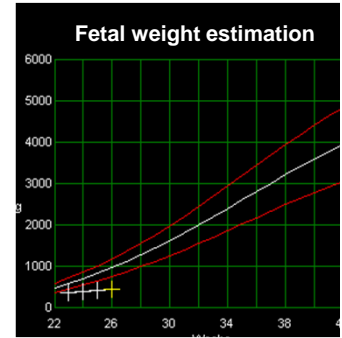


Fetal weight estimation in fetuses with 1500g or less

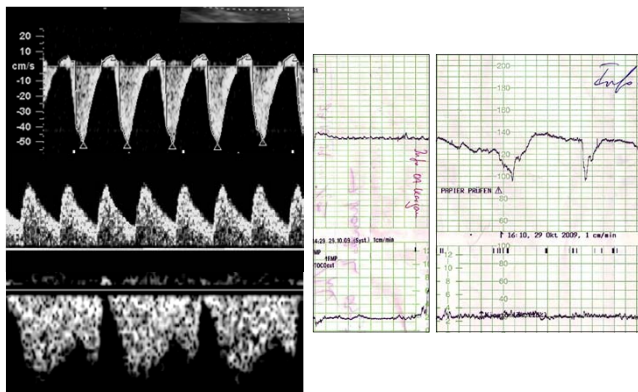


Karl Oliver Kagan, MD, PhD  
University of Tuebingen, Germany

Case report: 37 yrs, first pregnancy, 25+5 wks s/o placental insufficiency



Case report: 37 yrs, first pregnancy, 25+5 wks s/o placental insufficiency



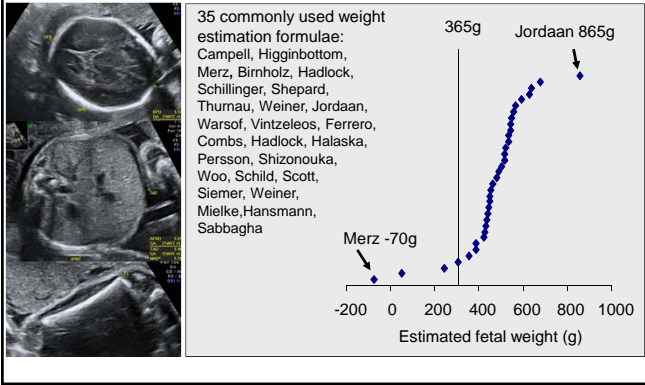
Case report: 37 yrs, first pregnancy, 25+5 wks s/o placental insufficiency

Herzaktion	gestv	
BPD	59.7	mm
FOD	76.7	mm
KU	215.1	mm
TCD		mm
CM		mm
ATD	53.2	mm
ASD	50.6	mm
AU	163.0	mm
FL	36.0	mm
<input type="checkbox"/> Quotienten nicht drucken		
KU/AU	1.422	
Gewichtsschät.	Hadlock (BPD-FL-AU-FL)	
Gewicht	366	g
<input type="checkbox"/> erweiterte Biometrie...		
Lage des Feten	IL BEL	
Fruchtw / FWI	Oligohydramnie	cm
Plazenta	Vorderwand	
Plazentastruktur	unauffällig	
Plazentagrad	Gravum Grad 1	
Info bzgl. Geschl.	erwünscht	

Fetal birth weight: 365g  
20% overestimation



### Fetal weight estimation with other weight estimation formulae in our case

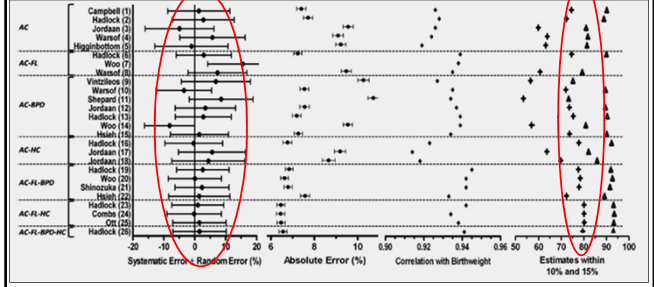


### Fetal weight estimation in term fetuses

#### Sonographic Fetal Weight Estimation

Which Model Should Be Used?

Nir Melamed, MD, MSc, Yarin Yogev, MD, Israel Meizner, MD, Reuven Meshiach, MD, Ron Bardan, PhD, Ofir Ben-Haroush, MD | J Ultrasound Med 2009; 28:617-629



### Current birth weight formulae

**Combination of several fetal measurements:**  
 - Biparietal diameter  
 - head circumference  
 - abdominal circumference  
 - femur length

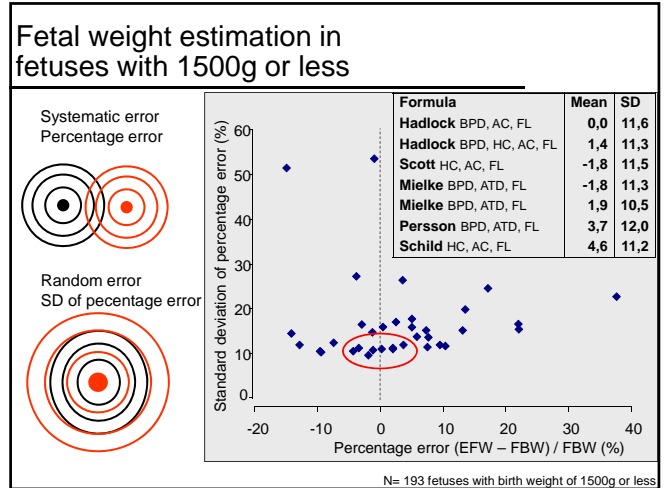
- Abdomen only:**  
Campell, Higginbottom, Merz
- Head and abdomen:**  
Birnholz, Hadlock, Merz, Schillinger, Shepard, Thurnau, Weiner, Jordaan, Warsof, Vintzeleos
- Abdomen and femur length:**  
Ferrero, Hadlock
- Head, abdomen and femur:**  
Combs, Hadlock, Halaska, Persson, Shizonouka, Woo, Schild, Scott, Siemer, Weiner, Mielke
- Additional gestational age:**  
Hansmann, Sabbagha

### Current birth weight formulae

$$\text{Hadlock} = 10^{(1.3596 + 0.0064 * \text{HC} + 0.0424 * \text{AC} + 0.174 * \text{FL} + 0.00061 * \text{BPD} * \text{AC} + 0.00386 * \text{AC} * \text{FL})} \text{ [g, cm]}$$

Formula	N	Included data
Hadlock 1985	109	before birth
Shepard 1982	73	before birth
Campbell 1975	148	before birth
Hansmann 1985	152	2500 – 4000g
Birnholz 1986	96	before birth
Warsof 1977	85	17 – 40 wks
Marsal 1996	86	11 – 40 wks

**Which formula shall we use for fetal weight estimation in small fetuses?**



### Fetal weight estimation in fetuses with 1500g or less

Proportion of cases with estimated fetal weight within 5 to 30% of the fetal birth weight				
Fomulae	5%	10%	20%	30%
Mielke BPD, ATD, FL	34%	66%	93%	100%
Mielke BPD, ATD, FL	34%	62%	90%	99%
Persson BPD, ATD, FL	4%	58%	89%	99%
Scott HC, AC, FL	3%	61%	94%	97%
Hadlock BPD, AC, FL	3%	61%	91%	99%
Hadlock BPD, HC, AC, FL	2%	64%	92%	100%
Schild HC, AC, FL	1%	56%	91%	100%

N= 193 fetuses with birth weight of 1500g or less

### Fetal weight estimation in fetuses with 1500g or less

Formula	Screening for fetsues with a birth weight of			
	Less than 500g		Less than 1000g	
	DR	FPR	DR	FPR
Mielke BPD, ATD, FL	85%	1,1%	91%	2,3%
Mielke BPD, ATD, FL	46%	0,0%	89%	1,1%
Persson BPD, ATD, FL	85%	2,8%	93%	5,7%
Scott HC, AC, FL	46%	0,6%	89%	2,3%
Hadlock BPD, AC, FL	69%	1,7%	91%	5,7%
Hadlock BPD, HC, AC, FL	69%	1,7%	91%	3,4%
Schild HC, AC, FL	46%	0,6%	92%	12,5%

N= 193 fetuses with birth weight of 1500g or less

### Fetal weight estimation in our case

$$\text{Mielke} = \exp(3,067510 + 0,01677 * \text{BPD} + 0,000412 * \text{ATD}^2 + 0,040611 * \text{FL} - 0,000000006027957 * \text{BPD}^2 * \text{ATD}^2 - 0,000005086 * \text{ATD}^2 * \text{FL}) \text{ [g,cm]}$$



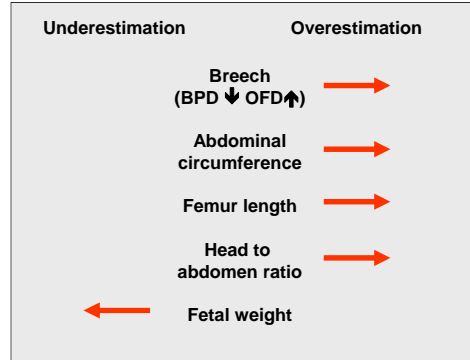
73 fetuses with a birthweight of 400 – 1680g

Gynecol Obstet Invest. 1995;40(2):84-8.

**A new formula for prenatal ultrasonographic weight estimation in extremely preterm fetuses.**

Mielke G, Pietsch-Breitfeld B, Salinas R, Risse T, Marzusch K.

### Fetal parameters influencing the percentage error of the Mielke formula



No influence: time between scan and delivery, fetal sex, experience (+/-3 yrs) *Thank you*