

2

1

: 2 /  
: 1999 5, 6, 7 9 4 가 19  
30  
가 1018 가 /  
95% /  
: 19 30  
87%,  $p = 0.0001$   
 $= 70.98 + 2.15 ( [mm])$   
가 /  $\pm 0.96 \pm$   
0.05, 95%  $0.96 \pm 0.000301$   
: 2 가  
/ 가

(5-7)

Shpintzen

(1).

가

가

Grandjean /

(8).

Hadlock

2 /

(2)

(9).

(3, 4).

가

가

가

가 가

가 2 / 1018 19 - 19 6 7 , 20 - 20 6  
328 , 21 - 21 6 224 , 22 - 22 6  
124 , 23 - 23 6 146 , 24 - 24 6 66  
, 25 - 25 6 55 , 26 - 26 6 20 , 27  
- 27 6 33 , 28 - 28 6 11 , 29 -  
30 4 (Table 1).

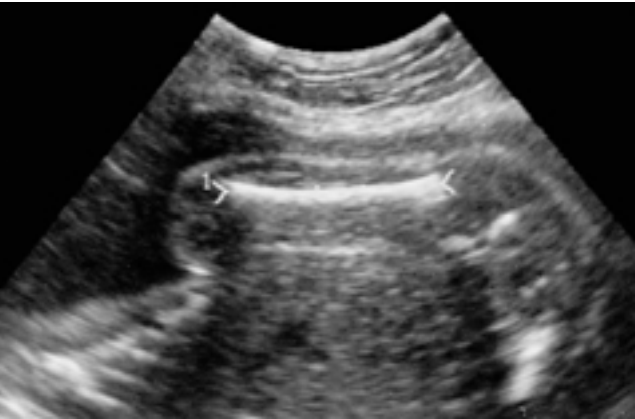
1999 5, 6, 7 9 4  
19 30

가 1020 1  
Zipf, Austria) Medison voluson 530D (Kretz Co.,  
2.0 - 7.5 MHz  
가  
1 - 2 (Fig. 1). 가 가  
가 가  
(Fig. 2). mm  
가 2  
. 1020 1

**Table 1.** Femur Length and Foot Length in Each Week of Gestation

G.A. (weeks)	Number of patients	Femur		Foot	
		Mean length (mm)	S.D. (mm)	Mean length (mm)	S.D. (mm)
19	7	31	1.7	32	2
20	328	33	1.8	34	2.0
21	224	37	1.9	37	2.4
22	124	38	1.8	40	2.2
23	146	41	1.7	43	2.3
24	66	43	2.0	45	2.5
25	55	46	2.2	48	2.6
26	20	49	2.0	52	2.3
27	33	50	1.3	53	2.9
28	11	52	1.8	55	3.8
29	4	56	1.5	60	1.7

G.A. = Gestational age  
S.D. = Standard deviation



**Fig. 1.** Measurement of the fetal femur length on ultrasonogram. The electronic caliper markers indicate the femur length.

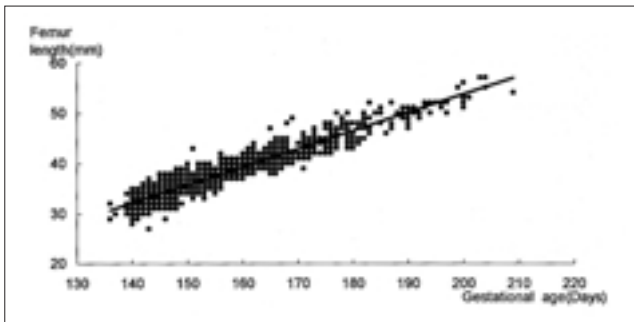


**Fig. 2.** The planar assessment of fetal foot length.

(6) 가 t - test 95% Platt 22 1 22 2 0.83 1.12  
/ , 가  
/ 가 t - test Campbell (8)  
Campbell (p<0.0001) t - test 가 0.99±0.06  
(r<sup>2</sup>)가 0.033 =1.06 - 0.0006 × ( (Fig. 5).

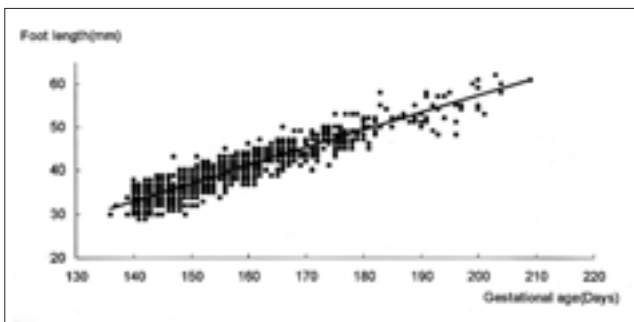
Table 1 19  
30 (Fig. 3,  
4) =61.5+  
2.49 × ( [mm])  
(r<sup>2</sup>)가 89%, p 0.0001  
(r<sup>2</sup>)가 87%,  
p 0.0001  
Table 1  
=70.98+2.15 × ( Platt  
[mm])  
t - test  
가 (p=0.68).  
/ ± 0.96 ±  
0.05 95% 0.96±0.000301  
/

가 가  
가 가 (3, 4).  
가 가  
가 Hadlock (2)

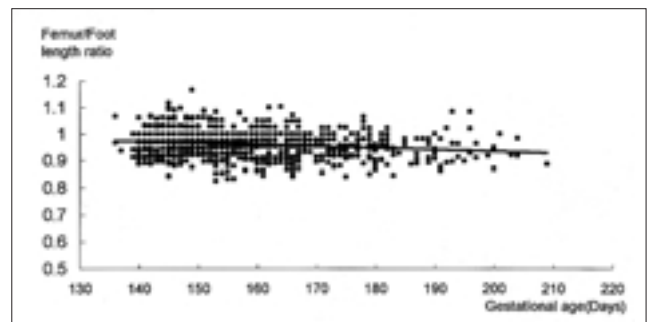


**Fig. 3.** Relationship between femur length and gestational age from 19 - 29 weeks' gestation ( $r^2 = 0.89$ ,  $p = .0001$ ).

가 가  
Meiowitz 가  
가  
(10),  
(5 - 7)



**Fig. 4.** Relationship between foot length and gestational age from 19 - 29 weeks' gestation ( $r^2 = 0.87$ ,  $p = .0001$ ).



**Fig. 5.** The femur/foot length ratio between 19 to 29 weeks' gestation ( $r^2 = 0.033$ ).



## Ultrasonographic Measurement of Fetal Foot Length and Femur/Foot Length Ratio in Second Trimester of Normal Pregnancy in Korean Women<sup>1</sup>

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**Purpose:** The aim of this study was to determine, using prenatal ultrasonography, normal fetal foot length and the femur length ratio during the second trimester of a normal pregnancy in Korean women.

**Materials and Methods:** From May to July 1999, and in September of the same year, 1018 normal Korean singleton pregnancies showing no abnormality on prenatal sonograms were included in this study. The gestational age ranged from 19 to 30 weeks. Femur and foot length were measured by one radiologist. Regression analysis was performed for foot length and gestational age, and the mean value of the femur/foot length ratio and 95th percentile confidence interval of that mean value were calculated. The data obtained was compared with that obtained from caucasians.

**Results:** Foot length correlated with gestational age ( $r^2 = 0.87$ ,  $p$  value = 0.0001). The regression formula was as follows; Gestational age (days) =  $70.98 - 2.15 \times$  foot length (mm). Mean foot length at each gestational week was not different from the corresponding figure for Caucasians. The mean ( $\pm$  SD) value of the femur/foot length ratio was 0.96 ( $\pm 0.05$ ) and the 95th percentile confidence interval of that mean value was  $0.96 \pm 0.000301$ , figures which are significantly lower than those for Caucasians.

**Conclusion:** Fetal foot length during the second trimester of a normal pregnancy in Korean women is a reliable parameter for use in the assessment of gestational age. In our study the fetal foot length was not different from that of caucasians, while the femur/foot length ratio was lower than the value in that group. The nomogram depicted in of this study will serve as a useful adjunct in the screening of chromosomal abnormality or skeletal dysplasia among Koreans.

**Index words :** Fetus, US

Fetus, skeletal system

Fetus, growth and development

Foot, US

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