Contents

Cha	pter 1	Introduction and definition of objectives	
1.1	Introd	uction	9
1.2	Definit	tion of objectives	11
Cha	pter 2	The fetal circulation with emphasis on venous return	
2.1	Introd	uctory remarks	15
2.2	Histor	cal background	15
2.3	Embry	ology and anatomy	18
2.4	Preloa	d physiology	21
2.5	Anima	I experiments	24
2.6	Dopple	er techniques; transabdominal versus transvaginal Doppler ultrasound	28
Part	of this c	hapter was published in: TWA Huisman, JW Wladimiroff.	
The	ductus v	enosus. Fetal Matern Med Rev 1993;5:45-55.	
Cha	pter 3	Doppler assessment of venous return relative to cardiac performance	
		and afterload in early pregnancy	
3.1	Introdu	uctory remarks	41
3.2	Dopple	er flow velocity waveforms in late first and early second trimester fetuses;	
	reprod	ucibility of waveform recordings (Ultrasound Obstet Gynecol 1993;3:260-263)	42
3.3	Evalua	ation of fetal cardiac performance by cardiac Doppler flow velocity	
	record	ing in early pregnancy	
	3.3.1	Fetal cardiac flow velocities in the late first trimester of pregnancy;	
		a transvaginal Doppler study (J Am Coll Cardiol 1991;17:1357-1359)	50
3.4	Evalua	ition of fetal afterload by arterial Doppler flow velocity recording	
	in earl	y pregnancy	
	3.4.1	Fetal and umbilical flow velocity waveforms between 10 -16 weeks'	
		gestation: a preliminary study (Obstet Gynecol 1991;78:812-814)	57
	3.4.2	Intracerebral, aortic and umbilical artery flow velocity waveforms	
		in the late first trimester fetus (Am J Obstet Gynecol 1992;166:46-49)	63
3.5	Evaluation of fetal preload by venous Doppler flow velocity recording in early pregnance		
	3.5.1	Normal fetal Doppler inferior vena cava, transtricuspid and umbilical	
		artery flow velocity waveforms between 11 and 16 weeks' gestation	
		(Am J Obstet Gynecol 1992;166:921-924)	68
	3.5.2	Flow velocity waveforms in the ductus venosus, umbilical vein and	
		inferior vena cava in normal human fetuses at 12 - 15 weeks of gestation	
	1	(Ultrasound Med Biol 1993;19:441-445)	76

4.1	Introductory remarks	91
4.2	Anatomy of the venous inflow vasculature	
	4.2.1 Recognition of a fetal subdiaphragmatic venous vestibulum essential	
	for fetal venous Doppler assessment (Pediatr Res 1992;32:338-341)	91
4.3	Venous Doppler flow velocity waveforms during the second half of pregnancy;	
	reproducibility of waveform recording	
	4.3.1 Reproducibility of fetal inferior vena cava and ductus venosus	
	waveform recording	101
4.4	Normal flow velocity waveforms from fetal venous inflow during	
	the second half of pregnancy	
	4.4.1 Flow velocity waveforms in the fetal inferior vena cava during the	
	second half of normal pregnancy (Ultrasound Med Biol 1991;17:679-682)	108
	4.4.2 Ductus venosus blood flow velocity waveforms in the human fetus;	
	a Doppler study (Ultrasound Med Biol 1992;18:33-37)	115
Chap	oter 5 Influence of fetal variables on venous Doppler waveforms	
5.1	Introductory remarks	127
5.2	Fetal breathing movements and venous inflow	
	5.2.1 Changes in inferior vena cava blood flow and diameter during fetal breathing	
	movements in the human fetus (Ultrasound Obstet Gynecol 1993;3:26-30)	127
	5.2.2 Changes in ductus venosus, hepatic veins, distal part of the	
	inferior vena cava and umbilical vein flow velocities during	
	fetal breathing movements in the human fetus.	138
5.3	Fetal behavioral states and venous inflow	
	5.3.1 Ductus venosus flow velocity waveforms relative to fetal behavioral states	
	in normal term pregnancy (Br J Obstet Gynaecol 1993;in press)	144
	5.3.2 Inferior vena cava flow velocity waveforms relative to fetal	
	behavioral states and sample site in normal term pregnancy	
	(submitted in extended form to Early Human Development).	154
5.4	Fetal arrhythmias and venous inflow	
	5.4.1 Doppler evaluation of venous return during fetal arrhythmias	
	(submitted)	16
Chap	oter 6 General conclusions	178
Sumi	mary (Kenny et al. 1997) you our Mooren et al. 1991)	183
	envatting	187
	woord sculature sakhough it has beed in the last the permental v	192
	culum Vitae	195