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# New research sheds light on why older mothers more likely to face birth complications

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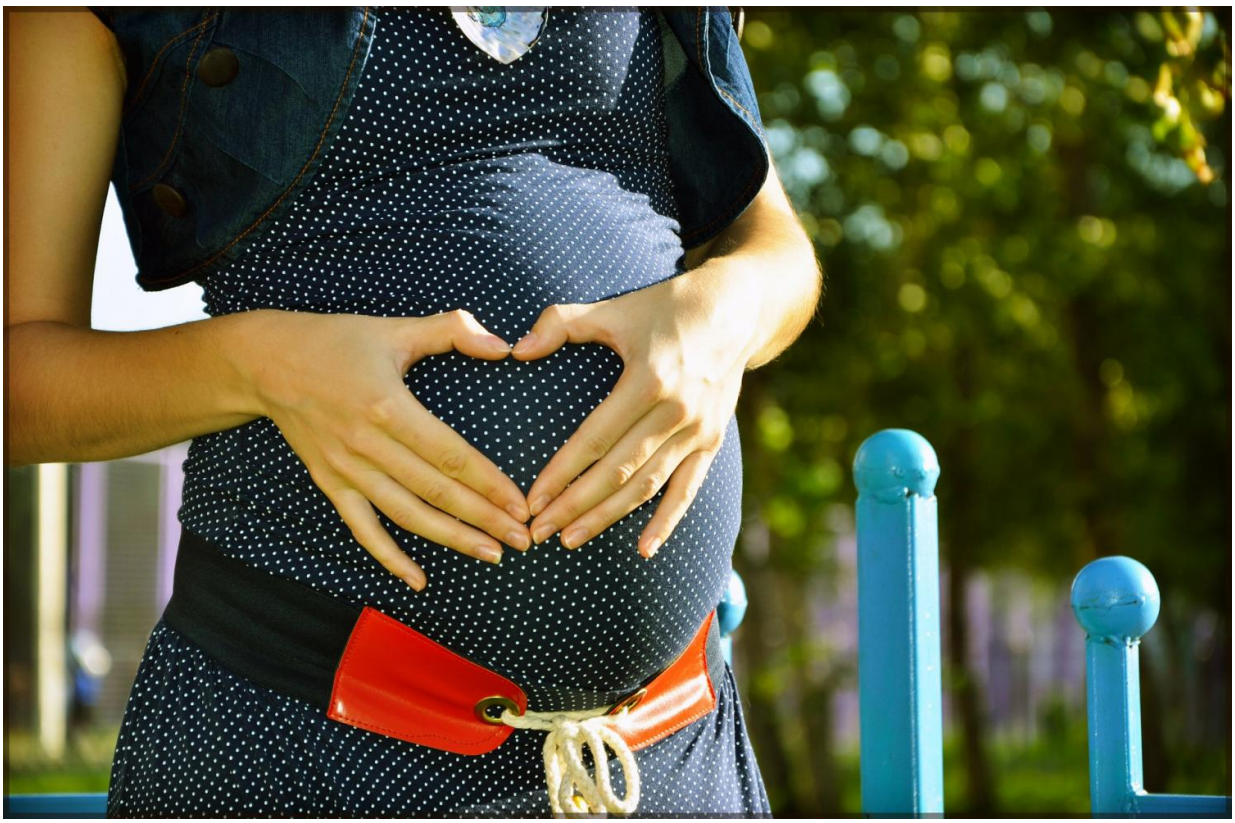

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Pregnant women over 35 years old are more likely to have complications at birth due to delayed and longer labour stages, suggests new research

published in *The Journal of Physiology*.

It is well known that older mothers are more likely to experience complicated births, and this new research identifies physiological changes in the body that could explain this. Using mouse models, researchers from King's College London have discovered that maternal age influences the structure of the uterus. Specifically, they examined how the muscle of the uterus contracts, the way it responds to oxytocin (an important drug to speed up labour), and the number of mitochondria (energy supplier for cells) available to provide energy for uterus muscle contraction. They also found altered hormonal signals which underpinned the delayed onset of labour.

The average age for women to have their first child is increasing, with more women giving birth to their first child over 35 years of age. This has been paralleled by an increase in pregnancy complications such as induction for women who have passed their due date, failure to progress in labour, and bleeding after delivery. Older women are also more at risk of requiring a caesarean section or instrumented delivery (e.g., with forceps), suggesting there may be issues with the way their uterus can contract during labour.

The research team developed and used a pregnant mouse model of maternal aging. Pregnant mice at different ages were used to mimic the human situation. The average mouse has a peak fertile period between 3 - 5 months, so mice at 8 months were used to represent an older mother. They analysed the functions and physiological changes in the cervix and uterine muscles from these pregnant mice. In older mice, muscle contraction properties in the uterus were impaired, less sensitive to oxytocin and had reduced numbers of mitochondria indicating that the uterus muscles are less able to contract. Signalling of the pregnancy-related hormone progesterone was also altered and this triggered a delay in labour.

Dr. Rachel M. Tribe, Reader in Women's Health at King's College London and lead investigator of the study explained: "Our research highlights that there are key physiological and cellular changes associated with a mother's age that result in labour dysfunction. Timing of delivery and progress of labour is directly related to maternal age and this can cause complications during birth."

Dr Rima Patel, Research Associate at the Division of Women's Health, King's College London and fellow researcher added: "Our study uses a mouse model so further research involving measuring hormones and analysing uterus tissue in older pregnant women is now needed. Studies like this in maternal aging are essential to inform future clinical management strategies for older mothers to ensure more hassle-free and successful births."

**More information:** *The Journal of Physiology*, DOI: 10.1113/JP273350

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