

Efficacy of a two (32/38 weeks) versus one (36 weeks) growth scan surveillance protocol for the detection of fetal smallness

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Objective:

The objective of the study was to compare in terms of cost effectiveness two routine third-trimester ultrasonography surveillance protocols for the detection of Small for Gestational Age (SGA) and determine the ultrasound (US) accuracy according to the interval to labour.

Methods:

We conducted a retrospective observational study including 964 pregnancies attended at the ultrasound unit of La Fe Maternity Hospital for routine third-trimester surveillance, between the year 2012 and 2022. Of them, 481 were evaluated using a two scans protocol performed at 32 and 38 weeks, while a similar cohort of 483 women were followed by means of a simplified approach consisting of only one growth scan performed at 36 weeks.

Inclusion criteria were women between 18 and 40 years with singleton pregnancies, and absence of risk factors or anomalies at the first and second trimester ultrasound scans. Gestational age was determined according to the crown-rump length at the first trimester ultrasound.

Exclusion criteria were gestational diabetes mellitus, hypertensive disorders of pregnancy, preeclampsia, thrombophilia and any other condition leading to a higher risk of growth disturbance.

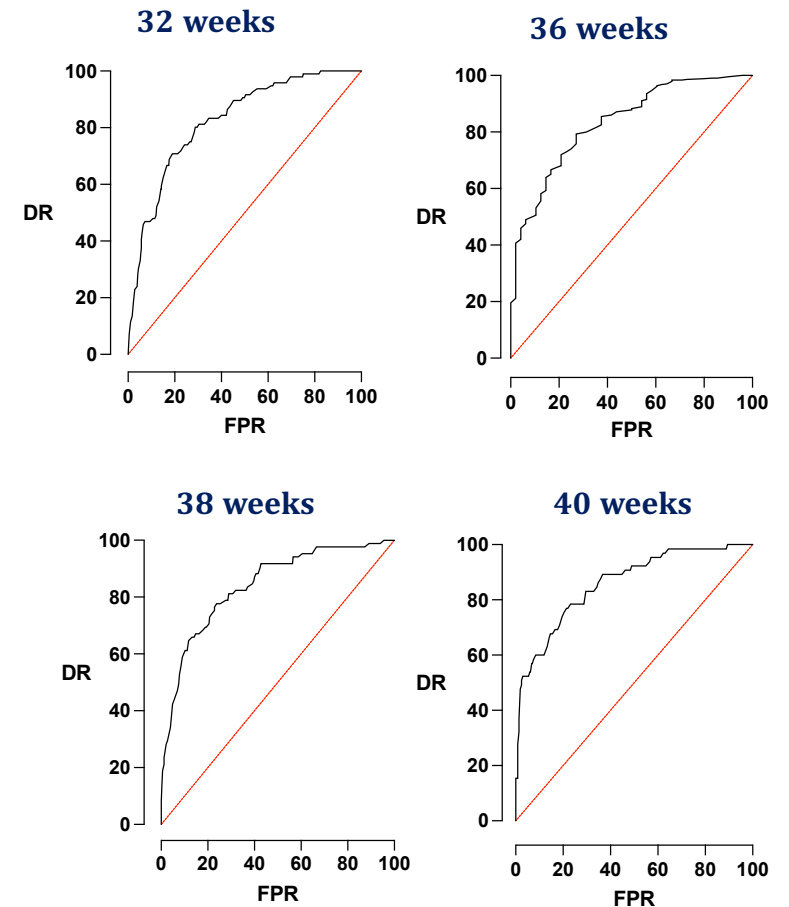
The US scan included the estimated fetal weight (EFW) that was transformed into centiles according to gestational age plotted in fetal charts. The scheduled and added scans from a positive result were recorded for each pregnancy.

Results:

While the overall efficacy of the two models presented no significant differences in term of sensitivity 50 vs 50% (32/38 vs 36 weeks), specificity 94,28 vs 95,86%, positive likelihood ratio 68,57 vs 57,14% and negative likelihood ratio 88,32 vs 94,55% routinary performing a two instead of one scan surveillance protocol represented an increased economic burden. In addition, abnormal findings were seen to yield a mean of 3,1 more US (range 1-6) in case of the 2 scan approach and 2,3 (range 1-4) in case of the one scan approach.

Assuming an estimated cost of 100 euros per US in our setting and considering that the scheduled and added scans led to an average of 1,7 (range 1-4) scans in the one US protocol and 2,5 (range 1-6) scans in the two US protocol, the average total cost per pregnancy would be of 167,9 euros in case of the simplified approach and 250,1 euros in case of the two scan approach.

Concerning accuracy of US in the detection of SGA according to the interval to labor a progressive increase trend of accuracy was observed: Area under the ROC curve of 82,39% (95% confidence interval (IC) of 77,95 to 86,84%), 83,33% (95% IC of 77,67 to 89%), 84,07% (95% IC of 79,27 to 88,88%) and 85,88% (95% IC of 80,83 to 90,93%) for 32, 36, 38 and 40 weeks.



Conclusions:

The higher costs of a two scans growth surveillance protocol at the third trimester is not justified by an increase of diagnostic efficacy. In accordance, fetal surveillance should follow a simplified approach.