Stillbirth Reduction Efforts and Impact on Early Births

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KEYWORDS

• Stillbirth • Placental insufficiency • Late preterm birth • Early term birth

KEY POINTS

- Despite the medical risks of intentional delivery of a pregnancy before 39 weeks' gestation, it is considered to be justified in some cases to reduce the risk of stillbirth.
- The stillbirth rate has decreased dramatically over the past 60 years, in part because of improved management of conditions associated with an increased risk for stillbirth.
- Examples of such conditions include hypertensive disorders of pregnancy, diabetes, intrauterine growth restriction, placental abnormalities, some birth defects, multiple gestation, and abnormal fetal testing.
- The optimal gestational age for delivery in many of these conditions is uncertain.
- There is no evidence that delivery before 39 weeks' gestation reduces the risk of recurrent stillbirth.

INTRODUCTION

The emotional impact of stillbirth, defined as death of the fetus at 20 or more weeks' gestation, is considerable for families and clinicians. In 2006 the United States reported 25,972 stillbirths, nearly equaling the number of reported infant deaths.[1] Stillbirth is responsible for around one-half of perinatal deaths and is almost 10 times more frequent than sudden infant death syndrome.[2,3]

The rate of stillbirth in the United States has dropped dramatically over the past 100 years, decreasing almost 100-fold. This trend has been due to major improvements in the care of conditions such as RhD alloimmunization, diabetes, and preeclampsia. There has been considerable emphasis on identifying pregnancies at risk for stillbirth and aggressively managing them to avoid stillbirth. In many cases this involves antenatal fetal testing such as nonstress tests, assessment of amniotic fluid index, biophysical profile, and Doppler velocimetry studies. Each of these tests

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Clin Perinatol 40 (2013) 611–628
http://dx.doi.org/10.1016/j.clp.2013.07.002 **perinatology.theclinics.com**
0095-5108/13/$ – see front matter

identifies fetuses at increased risk for stillbirth. However, they are only effective because such fetuses are then delivered before a stillbirth occurs. The rates of stillbirth have generally plateaued over the past 40 years, but there has been a slight decrease during the past 20 years, primarily attributable to a decrease in late stillbirths occurring after 28 weeks' gestation.[1]

Conversely, preterm birth carries important risks for the neonate, including long-term morbidity and neonatal death.[4–8] These issues are extensively reviewed elsewhere in this issue. This article reviews the pros and cons of late preterm and near term birth for the prevention of stillbirth, as well as generally accepted indications for such deliveries.

IMPLICATIONS OF LATE PRETERM OR EARLY TERM DELIVERY

As seen in **Fig. 1**, over the past 20 years in the United States there has been a decrease in stillbirth after 28 weeks. At the same time, there has been an increase in preterm delivery at 34 to 36 weeks' gestation (**Fig. 2**). Accordingly, there is seemingly well-founded speculation that these 2 trends are directly linked. Moreover, countries with high rates of preterm birth at 32 to 36 weeks' gestation have lower stillbirth and neonatal death rates at and beyond 32 weeks' gestation.[9]

Preterm or early delivery could theoretically limit stillbirth risk. It goes without question that all ongoing pregnancies carry a stillbirth risk, even after the pregnancy reaches term gestation. However, it is known that neonatal mortality and morbidity are increased with preterm and early term birth.[5–8] Thus, the goal of stillbirth reduction must be taken in the context of increased risks of prematurity.

We can gain a better understanding of the risk/benefit ratio of late preterm or early term delivery in reducing stillbirth by examining the prospective fetal mortality rate. By definition, this is the number of fetal deaths at a given gestational age plus fetal deaths that would occur at a later gestational age if the pregnancy remains undelivered per 1000 live births.[10] Accordingly, iatrogenic delivery would prevent stillbirth at that week as well as in subsequent weeks of gestation. Conversely, expectant management of the pregnancy allows for potential stillbirth in that given week, as well as in each subsequent week that delivery does not occur.[10,11] In simple terms, this is the "hazard risk" or "percentage of fetal deaths in ongoing pregnancy."

The prospective fetal mortality rate by gestational age (in weeks) in the United States in 2005 is shown in **Fig. 3**. At 34 to 37 weeks' gestation the mortality rate is 0.23 to

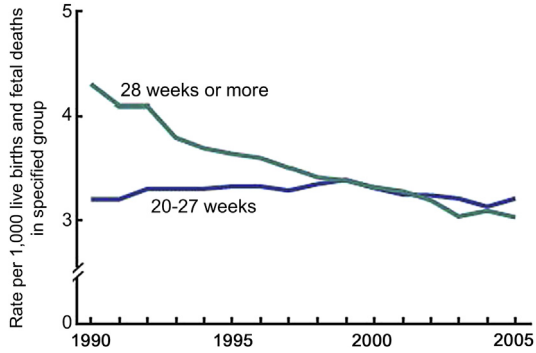

Fig. 1. Fetal mortality rates by period of gestation: United States, 1990 to 2005. (*From* MacDorman MF, Kirmeyer S. Fetal and perinatal mortality, United States, 2005. National vital statistics reports; vol 57 no 8. Hyattsville, MD: National Center for Health Statistics; 2009.)