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Fetal EKG may reduce C-sections

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Florida researchers are developing a fetal electrocardiogram, or EKG, designed to monitor an unborn baby's heart rate during labor, which could reduce the need for Caesarean sections.

Dr. Tammy Euliano, an associate professor of anesthesiology and of obstetrics and gynecology at the University of Florida, said the big problem with ultrasound monitors used during labor is that they can "record the mother's heart rate, instead of the baby's."

Because a mother's heartbeat is slower than a baby's, she said, the confusion can wrongly suggest that the unborn infant has a cardiac abnormality.

In addition, she said, it can mean a delay in treatment if the child "really is in trouble" but doctors wrongly conclude that the slower heart rate is the mother's.

Even with inadequate and sometimes misleading results, the situation has resulted in a "dramatic increase in C-sections," some of which have not been necessary, Dr. Euliano said.

Her husband, Neil Euliano, an assistant professor of anesthesiology at the university and a fellow researcher, agreed.

"When this [ultrasound] system was adopted [more than 40 years ago], the Caesarean delivery rate in the United States was about 5 percent."

Largely because of increases in deliveries prompted by abnormal heart rate patterns, he said the Caesarean rate is now higher than 25 percent.

"There have been some preliminary studies by other groups that say fetal EKG is a more accurate predictor than ultrasound of how the baby's doing during labor," Dr. Euliano said.

She added: "Currently, the only way to get that information is with what's called a scalp electrode."

But she noted that the use of a scalp electrode is limited to the final stages of labor.

Dr. Euliano and some other University of Florida physicians are working with a private engineering firm, headed by her husband, to develop what could be the first commercial monitoring system to noninvasively detect electrical activity in the baby's heart.

The team, she said, already has developed a fetal EKG that is more effective than ultrasound in distinguishing the baby's heartbeat from that of its mother or from uterine contractions, muscle movement or other noise.

"Our EKG is so much tinier; it can tell for sure if it's the baby's heartbeat," she said.

The new system uses sensors placed on the mother's abdomen with an adhesive, so it could be used at any time during labor. It could be used even earlier for mothers with medical conditions, such as diabetes

and heart disease, which can place their babies at greater risk for complications.

The team believes the new system, once refined, may detect abnormal fetal heart rhythms, distinguish false labor from early labor and track the mother's heart rate and the strength of her uterine contractions.

"The goal of our project is to find something in the electrocardiogram that maybe will help improve outcomes," Mr. Euliano said.

He said that ultrasound fetal monitoring, which has been used for more than 40 years, "has not improved outcomes."

Return to the article