

Ultrasound during active labour best predictor of C-section needs

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Torbjørn Moe Eggebø uses ultrasound to examine a pregnant woman. Credit: Morten Dreier, NSF

Midwives need more than fingers to figure out who the C-section candidates are. Small, tablet-sized ultrasound devices may be the key.

For over a hundred years, midwives and doctors have used their fingers to check on delivery progress. But predicting which women will need to give birth by [caesarean delivery](#) has always proved extraordinarily difficult. The traditional way to determine how far a woman has progressed in her labour is for [birth attendants](#) to do a vaginal examination using their fingers. But two of ten vaginal examinations are wrong.

"The head alignment of the foetus and how far the head has come down the birth canal have a bearing" on the assessment, says Torbjørn Moe Eggebø, associate professor at NTNU and chief physician at the National Center for Fetal Medicine at St. Olavs Hospital in Trondheim.

Most C-sections in China and Brazil

"A [caesarean section](#) is a necessary intervention in many situations, but unnecessary C-sections may lead to unfortunate complications," says Eggebø.

The number of caesarean sections performed in different parts of the world varies greatly. In Brazil, over 50 per cent of all children are delivered by caesarean section.

"Many doctors in private practice in Brazil perform C-sections without any thorough investigation of whether it is a necessary intervention," he says.

In the United States, the frequency is 33 per cent, while in Norway the frequency is 17-18 per cent.

In outlying areas of many African countries, only one per cent of babies come into the world through caesarean section, leading to maternal mortality. In Sierra Leone, a woman's lifetime risk of dying during pregnancy and childbirth is 15 per cent.

Fewer mistakes with ultrasound

Now Eggebø wants to equip midwives and doctors with small ultrasound devices the size of a tablet. "Errors occur in at least 20% of clinical assessments compared to only 2% using ultrasound," he says.

Eggebø and his colleagues in Stavanger University Hospital and Cambridge University Hospital have published a study about the use of ultrasound during labour in the September 2015 issue of the *American Journal of Obstetrics and Gynecology*.

The article reveals that women who have been evaluated as being "high-risk" using a maternal risk scoring system are ten times more likely to deliver by caesarean section than women who are evaluated as having low risk. The cause is generally because their labour progresses too slowly. First-time mothers consequently often need help giving birth.

Failure to progress in almost half of births

Among first-time mothers, about 30 per cent of deliveries go slowly. Labour can stop or slow down if the contractions are too bad, if the baby is big, if the birth canal is too narrow or if the foetus is in the wrong position. It is important to determine the main reason.

Midwives and obstetricians are specifically looking to discover "stargazer" babies, among others.

"Some foetuses are called stargazers because they're lying face up in relation to the mother's womb when they come out. These births often take a long time, and more often end up as C-section deliveries," says Eggebø.

New model for birth assessment

To help midwives predict which babies need to be delivered by caesarean section, Eggebø and the researchers from Cambridge University have created a new model for natal assessment. The model includes information on maternal age, maternal BMI, length of pregnancy, how deeply the foetus has settled in the pelvis, how the foetus has rotated in the [birth canal](#) and to what extent the skin on the head of the foetus has swelled up.

All this gives midwives information to assess whether or not a caesarean section may be called for.

The most important issue is not to reduce cesarean section rate, Eggebø says, but to do the right C-sections at the right time. This requires greater diagnostic precision when a woman is in active labour.

May reduce the risk of infection

There are also several benefits with the use of ultrasound in the delivery room.

"Many women find it unpleasant to have a vaginal examination using fingers. Ultrasounds are performed on the abdomen and from the outside of the vagina. Using ultrasound in the delivery room can reduce the number of vaginal examinations,

and probably also the risk of infection during birth," says Eggebø.

Several studies have shown that women prefer ultrasound. "The women also get information on how the delivery is going, and they're able see images on the screen that show how the foetus is moving during contractions. It's easy to teach midwives and physicians to use these small ultrasound devices," says Eggebø.

More information: Tørbjorn Moe Eggebø et al. A model to predict vaginal delivery in nulliparous women based on maternal characteristics and intrapartum ultrasound, *American Journal of Obstetrics and Gynecology* (2015). [DOI: 10.1016/j.ajog.2015.05.044](https://doi.org/10.1016/j.ajog.2015.05.044)

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