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Abstract #4

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BOOK OF ABSTRACTS

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P12.26
Effect of intermittent uterine occlusion on hemodynamic changes in preterm and near term ovine twin fetuses

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Objective: To determine hemodynamic changes to hypoxia induced by intermittent occlusion of uterine perfusion in 115–140 day old twin fetal lambs.
Methods: 14 twin pairs of ovine fetuses were exposed to hypoxia by gradual reduction of uterine blood flow (50%, 75%, 90%, 98%, 100%) and simultaneously Doppler imaging (LOGIQ 500) of the fetal aorta, carotid, ophthalmic and occipital arteries were recorded. Fetal heart rate and blood pressure were obtained by connecting an indwelling catheter inserted in maternal and fetal femoral arteries to a manometer and 1 ml samples of blood were taken from the catheter to determine pH and pO2 in a CO-Oxymeter.
Results: Hemodynamic changes followed by a decrease of diastolic flow velocities in the fetal aorta were first obtained during 75% occlusion of uterine perfusion ($p < 0.01$). During extreme hypoxia caused by 100% occlusion of uterine perfusion preferential blood flow to the fetal brain via the occipital and carotid arteries and the eye via the ophthalmic artery were paralleled by severe bradycardia, acidaemia and hypercapnia ($p < 0.0001$).
Conclusion: (1) Redistribution of blood flow was first noted by decreasing diastolic flow velocities in the fetal aorta during 75% occlusion of uterine perfusion. (2) Brain sparing effect during 100% occlusion of uterine perfusion was best exemplified by preserving diastolic flow velocities to the brain via the occipital and carotid arteries and the eye via the ophthalmic artery.

P12.27
Changes of blood flow during amnioreduction therapy

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Objective: Our purpose was to investigate whether acute alterations of amniotic fluid volume affect fetal circulation in twin to twin transfusion syndrome (TTTS).
Materials and methods: The study group included 7 pairs of twin pregnancies complicated by TTTS. The alterations of pulsatility index (PI) in the umbilical artery and in the middle cerebral artery during 15 amnioreductions were evaluated. The PI values before and after amnioreduction were compared. The duration of procedure depended on the amniotic fluid volume removed during amnioreduction. Amniotic fluid volume reduction was carried out as long as normal value of maximal amniotic packet (MAP 2.0–8.0 cm) was achieved.
Results: The table presents the comparison of PI values in certain fetal vessels (UA and MCA) in the larger and smaller twin, as well as PI differences between twins before and after amnioreduction.

AMNIOREDUCTION:

	N	*before*		*after*		*p*
		'x	*SD*	*'x*	*SD*	
PI MCA larger twin	15	1.71	0.35	1.53	0.29	< 0.01
PI MCA smaller twin	15	1.78	0.58	1.61	0.48	< 0.001
PI UA larger twin	15	1.13	0.45	0.99	0.48	< 0.01
PI UA smaller twin	15	2.23	0.68	1.76	0.47	< 0.01

		Larger twin		*Smaller twin*		
PIs MCA difference before and after procedure	15	0.18	0.22	0.17	0.16	NS
PIs UA difference before and after procedure	15	0.14	0.12	0.47	0.63	< 0.05

Conclusions: Amnioreduction causes significant changes of blood flow resistance altering fetal circulation. In twin to twin transfusion syndrome the reduction of blood flow resistance in the umbilical artery may improve fetal condition and partially explain the success of serial amnioreduction therapy. Moreover, the assessment of blood flow changes in the MCA helps to choose optimal treatment.

P12.28
Outcome of preterm premature rupture of membrane in twin pregnancies

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Objective: To determine the perinatal outcomes of preterm premature rupture of membrane (PPROM) in diamniotic twin pregnancies ≤ 34 weeks' gestation.
Methods: Cases with PPROM of 1 sac in DA twins diagnosed ≤ 34 weeks from January 2000 to April 2003 registered in the High Risk Consult Registry and Delivery Suite database were included. This group was stratified according to the gestational age (GA) at diagnosis into ≤ 26 (group I), 27–30 (group II) and 31–34 weeks (group III). The primary outcome measures were GA at delivery, diagnosis-delivery interval, histological chorioamnionitis, rate of fetal survival beyond 28 days and rate of both twins surviving beyond 28 days per pregnancy. Secondary outcome measures were pulmonary hypoplasia, respiratory distress syndrome (RDS) and length of stay in NICU.
Results: Twenty-two cases were included: 5, 7 and 10 in groups I-III respectively. Overall, the survival was 37/44 (84%). The median GA at diagnosis was 20.1 (14.0–22.9), 27.7 (27.1–30.7) and 32.9 (31.4–33.9) weeks respectively. The median GA at delivery was lowest in group I (24.4 vs 27.9 vs 33.4 weeks, $p < 0.01$) but the median diagnosis-delivery interval was longest (29.5 vs 5.0 vs 3.5 days, $p < 0.01$). Group I was associated with the lowest fetal survival rate [4/10 (40%) vs 13/14 (93%) vs 20/20 (100%)] and survival for both twins per pregnancy [1/5 vs 6/7 and 10/10, $P = 0.002$]. Of the 5 twins with ruptured sacs in group I, 2 were livebirths and both developed pulmonary hypoplasia. Among the livebirths, RDS was present in 4/5, 10/14 and 2/20 in groups I-III respectively. Group I survivors had the longest median duration of NICU stay (73 vs 48 vs 0 days).
Conclusion: PPROM in twin < 26 week is associated with low rate of survival beyond the neonatal period, a high rate of chorioamnionitis and significant neonatal morbidity while PPROM at later gestations is associated with a high rate of survival though morbidity is still significant for PROM < 30 weeks.

P12.29
Sonographic imaging of monochorionic monoamniotic twin pregnancy by the finding of a single yolk sac

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A ultrasonogram was performed for a primigravid lady at 11 weeks' gestation showing two viable fetuses without any dividing membrane in between and only one yolk sac. Monochorionic monoamniotic (MCMA) twin pregnancy was diagnosed. A subsequent ultrasonogram done at 14 weeks' gestation showed entangled cords.