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Letters to the Editor

Practical approach to obtain the mid-sagittal plane of the fetal face at 11–13 weeks' gestation by two-dimensional ultrasound

Sonographic measurement of fetal nuchal translucency (NT) thickness at 11–13 weeks' gestation is the most important single marker for identification of fetuses at high risk of aneuploidies[1], structural defects[2] and genetic syndromes[3]. Measurement of NT thickness should be performed on a mid-sagittal view of the fetal profile, which is defined by presence in the image of the tip of the nose and the rectangular-shaped palate anteriorly, the translucent diencephalon and the nuchal membrane posteriorly[4].

We report on the value of a simple and practical approach to obtain the correct mid-sagittal plane of the fetal face at 11–13 weeks' gestation by sonographers undergoing training in first-trimester ultrasound assessment.

Obstetricians assigned to our Unit for practical training were divided into two groups of 10 operators each. Among them, a total of 20 fetuses at 11–13 weeks' gestation were examined. In Group 1, operators were asked to freeze the image when they were fairly confident that all landmarks that define the exact mid-sagittal plane of the face were visualized on screen. In Group 2, operators were asked to focus their attention only on the presence of the tip of the nose and the rectangular shape of the palate in the absence of the frontal process of the maxilla and to freeze the image immediately thereafter (Figure 1).

Offline review of ultrasound images showed that the proportion of cases in which the criteria were satisfactory for defining the mid-sagittal plane was lower in Group 1 compared to Group 2 (72.5% *vs* 92.5%; $P < 0.05$). Differences between the two groups concerning each criterion are shown in Table 1. The nuchal membrane was visualized in all cases in both groups, but the rate of visualization of both the tip of the nose and the rectangular palate was lower in Group 1 (40% *vs* 90% and 50% vs 80%, respectively).

Table 1 Frequency of visualization of anatomical landmarks used to define the correct scanning plane for measurement of nuchal translucency thickness by the two groups of operators participating in this study

Landmark	*Group 1* (n = *10)*	*Group 2* (n = *10)*
Tip of the nose	4 (40)	9 (90)
Rectangular palate	5 (50)	8 (80)
Diencephalon	10 (100)	10 (100)
Nuchal membrane	10 (100)	10 (100)

Data are given as *n* (%).

Previous work[5] used the multiplanar mode of three-dimensional ultrasound to produce deviations from the true mid-sagittal view of the fetal face and showed that the only landmarks that define this plane are the tip of the nose and the rectangular-shaped palate. In addition, it has been demonstrated that NT thickness is significantly greater in the midline and that systematic underestimation of the true NT thickness would lead to a significant reduction in the detection rate of trisomy 21 on combined screening at 11–13 weeks' gestation[6]. Underestimation of NT thickness would also have an impact on the ability to identify fetuses at high risk of major structural defects and genetic syndromes. Therefore, it is important that sonographers undergoing training in first-trimester screening are given practical information that could improve their skills and increase their confidence in obtaining appropriate ultrasound images.

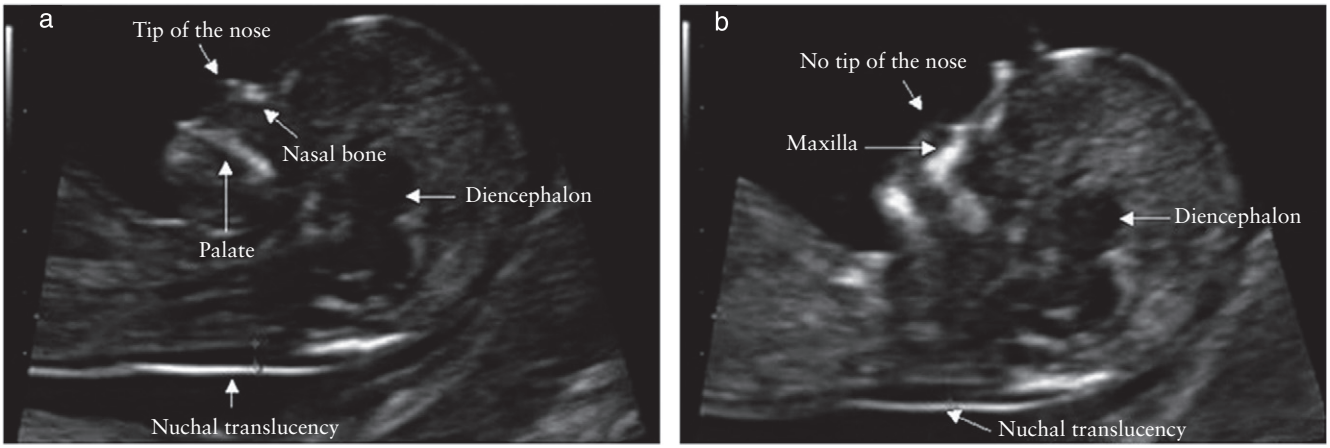

Figure 1 Ultrasound images of a fetus at 12 weeks' gestation, demonstrating: (a) the exact mid-sagittal plane of the face with sonographic landmarks and (b) an oblique view of the profile showing the absence of the tip of the nose and the presence of the frontal process of the maxilla.

During routine two-dimensional sonographic examination, it can be challenging to obtain the required scanning plane if the presence of several landmarks must be verified in the image, especially when magnification is high and the landmarks are far apart. In our experience, limiting the visual checklist of landmarks to the tip of the nose and the palate is a practical and easy method for visualizing NT thickness and for ensuring that this is measured in the correct plane.

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