, 39, or 40 weeks of gestation may reduce rates of severe neonatal morbidity and mortality in women with gestational diabetes. While there is insufficient evidence on timing of delivery for women with types 1 and 2 diabetes, the study’s findings suggest that there is little to no neonatal or maternal benefit to iatrogenic delivery at 39 weeks instead of at 38 weeks of gestation, especially in the context of increased risk of stillbirth in these groups. The study lacked data on important confounders, including glycemic control, estimated fetal weight, and obstetric history. However, as the first study to compare the risks of iatrogenic delivery and expectant management by diabetes type, it reinforces the complexity of obstetric decision making and highlights the importance of making delivery decisions on an individual basis.

EDITORIAL COMMENT

(It has been estimated that 4.6% to 9.2% of women have some form of diabetes mellitus (DM) during pregnancy (NIH Consens State Sci Statements 2013;29:1–31). These cases are mostly
gestational DM, which comprise approximately 88%, but the remaining 12% have either type 1 or 2 DM, and the rates appear to be rising, particularly those with gestational DM and type 2 DM (Am J Obstet Gynecol 2015;212:74.e1–74.e9). Diabetes in pregnancy is associated with a wide range of complications including preeclampsia, stillbirth, shoulder dystocia, and fetal macrosomia. One approach to reduce some of these risks is earlier delivery, which was a mainstay of the management of pregestational diabetes, but has declined in recent years with many such pregnancies going to their due date if there are no complications.

However, in the recent ARRIVE trial, induction of labor at 39 weeks' gestation was associated with a reduction in the risk of preeclampsia in a non-diabetic population (N Engl J Med 2018;379:513–523). In a large randomized trial of induction of labor for a large-for-gestational-age fetus prior to 39 weeks' gestation, the risk of shoulder dystocia was reduced (Lancet 2015;385:2600–2605). Certainly, there are widespread data that delivery at 41 weeks' gestation reduces both cesarean delivery and perinatal mortality (Cochrane Database Syst Rev 2018;5:CD004945). There are fewer data in diabetic populations alone, but given that they are at increased risk of these complications, one might theorize that there may be benefit from delivery prior to 41 weeks' gestation.

The study abstracted above attempts to examine the perinatal morbidity of delivery at late preterm and early time gestational ages to assess the potential risks and benefits of planned delivery at these gestations. Because many of these patients' deliveries were not planned, there is a large concern about potential confounding due to the reason for the earlier deliveries. Overall, the study found potentially improved outcomes in the offspring of women with gestational diabetes who delivered at 38 to 40 weeks' gestation as compared with those delivering beyond 40 weeks. For those patients with pregestational diabetes, it did not appear that outcomes at 39 weeks' gestation were better than those who delivered at 38 weeks' gestation, suggesting that you might as well deliver at 39 weeks' gestation as compared with further expectant management.

This issue about timing of delivery for women with diabetes is quite relevant today. A decade ago, the National Institute of Child Health and Human Development convened a consensus conference with the Society for Maternal-Fetal Medicine and the American College of Obstetricians and Gynecologists to focus on the timing of delivery (Obstet Gynecol 2011;118:323–333). The resulting consensus document outlined the optimal timing of delivery for a range of conditions including diabetes in pregnancy. However, while the suggestions for some conditions were very specific (eg, delivery for preeclampsia without severe features should occur at 37 0/7 to 37 6/7 weeks' gestation), the recommendations for diabetes in pregnancy was far less so. For example, the recommendations state deliver at 39 weeks or later in well-controlled patients and delivery between 34 and 39 weeks' gestation in poorly controlled pregnancies. These recommendations do not help typical providers trying to make a plan for delivery with their patients. There have been several decision-analytic model studies that demonstrate that perinatal mortality may be minimized by delivery by 39 weeks in women with both type 1 diabetes and gestational diabetes (Am J Obstet Gynecol 2014;211:418.e1–418.e6), but more work is needed in this area.

Meanwhile, as a provider, it is likely that one will need to work in their local community to ensure that practice approaches are similar with the different providers so that local practice is consistent. This will be important so that patients do not get widely varying messages, and the need for maternal-fetal medicine specialists, endocrinologists, obstetricians, and midwives to all be on the same page in each community will be important. Further, in an environment that is increasingly considering offering earlier elective induction, offering it to women with gestational diabetes seems increasingly evidence-based.—ABC)