

In the centre of this image, you can recognise the definite outline of a baby's face. Suspended in what appears to be a dark expanse, the hairless head is angled slightly to the left, tilted downwards. Its eyes and mouth are closed. The child's small, round chin rests on its two arms, folded gently over one another. And either side, the edges of the placenta.

Whilst the background of the picture is black, you are drawn to the smooth, sand-coloured shapes in its centre. The baby's button nose and restful facial features, as well as its folded arms, give the impression it is peaceful, perhaps even sleeping. There is something ethereal about the composition, as though the baby's form is drifting in space. This is emphasised by the fact that the edges of the baby's head are smudged, blurred, and somewhat indistinct; streaks of orange that give way to a black background. It's as though the baby is sleeping in a peaceful space.

At the right edge of the image are a series of numbers and statistics. At the top, there is a navy-blue strip. "Canon Aplio i700, Clinical Diagnostics Services, OB 3D, 13.12.23, 14.34," are written from left to right. This denotes the patient details and date of the scan, accompanied by the Canon logo.

The reason this image looks unlike other kinds of photography or image capture is because it is a 3D ultrasound impression of a baby's face, obtained during a transabdominal scan on 13 December 2023.

I'm Bill Smith, the ultrasound practitioner who took this scan. Taken utilising the Canon Medical Aplio i700 system, it is from the mother, Karen's, third trimester pregnancy assessment. Her baby was captured with such incredible clarity 29 weeks and three days into her pregnancy.

A baby girl, she is Karen's second daughter.

This 3D scan, printed in relief, is particularly special to Karen, and me, because she is registered blind. Being able to convert this image into a form she can touch and feel helps her experience something she has been unable to in the past. She told me that not being able to see any of her previous scans has been very difficult for her. Unlike most of my patients, Karen can't see her child's face, the position she's lying in, or the outlines of her features. But in this instance, she can use her fingers to conjure a picture of her daughter in her mind's eye.

At this stage of pregnancy, I check the welfare of Karen's baby, including the baby's growth, her estimated weight, her position, liquor volume surrounding her, placental location and placental blood flows. This helps ensure the baby's safe passage through the final weeks of pregnancy. And while this scan offers parents like Karen tremendous reassurance, unfortunately this check isn't routinely carried out in many hospitals.

Unlike 2D ultrasound scans – which are essential in checking the baby's size, position, and growth – a 3D scan is able to check for different kinds of abnormalities, such as facial defects. By detecting abnormalities early, doctors and parents can prepare for the necessary care their baby should receive based on the findings. It also provides a more tangible way for parents to see what their child looks like.

In Karen's case, the scan indicated normal pregnancy progress to date. And while babies do open their eyes in the womb, it tends to happen later in pregnancy, and this baby girl kept them closed this time. Karen was equally pleased and extremely reassured to hear her baby's heartbeat.

The clarity provided by scans like this one help us make sure there are no obvious complications. We ensure all the positive clinical impressions are relayed onto the patient. And as well as the reassurance and peace of mind, they have a huge emotional appeal as part of the baby's journey towards a successful delivery. They are the first clear images captured of a child, before they've even entered the world.

As the founder and head of ultrasound at Clinical Diagnostics Services – or CDS – I am recognised internationally as a specialist ultrasound practitioner with particular skills in areas of gynaecology, reproductive medicine and, of course, pregnancy.

There is no doubt that advances in ultrasound technology have enhanced the clinical care in pregnancy. It has had a tremendous impact in terms of fertility investigation and treatment, as well as management of recurrent miscarriage.

Patients at CDS continue to benefit enormously both from a clinical as well as an emotional point of view because of access to this outstanding, state-of-the-art technology.

For Karen, her 10-year-old daughter, and her husband Mark, the arrival of a baby girl – not a boy, as they had predicted – may have come as a surprise, but at the time of this scan, they were excited to welcome her into their world and preparing for her arrival.