



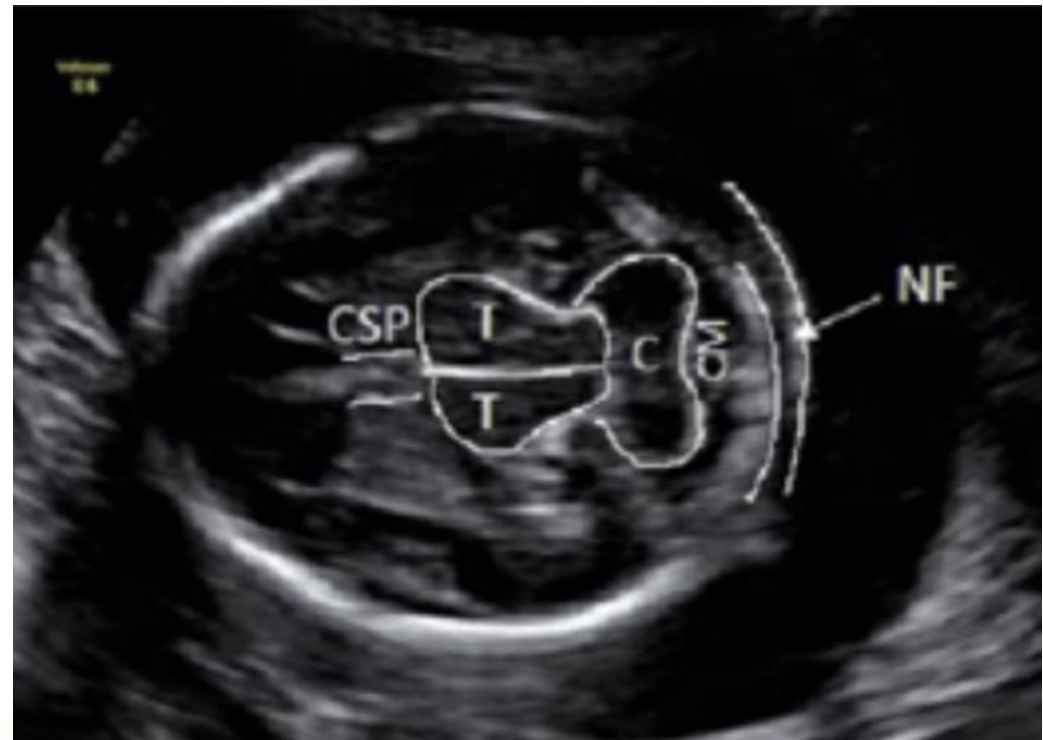
Increased Nuchal Fold

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Fellowship in perinatology

Introduction

- The nuchal fold (NF) is the measurement between the outer edge of the occipital bone to the outer margin of the skin in the axial plane of fetal head at the level of BPD







- Significant fetal neck extension or excessive abdominal pressure with the probe : falsely increased NF
- Nuchal cord causes increase in NF
- Increased NF is defined as $NF \geq 6$ mm in 16-24 wks of gestation (15-21 wks)

Normal NF

Thickened NF





Thickened NF

- **GA-specific criteria:**

- **Between 18-24 wks : NF \geq 6 mm**

- **Between 16-18 wks : NF \geq 5 mm**

- **Nuchal index : mean NF/mean BPD \times 100**
 \geq 11 (abnormal)
GA independent



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SHORT REPORT

Fetal nuchal fold thickness measurement between 18 and 24 weeks of pregnancy: reference intervals for a Brazilian population

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Table 2. Estimated percentiles of fetal NF thickness measurement in relation to gestational age.

GA	NF (mm)				
	1st	5th	50th	95th	99th
18	1.46	2.16	3.90	5.62	6.34
19	1.66	2.35	4.05	5.75	6.46
20	1.85	2.54	4.21	5.87	6.58
21	2.05	2.72	4.37	6.00	6.70
22	2.25	2.91	4.53	6.13	6.81
23	2.45	3.09	4.68	6.26	6.93
24	2.65	3.28	4.84	6.39	7.05

GA: gestational age; NF: nuchal fold.



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OBSTETRICS

Fetal nuchal skin-fold thickness during the 2nd trimester of pregnancy

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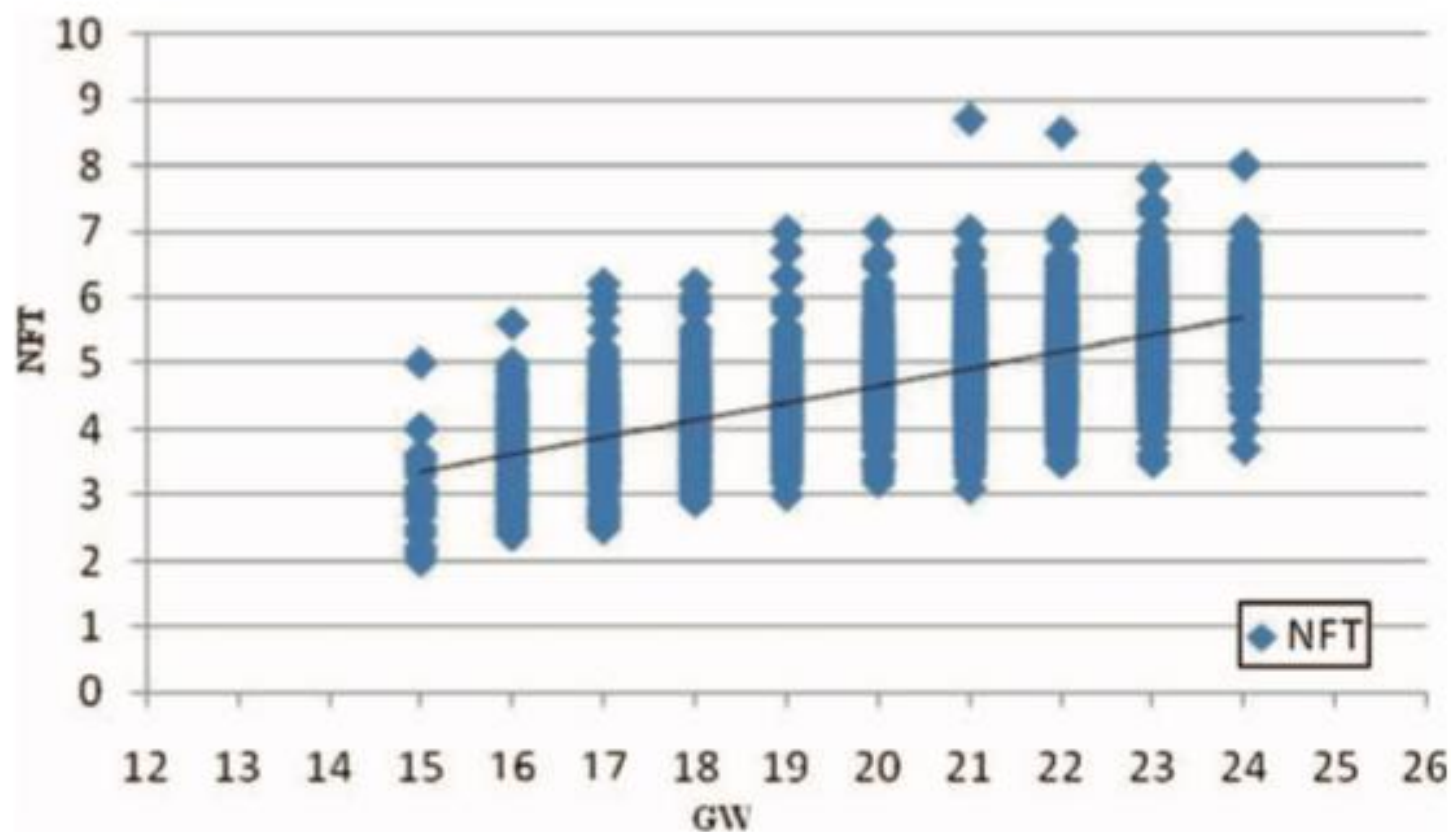


Figure 2. The relationship between nuchal skin-fold thickness (NFT) and gestational weeks.

Table I. Percentile values for nuchal skin-fold thickness between 15 and 24 weeks' gestation.

GW	Percentiles		
	5th	50th	95th
15	2.03	3.00	4.70
16	2.50	3.50	4.77
17	2.70	3.80	5.00
18	3.01	4.00	5.50
19	3.40	4.40	5.76
20	3.50	4.80	5.90
21	3.90	5.00	6.00
22	4.10	5.15	6.10
23	4.30	5.50	6.50
24	4.50	5.70	6.80

GW, gestational weeks.

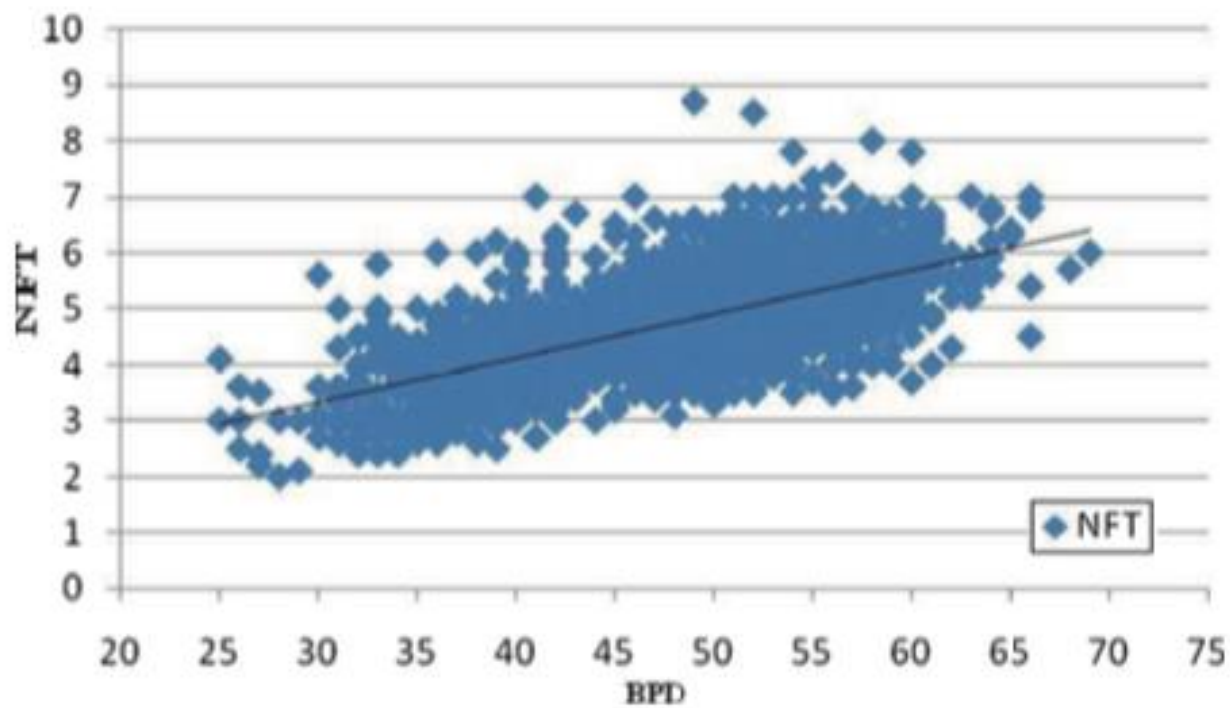


Figure 3. The relationship between nuchal skin-fold thickness (NFT) and biparietal diameter.



- In DS fetuses, complete resolution of thickened NF as GA advances may be seen → **serial sonogram for resolution is not recommended** and may provide false reassurance
- **NT and NF do not have any correlation**, so can be used independently to assess aneuploidy risk

Significance



- **Association with fetal aneuploidy**
 - An increased NF is detected in ۲۰- ۳۳% of fetuses with DS and ۰.۵-۲% of euploid fetuses
 - **Isolated LR : ۳.۸**
- **Association with nonchromosomal abnormalities**

Noonan syndrome, multiple pterygium syndrome, skeletal dysplasia
- **Congenital cardiac defects**

Likelihood ratio of Down syndrome based on the presence of an isolated soft marker (pooled results)

Finding	Sensitivity Down syndrome, percent	False positive rate (ie, marker detected in euploid karyotype), percent	Positive likelihood ratio if the marker is isolated, percent*
Increased nuchal fold ^Δ	20.3 to 32.9	0.5 to 1.9	3.79



Recommendations

- NF measurement as a part of screening ultrasound at 18-20 wks
- In case of increased NF :
 - A. Detailed anatomic survey by an expert**
 - B. Genetic counselling**
 - C. Aneuploidy screening vs diagnostic testing**
 - D. Fetal echocardiography ???**