多胎妊娠の診断と管理

大阪母子医療センター　産科
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第73回日本産科婦人科学会学術講演会

利益相反状態の開示

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所　属：　大阪母子医療センター　産科

私の今回の演題に関連して、開示すべき利益相反状態はありません。

1.超音波膜性診断

膜性による死亡のリスク

STORK multiple pregnancy cohort (N=3117)

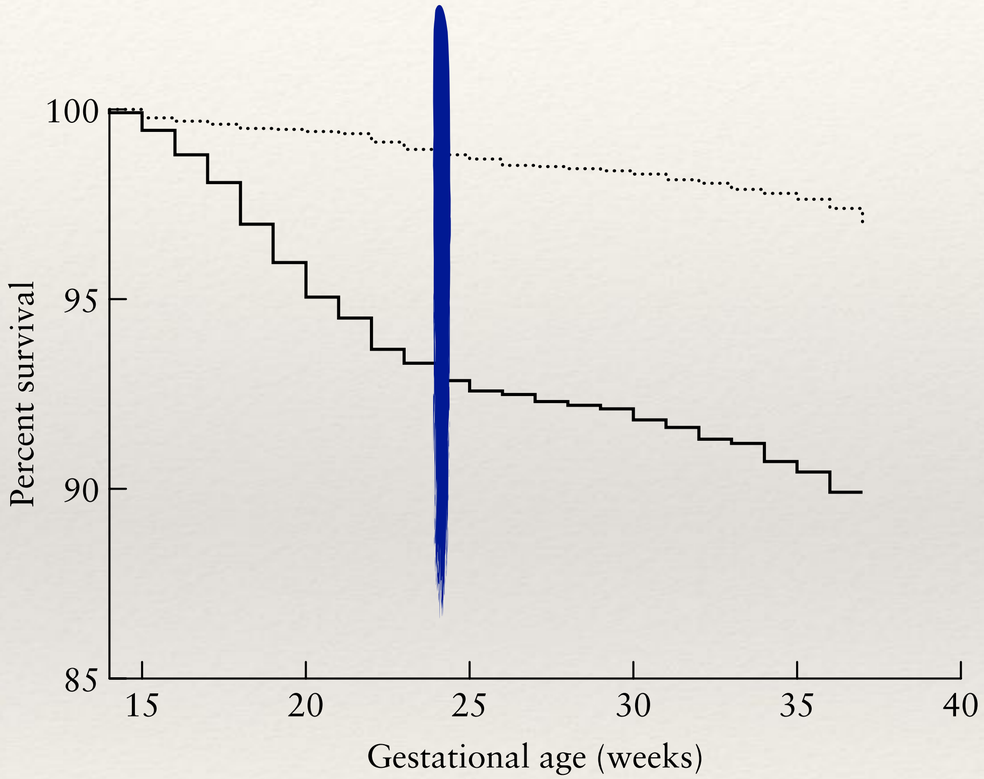


Figure 1 Kaplan–Meier survival analysis of monochorionic (——) and dichorionic (·····) twin pregnancies from 14 weeks of gestation.

F. D'Antonio. UOG 2013

MD双胎児　2歳児予後

Prospective Cohort From 1st trimester

	2児生存	1児生存	0児生存	死亡 (n=272)
n=136	90%	4%	6%	8%

	Motor Delay	Mental Delay	Combined Delay	CP	Total
n=230	5%	1.5%	1.5%	2%	10%

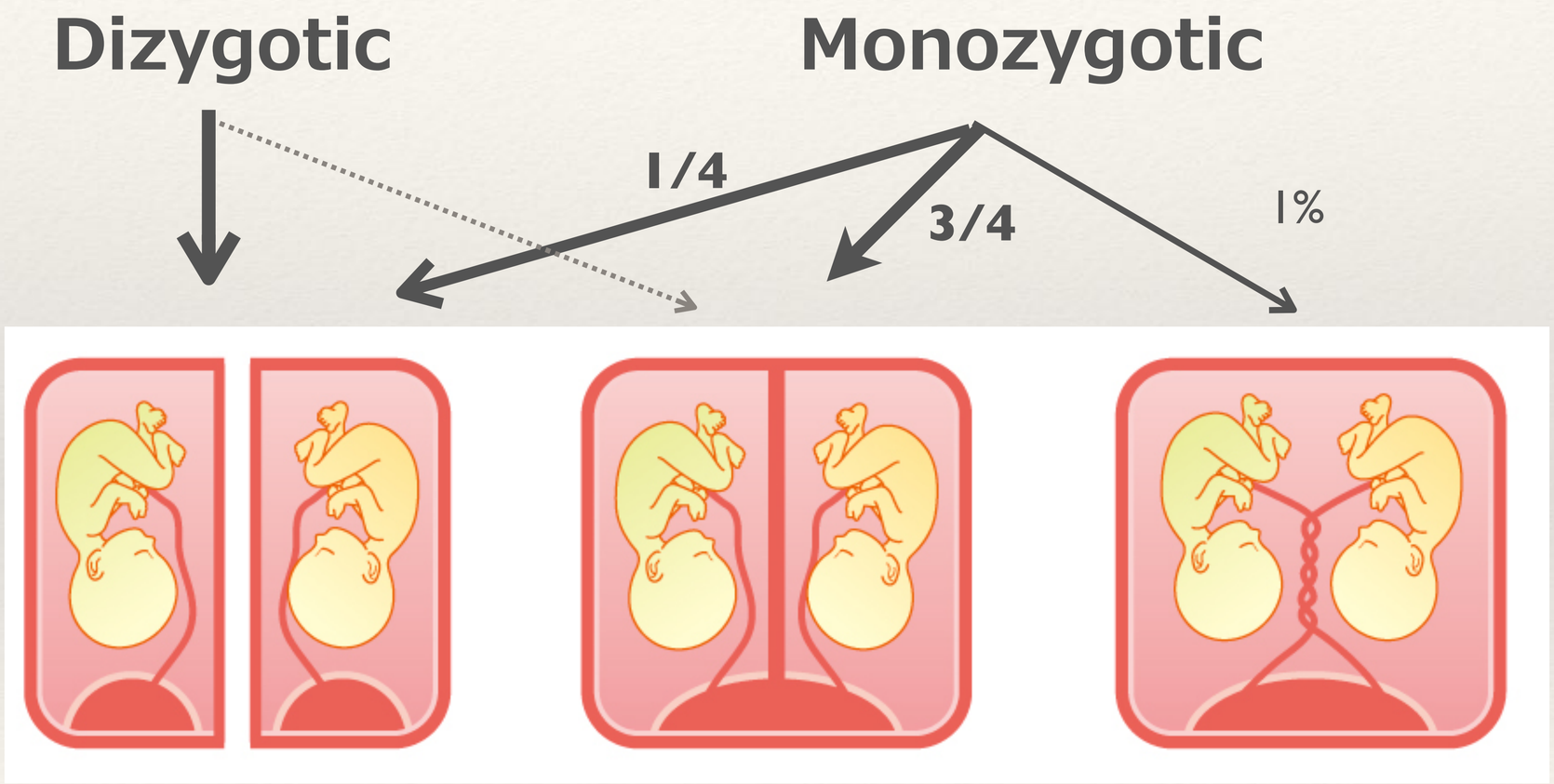
Ortibus E AJOG 2009

1500g未満出生児の3歳時予後

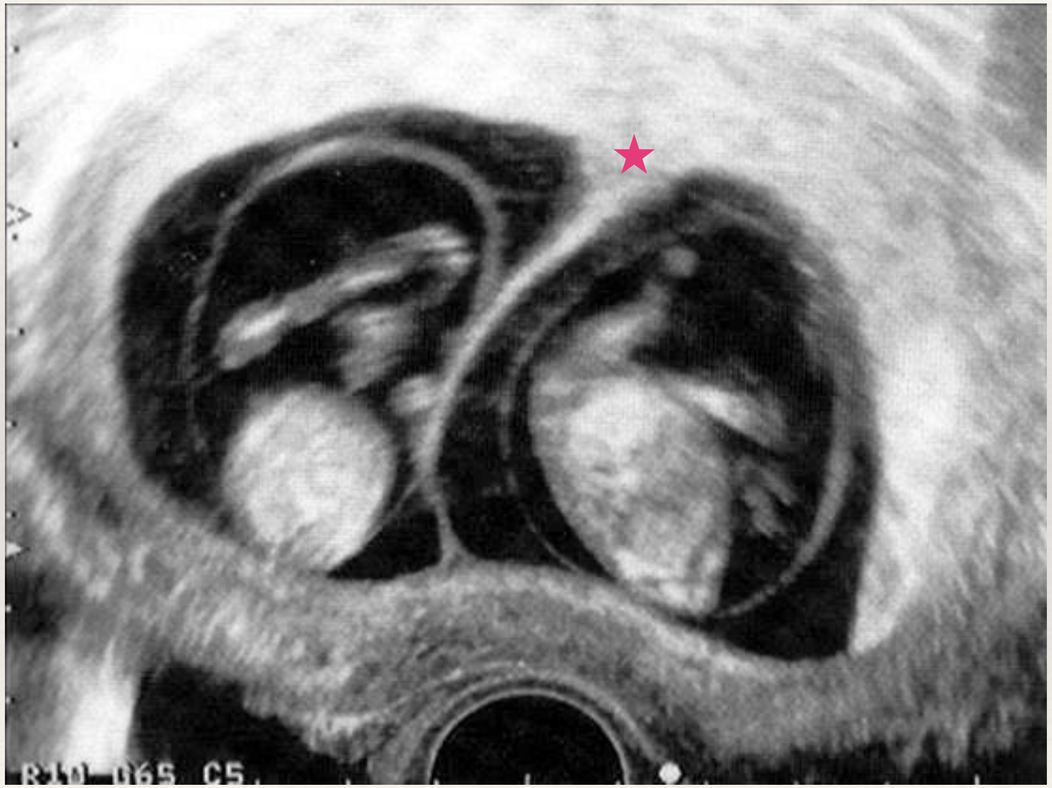
	MR	CP	Death	**Total**
DD (n=79)	1 (1.3%)	7 (8.9%)	3 (3.8%)	**11 (13.9%)**
MD (n=83)	4 (4.8%)	8 (9.6%)	12 (14.5%)	**22 (26.5%)**

大阪母子　*JOGR 2015*

卵性(zygocity)と膜性(chorionicity)



二絨毛膜二羊膜双胎(DD)



★ λ sign
(Twin peak sign)

胎嚢	2
羊膜腔	2
胎児	2
卵黄嚢	2

一絨毛膜二羊膜双胎(MD)

胎嚢	1
羊膜腔	2
胎児	2
卵黄嚢	2

一絨毛膜一羊膜双胎(MM)

胎嚢	1
羊膜腔	1
胎児	2
卵黄嚢	1,2

1.超音波膜性診断　まとめ

1.妊娠初期に正確な膜性診断を

２.流早産予測と予防の限界

人口動態統計では

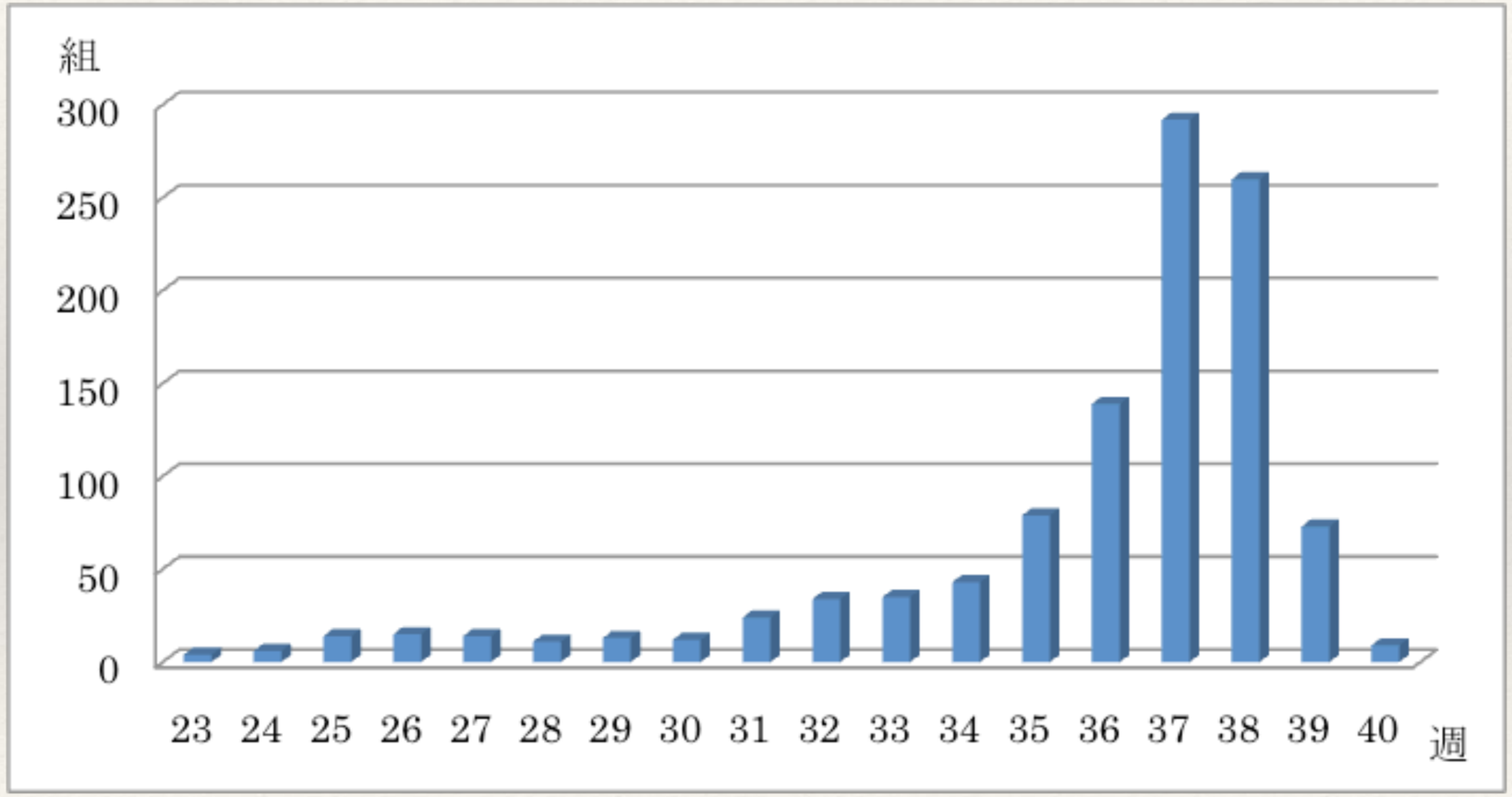
- 早産率は約54%
- 低出生体重児は約74%
- 周産期死亡率は約17%

多胎の分娩転帰

	32週未満の早産	低出生体重児 <2500g	極低出生体重児 <1500g
単胎	1.2	6.3	1.1
双胎	10.7	55.4	9.6
品胎	37.1	95.7	36.4

Births. 2015, National Vital Statistics Report 66. 2017

双胎の分娩時期@大阪母子医療センター



自然早産の予知

- 子宮頸管長　　○
- フィブロネクチン　○
- 既往早産　○

・ハイリスクと判断しても、有効な介入がなければ検査の有用性は低い

・1週以内の早産が予知されれば、母体ステロイドの判断に使用できる

NICE guideline

Number	Recommendation
47	Be aware that women with twin pregnancies have a higher risk of spontaneous preterm birth if they have had a spontaneous preterm birth in a previous singleton pregnancy.
48	Do not use fetal fibronectin testing alone to predict the risk of spontaneous preterm birth in twin or triplet pregnancies.
49	Do not use home uterine activity monitoring to predict the risk of spontaneous preterm birth in twin or triplet pregnancies.
50	Do not use cervical length (with or without fetal fibronectin) routinely to predict the risk of spontaneous preterm birth in twin or triplet pregnancies.

Multiple pregnancy. NICE Clinical Guideline

安静

Outcomes	Anticipated absolute effects* (95% CI)		Relative effect (95% CI)	№ of participants (studies)	Quality of the evidence (GRADE)
	Risk with no activity restriction at home	Risk with strict bed rest in hospital			
Very preterm birth (less than 34 weeks) - assuming complete correlation between twins/triplets	Study population		RR 1.02 (0.66 to 1.58)	495 (5 RCTs)	⊕⊕◯◯ Low [1,2]
	120 per 1000	123 per 1000 (80 to 190)			
Perinatal mortality - assuming independence between twins/triplets	Study population		RR 0.65 (0.35 to 1.21)	1016 (5 RCTs)	⊕⊕◯◯ Low [1,2]
	47 per 1000	31 per 1000 (16 to 57)			
Low birthweight (less than 2500 g) - assuming independence between twins/triplets	Study population		RR 0.95 (0.75 to 1.21)	502 (3 RCTs)	⊕⊕◯◯ Low [2,3,4]
	502 per 1000	477 per 1000 (376 to 607)			
Prelabour preterm rupture of the membrane	Study population		RR 1.30 (0.71 to 2.38)	276 (3 RCTs)	⊕⊕◯◯ Low [1,2]
	116 per 1000	151 per 1000 (82 to 276)			

da Silva Lopes K , Cochrane Database Syst Rev 2017

予防的子宮頸管縫縮術

	予防縫縮あり	予防縫縮なし	OR (95%CI)
PTB<37w	10/22(45.4%)	11/23(47.8%)	0.83 (0.25-2.72)

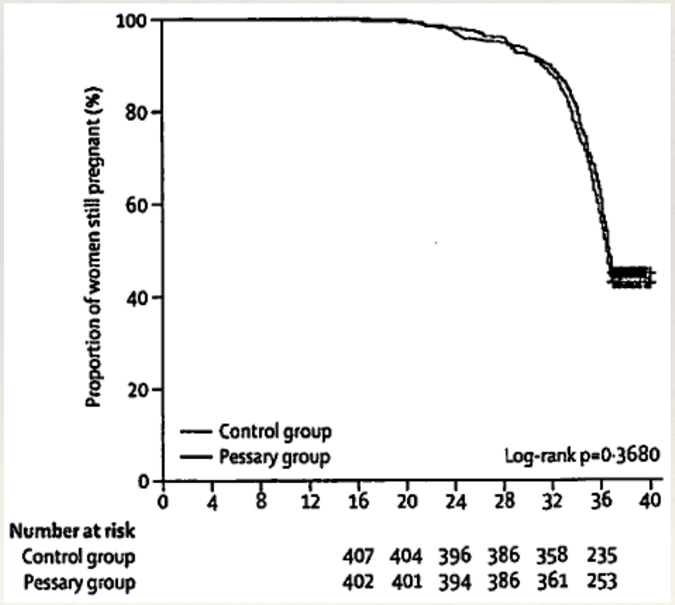
“cerclage did not prolong gestation or improve perinatal outcome”

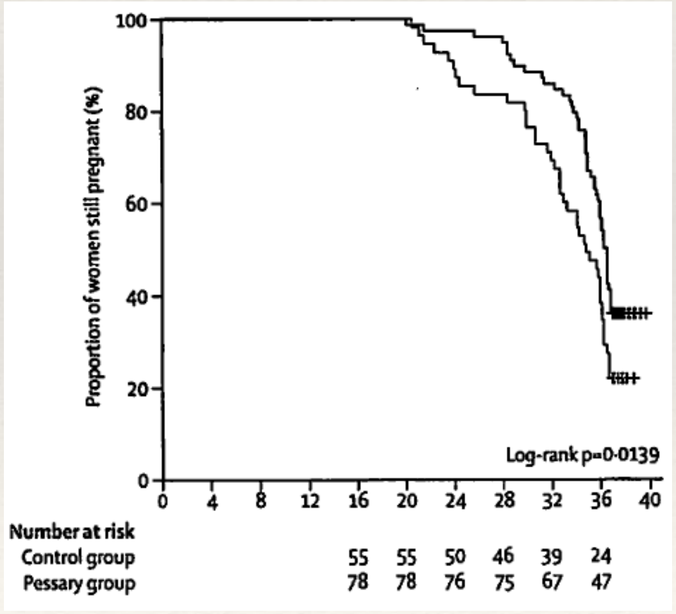
Dor J, Gynecol Obstet Invest 1982
Interim report of the Medical Research Council/Royal College of Obstetricians and Gynaecologists multicenter randomized trial of cervical cerclage. MRC/RCOG Working Party on Cervical Cerclage. BJOG 1988
JAPAN (MFICU連絡協議会） AJOG 2013

予防的子宮頸管ペッサリー

双胎を対象にしたRCT：効果なし

サブグループ解析：CL<38mmの場合は効果あり?

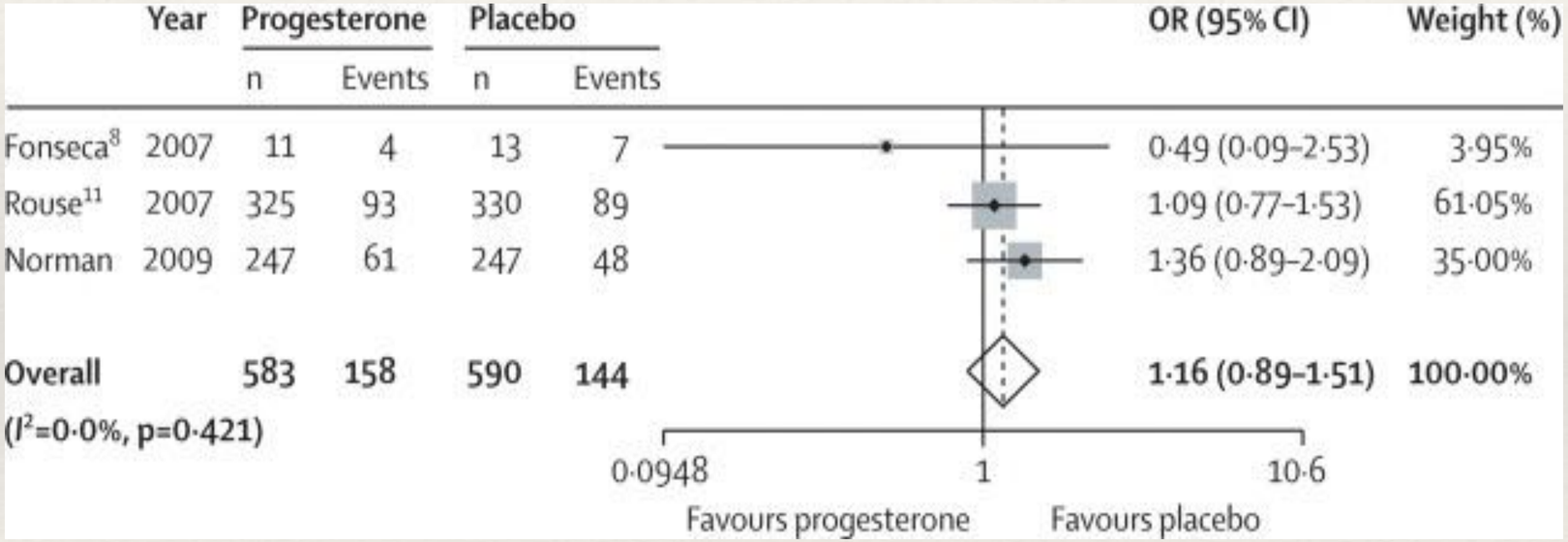




Lien S. Lancet 2013 (multicenter RCT)

予防的プロゲステロン投与

Progesterone for the prevention of preterm birth in twin pregnancy (STOPPIT): a randomised, double-blind, placebo-controlled study and meta-analysis

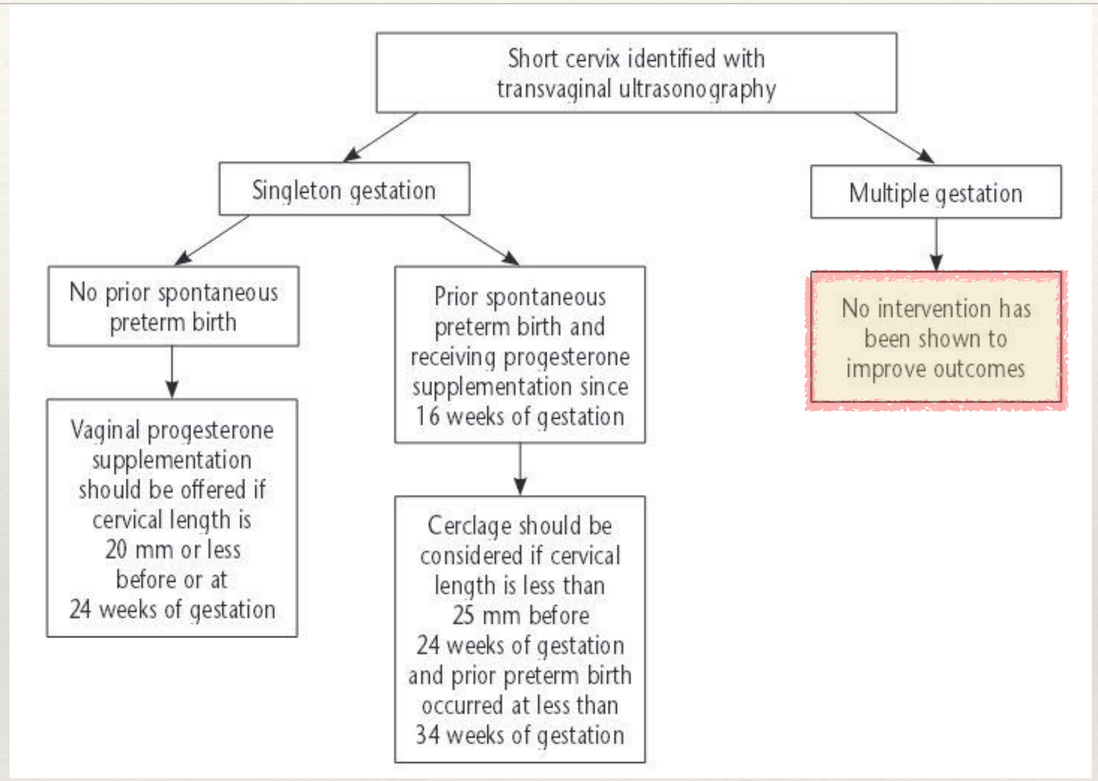


The Lancet 373, 2009

自然早産の予防

- 安静　×
- 子宮頸管縫縮術　×
- ペッサリー　×
- プロゲステロン　×

ACOG



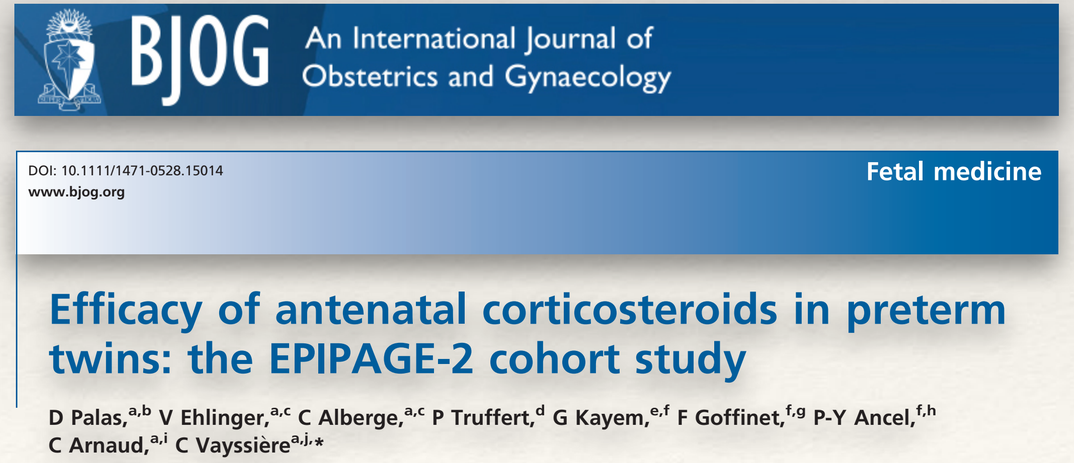
There currently is no evidence that their prophylactic use improves outcome in these pregnancies.

Prediction and Prevention of Preterm Birth. ACOG 2012
Committee on Practice Bulletins Obstetrics; Society for Maternal–Fetal Medicine. Obstet Gynecol. 2016

副腎皮質ステロイド投与(ACS)

- 双胎の早産児に対する有益性は確立していないが、単胎に準じて投与することが推奨される
- 切迫早産徴候がない症例への投与（untargeted corticosteroid）は行わない

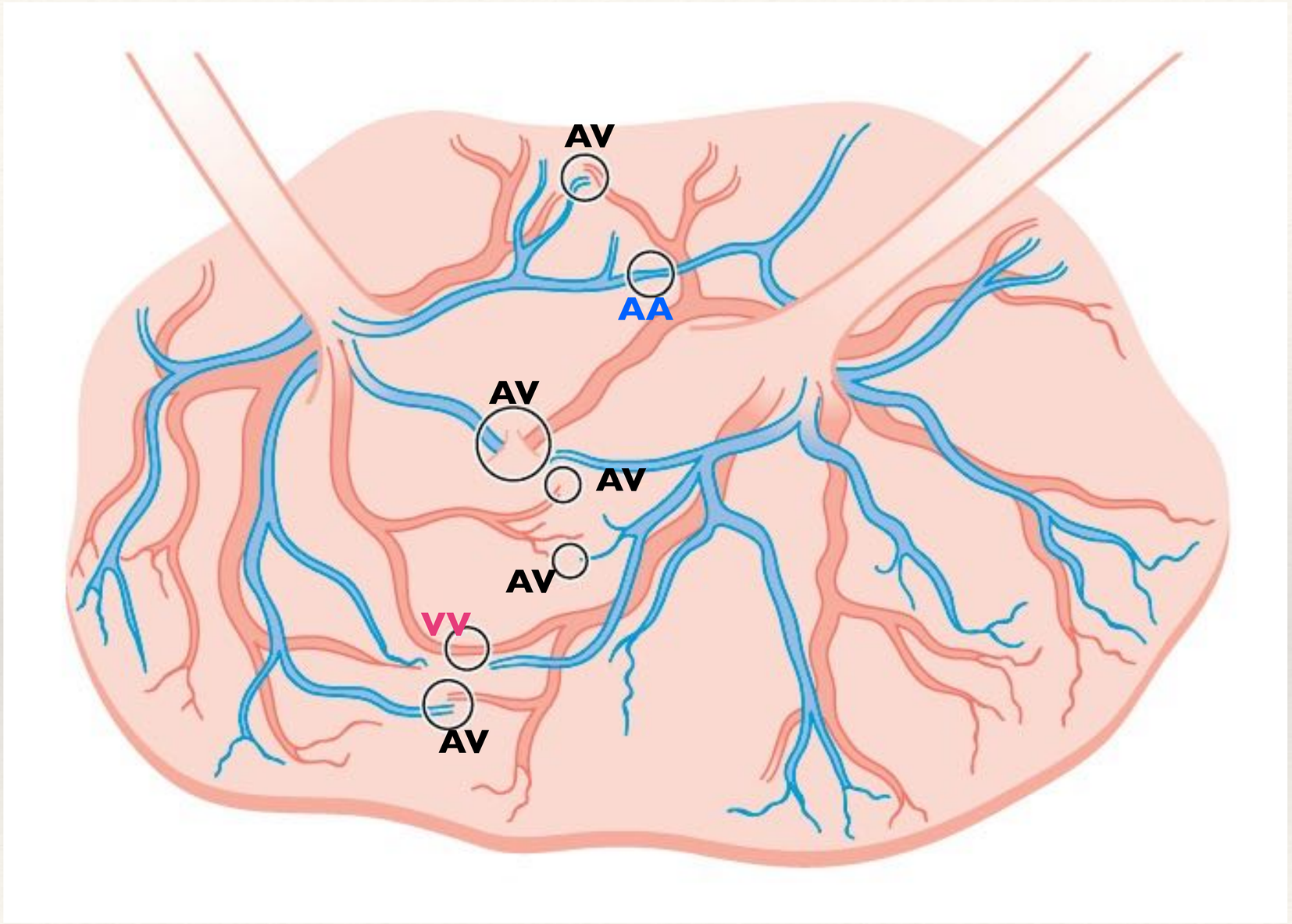
Committee on Practice Bulletins Obstetrics; Society for Maternal–Fetal Medicine.　Obstet Gynecol. 2016



２.流早産予測と予防の限界　まとめ

1.多胎妊娠の早産率は高いため、周産期母子医療センターと連携した管理が必要
2.双胎では早産予知マーカーの有用性が示されている
3.多胎では有用性が確認された早産予防法は無い
4.双胎妊娠で早産が予測される場合は、母体に副腎皮質ステロイド投与が考慮される

３.一絨毛膜双胎特有の病的状態の診断と管理


AV
AA
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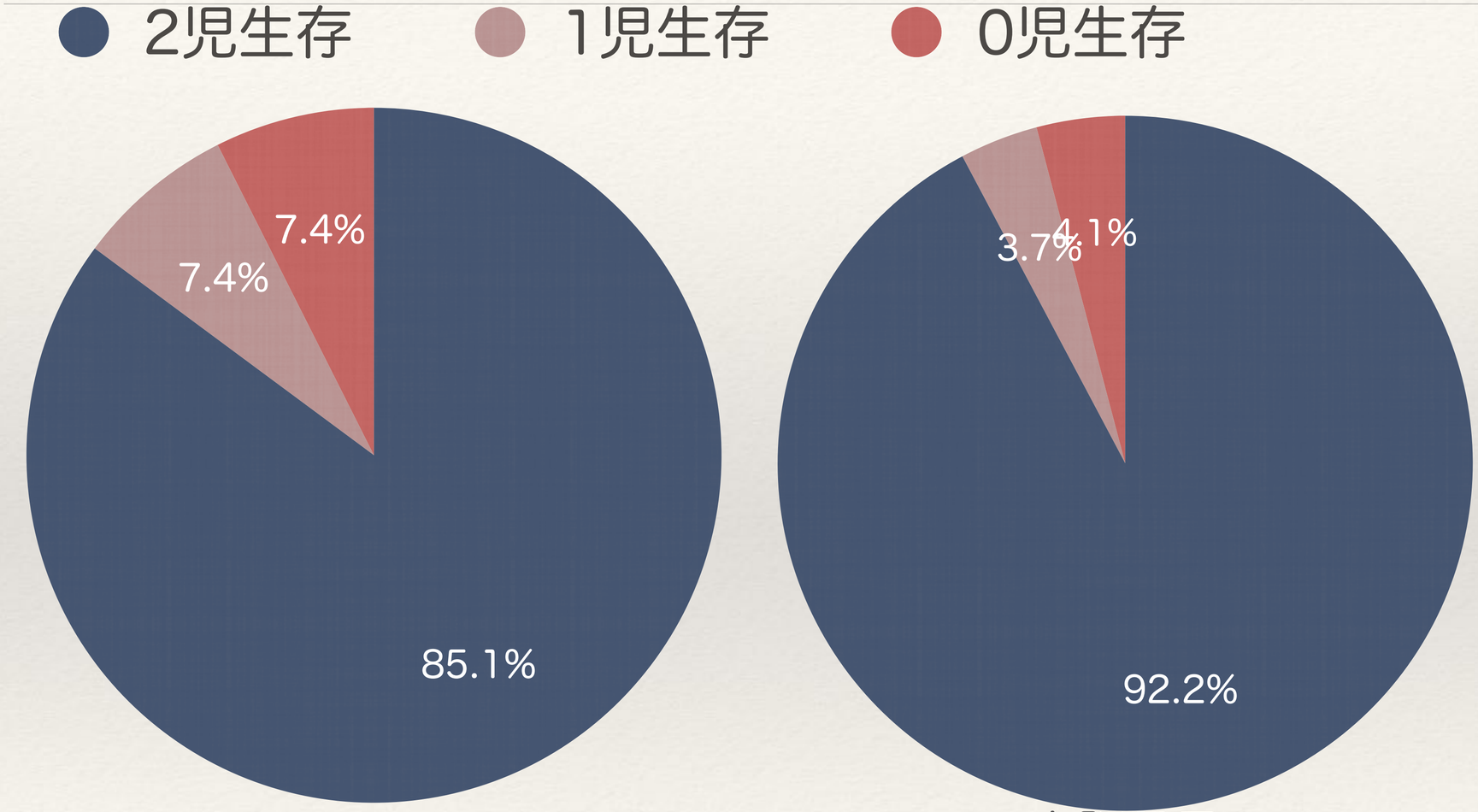
MD双胎の生存率

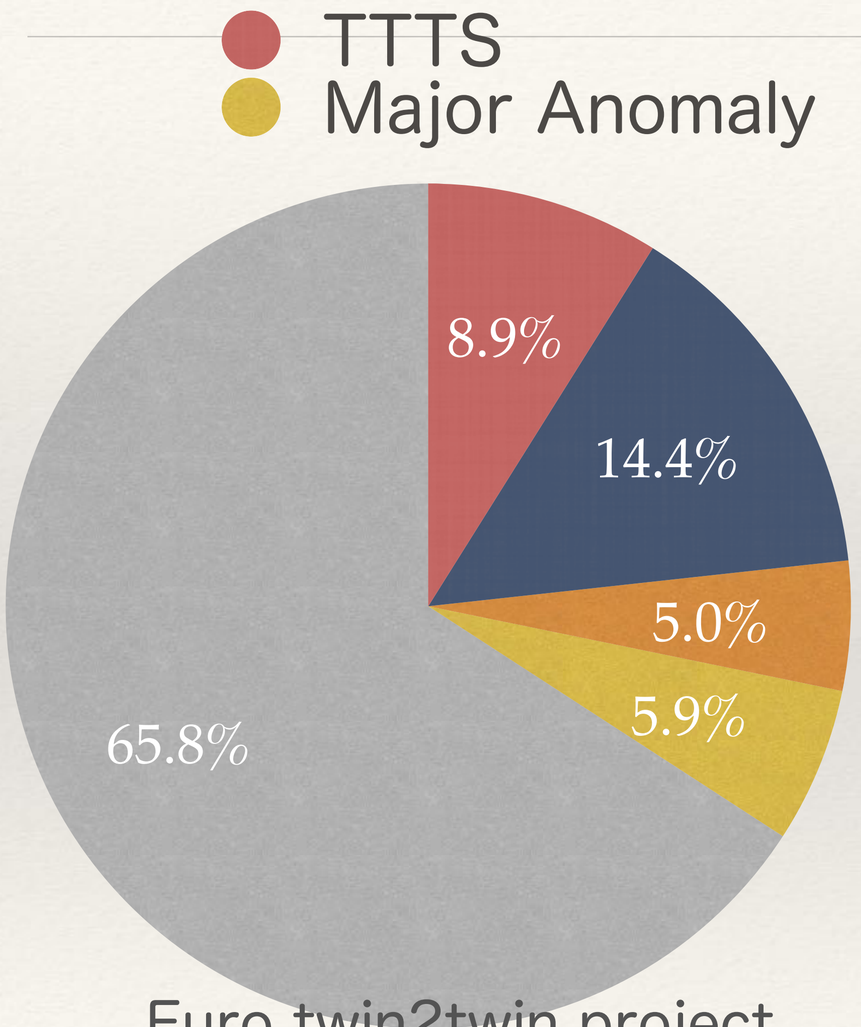


Euro twin2twin project

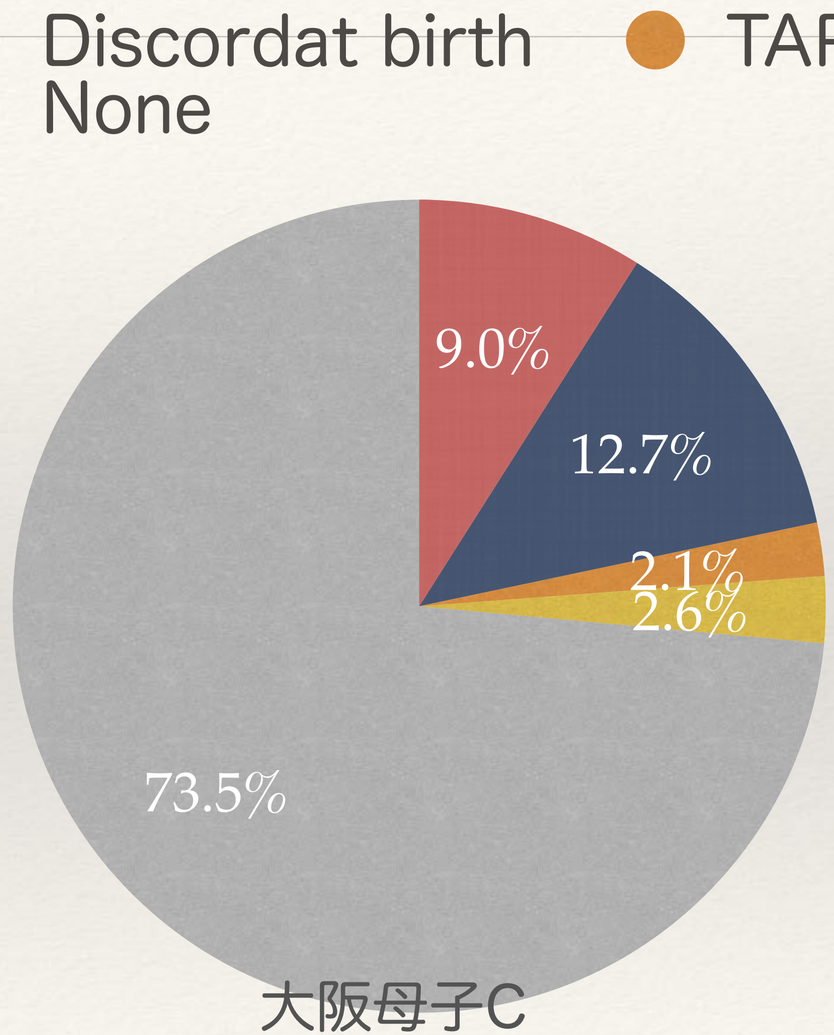
大阪母子C

Lewi L. AJOG 2008
Nakayama S. JOGR 2012

MD関連合併症



Euro twin2twin project



大阪母子C

Lewi L. AJOG 2008
Nakayama S. JOGR 2012

一絨毛膜双胎のリスク

- 双胎間輸血症候群 (TTTS)
- Selective IUGR
- Twin anemia polycythemia sequence (TAPS)
- TRAP sequence
- 一児死亡とAcute fetofetal hemorrhage
- MM双胎

TTTSの診断

一絨毛膜双胎で以下が同時に存在する

- ☑ 羊水過多（≧ 8cm)
- ☑ 羊水過少（≦ 2cm)

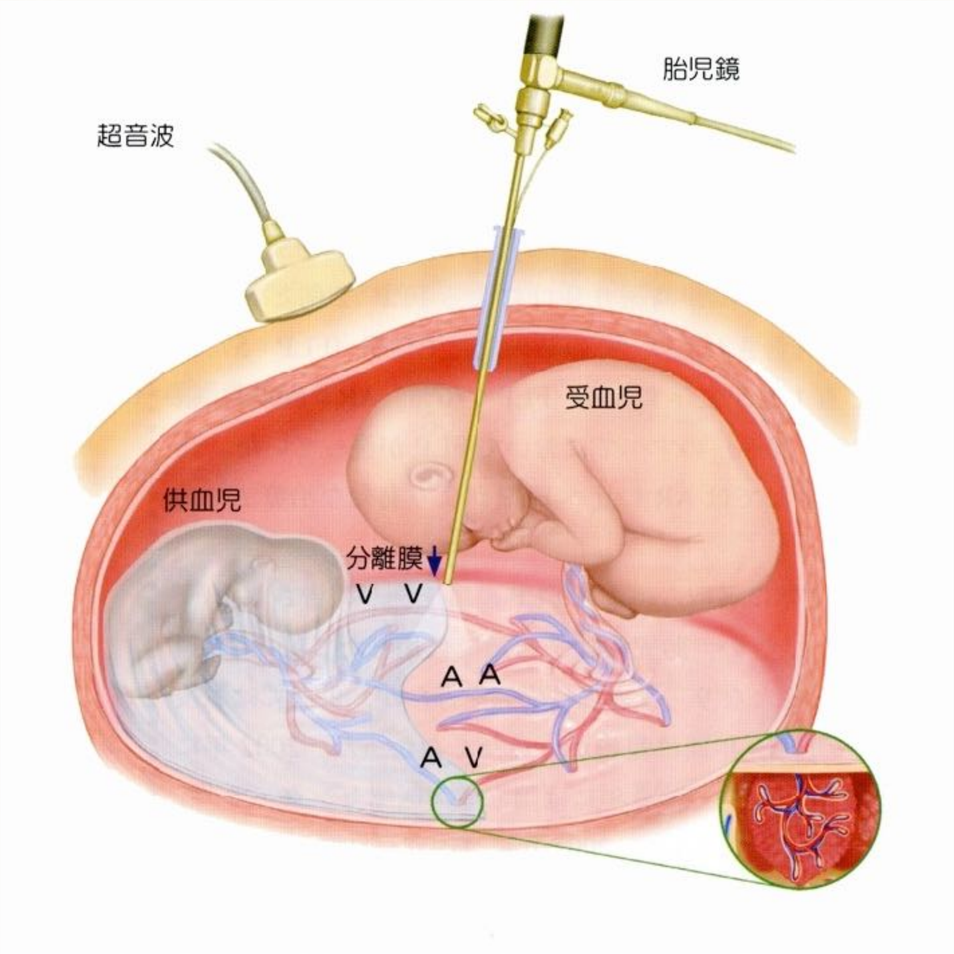
- ●推定体重差は診断に用いない
- ●貧血/多血は双胎貧血多血症(TAPS)

TTTS 重症度分類 (Quintero分類)

Stage 1	Donorの膀胱が見える
Stage 2	Donorの膀胱が見えない
Stage 3	血流異常;臍帯動脈・臍帯静脈・静脈管
Stage 4	胎児水腫
Stage 5	胎児死亡

注）血流異常があるが膀胱が見える場合:Stage 3.Atypical

胎児鏡下レーザー凝固術(FLP)



一絨毛膜双胎　メジカルビュー社

The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

Endoscopic Laser Surgery versus Serial Amnioreduction for Severe Twin-to-Twin Transfusion Syndrome

Marie-Victoire Senat, M.D., Jan Deprest, M.D., Ph.D., Michel Boulvain, M.D., Ph.D., Alain Paupe, M.D., Norbert Winer, M.D., and Yves Ville, M.D.

Laser > 羊水除去

Euro fetus Group, NEJM, 2004

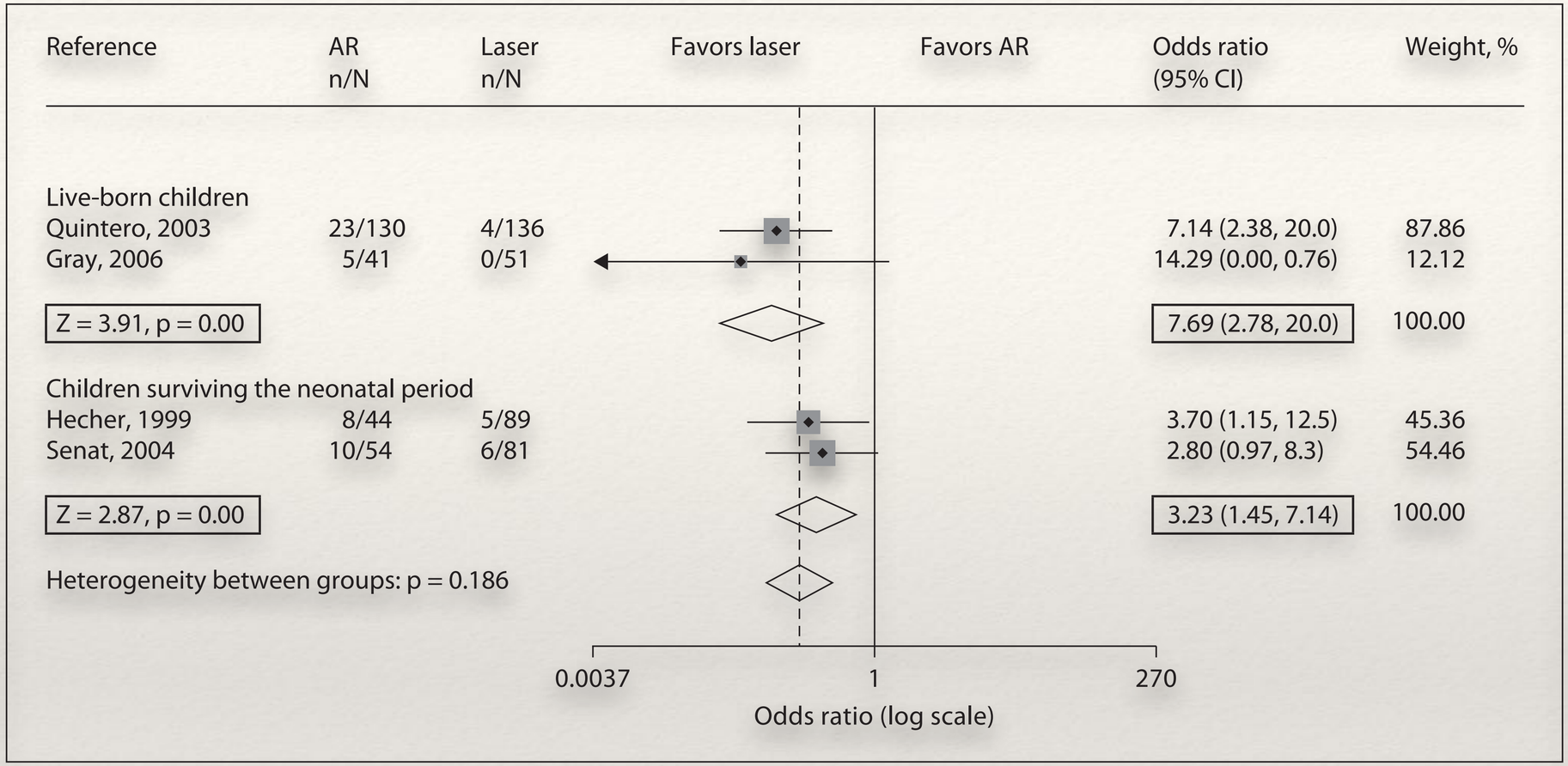


Fig. 2. Fixed effect analysis of severe cerebral injury after amnioreduction versus laser surgery.

神経学的異常の頻度　Laser > 羊水除去

Jeanine M.M. van Klink, Fetal Diagn Ther 2012

本邦におけるFLPのこれまで

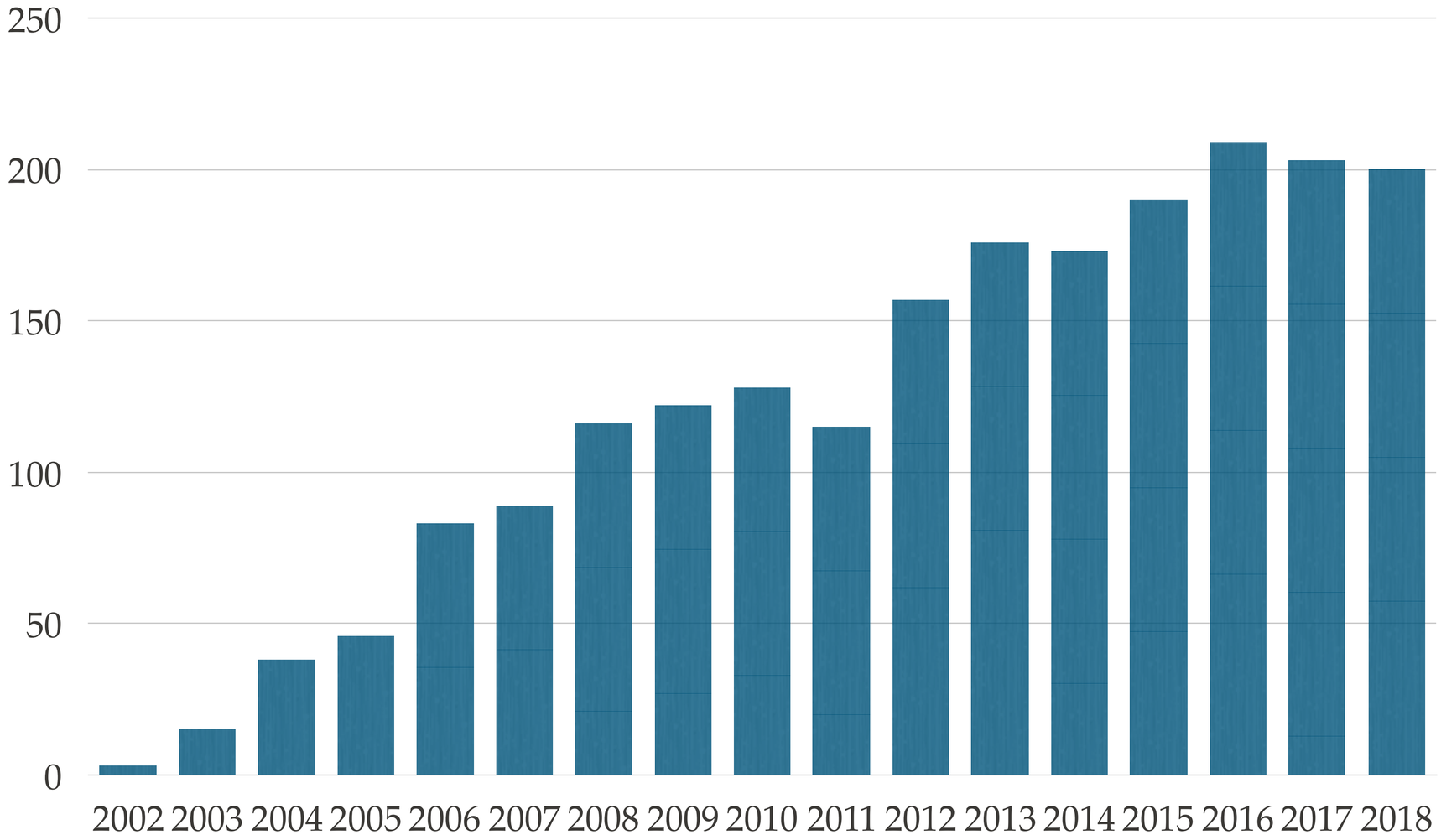
2002	Quintero: TTTS Staging	聖隷浜松病院で開始
2004	Euro fetus group: RCT. *FLP > AR*	JFG, 厚生科研左合班
2005		**高度先進医療**
2010		JFG: 181 cases
2012		**保険収載, 臨床試験の開始**
2014	Slaghekke: RCT 2014 Solomon	

PRENATAL DIAGNOSIS
Prenat Diagn 2010; **30**: 1185–1191.
Published online 10 November 2010 in Wiley Online Library
(wileyonlinelibrary.com) **DOI:** 10.1002/pd.2647

The outcome and prognostic factors of twin–twin transfusion syndrome following fetoscopic laser surgery

Haruhiko Sago[1,2]*, Satoshi Hayashi[1,2], Mari Saito[3], Hiromi Hasegawa[3], Hiroshi Kawamoto[4], Naomi Kato[1], Yukiko Nanba[1], Yushi Ito[1], Yuichiro Takahashi[2,5], Jun Murotsuki[2,6], Masahiko Nakata[2,7], Keisuke Ishii[2,8] and Takeshi Murakoshi[2,8]

本邦におけるFLP件数



Japan Fetal Therapy Group

https://fetusjapan.jp

吻合血管遺残の予防を考慮した**改良術式**

Equatorial dichorionization(ED) = Solomon method

Slaghekke F, Lancet 2014
Ruano R, UOG 2013
Baschat A, AJOG 2013
大阪母子, FDT 2013

本邦におけるFLPの適応拡大

- 一絨毛膜三胎(MT, DT)
- 妊娠26週～27週のTTTS
- Selective IUGR(血流異常＋羊水過少)
- 双胎貧血多血症(TAPS)

一絨毛膜双胎のリスク

- 双胎間輸血症候群 (TTTS)
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- TRAP sequence
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- MM双胎

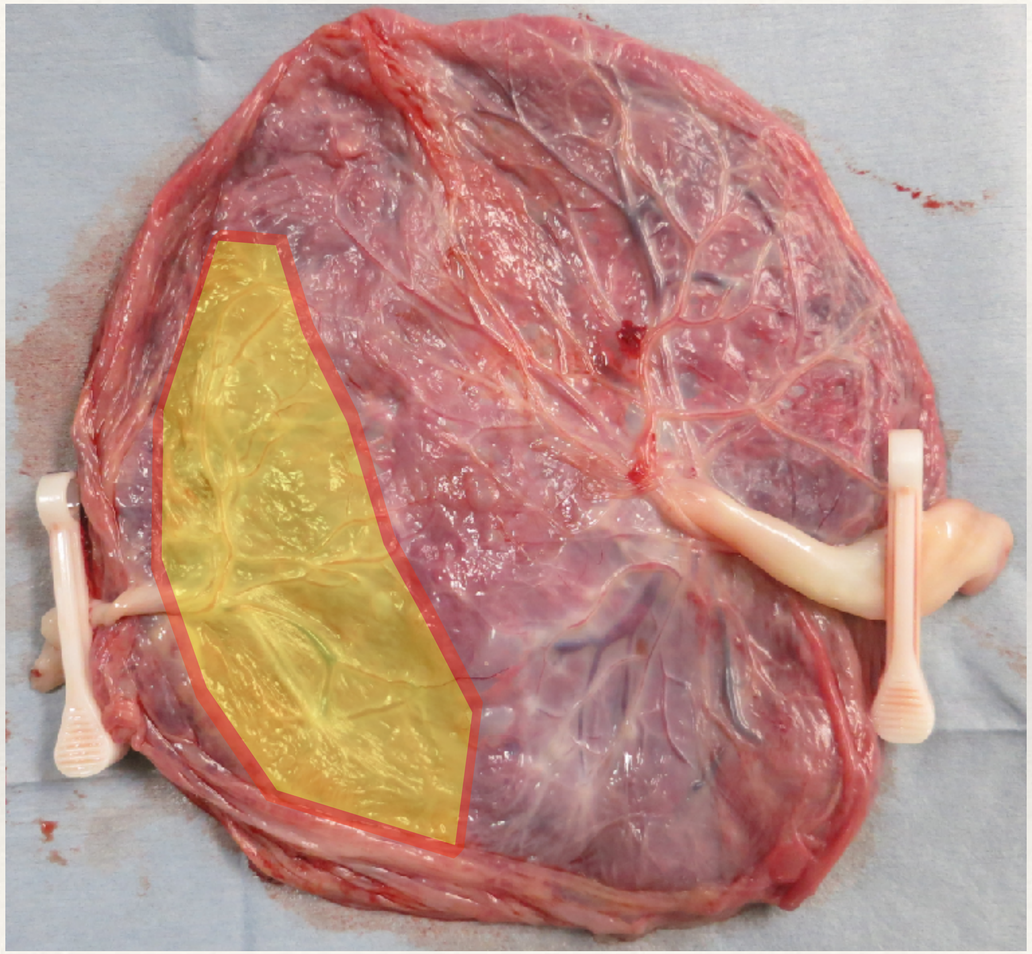
Selective IUGR

- TTTS（羊水過多/羊水過少）ではない
- 一児がIUGRの一絨毛膜双胎

〈診断基準〉

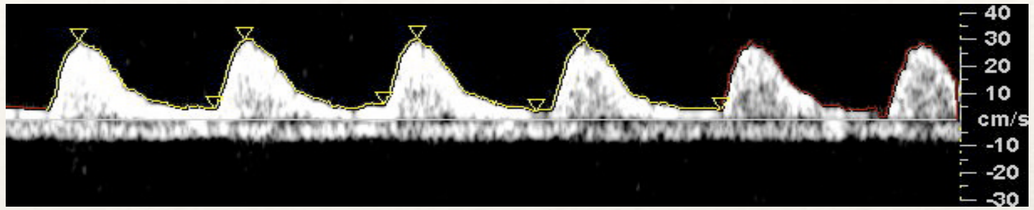
- 小さい胎児の推定体重　-1.5SD以下
- 推定体重差(DR)　25%以上

SIUGRの胎盤 領域の不均衡

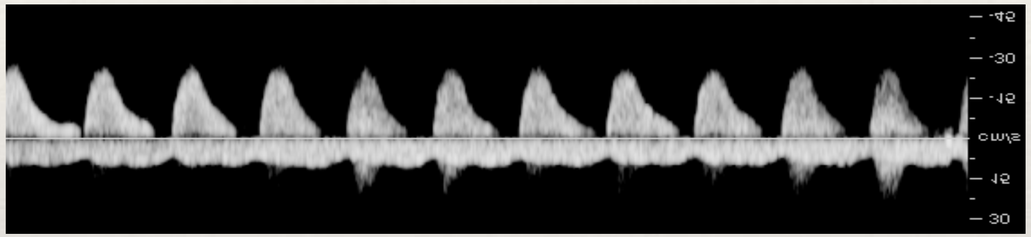


臍帯動脈拡張期血流による分類

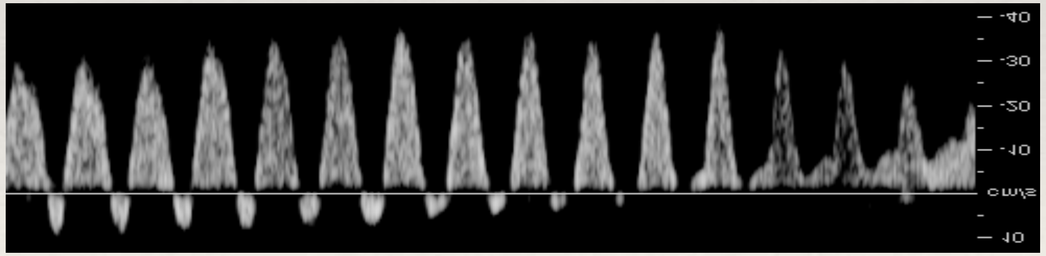
【Type I】常に順行性



【Type II】途絶が持続

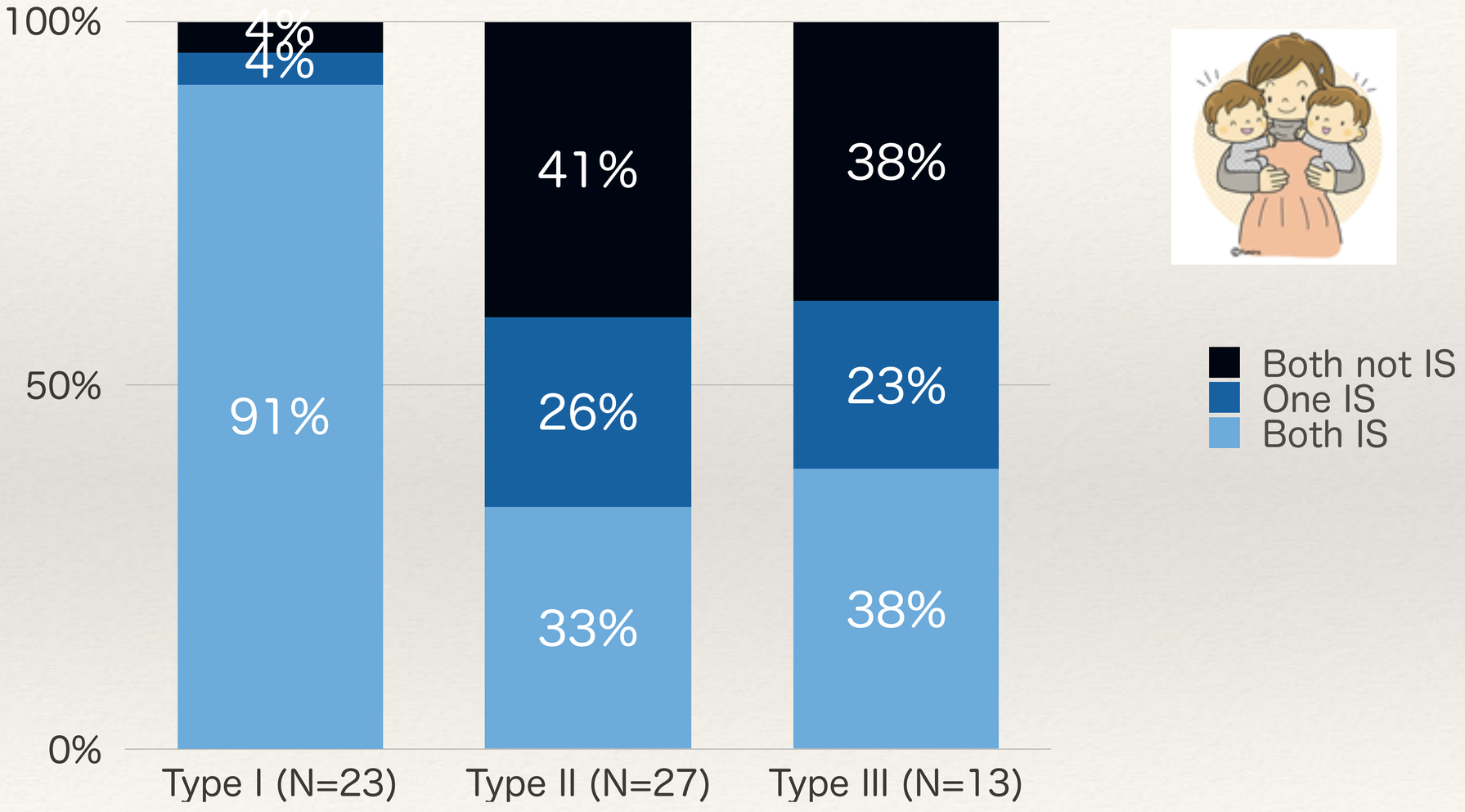


【Type III】周期的途絶



Gratacos E. UOG 2007;30

母体からみた予後
《Intact survival (IS)の児の有無》



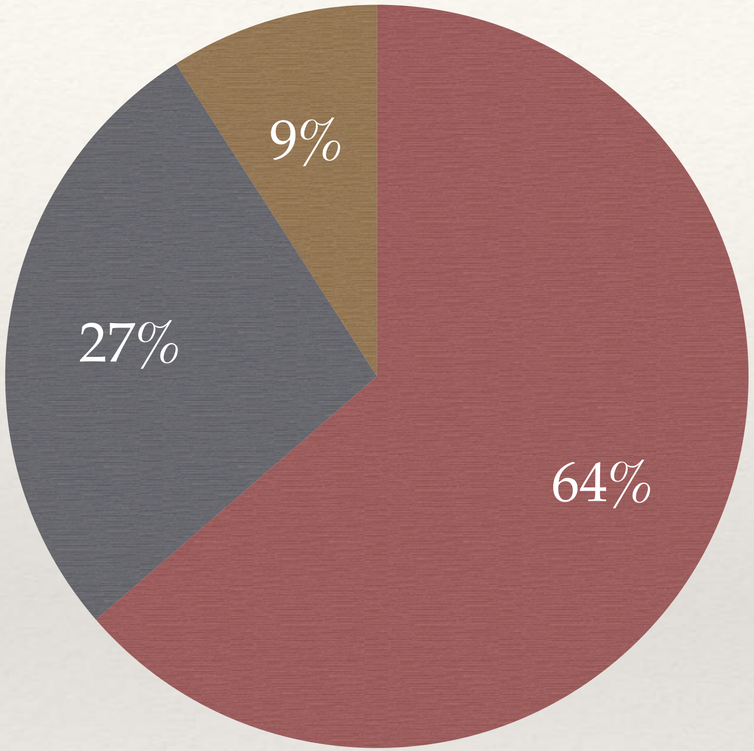
JAPAN. FDT 2009

SIUGRの死亡リスク

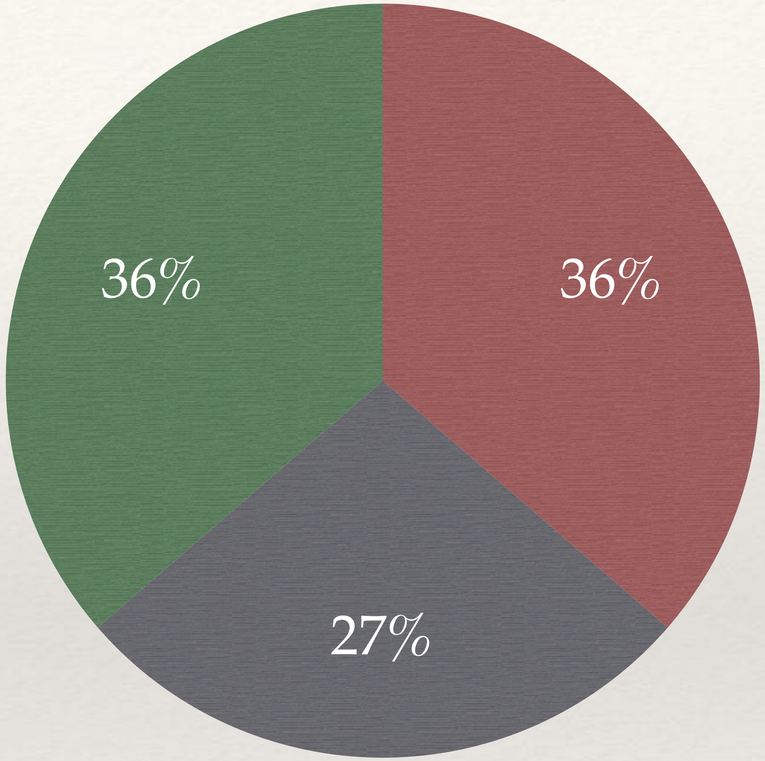
	aOR	(95%CI)	P
UA Type II	**29.4**	3.3-264.0	0.003
UA Type III	5.6	0.4-72.5	0.186
Stuck	**14.5**	2.2-93.2	0.005
SD (<3%tile)	3.3	0.9-12.4	0.084

JAPAN. UOG 2011

SIUGRの予後



大きい児の予後



IUFD　NND　後遺症　Intact

JAPAN. JOGR 2012

Survival Rate without Brain Abnormalities on Postnatal Ultrasonography among Monochorionic Twins after Fetoscopic Laser Photocoagulation for Selective Intrauterine Growth Restriction with Concomitant Oligohydramnios

Table 5. Neonatal outcome of twins at 28 days of age (n = 52)

	Total (n = 52)	Type II (n = 42)	Type III (n = 10)
Neonatal death	1/104 (1%)	1/84 (1%)	0
Neonatal death of the sIUGR twin	0	0	0
Neonatal death of the larger twin	1 (2%)	1 (2%)	0
Grade III or IV IVH	0	0	0
Cystic PVL	0	0	0
Survival at 28 days of age	72/104 (71%)	54/84 (64%)	18/20 (90%)
Survival of the sIUGR twin	23 (44%)	15 (36%)	8 (80%)
Survival of the larger twin	49 (94%)	39 (93%)	10 (100%)
Survival without BA at 28 days of age	72/104 (71%)	54/84 (64%)	18/20 (90%)
Survival without BA of the sIUGR twin	23 (44%)	15 (36%)	8 (80%)
Survival without BA of the larger twin	49 (94%)	39 (93%)	10 (100%)

Brain abnormalities (BA) were defined by grade III or IV intraventricular hemorrhage (IVH) and cystic periventricular leukomalacia (PVL). sIUGR, selective intrauterine growth restriction.

JAPAN. FDT 2018

一絨毛膜双胎のリスク

- 双胎間輸血症候群 (TTTS)
- Selective IUGR
- Twin anemia polycythemia sequence (TAPS)
- TRAP sequence
- 一児死亡とAcute fetofetal hemorrhage
- MM双胎

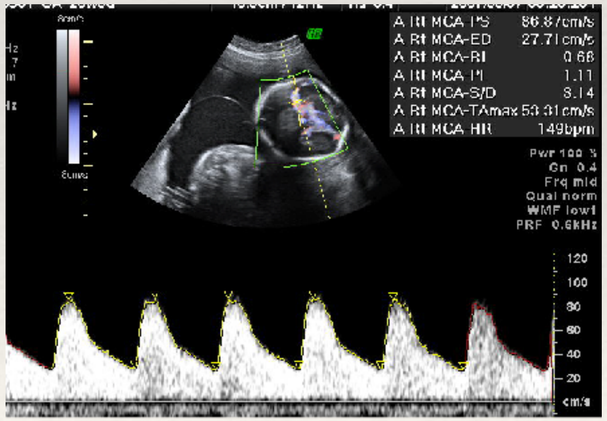
Twin anemia polycythemia sequence (TAPS)

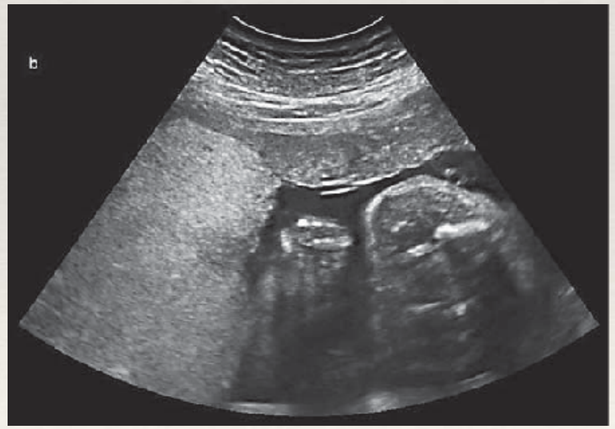
- TTTSに該当しない
- 貧血/多血
- 細い動脈静脈吻合の関与
- 自然発生は2-3%, 医原性(FLP)もある
- 予後は様々：良好～神経学的異常～死亡

TAPSの出生前診断

Antenatal criteria	Postnatal criteria
MCA-PSV >1.5 MoM in the donor *and* MCA-PSV <1.0 MoM in the recipient	Intertwin Hb difference >8.0 g/dl *and* at least one of the following: – Reticulocyte count ratio >1.7 – Placenta with only small (diameter <1 mm) vascular anastomoses

新しい胎児診断基準：δMCA-PSV>0.5 MoM





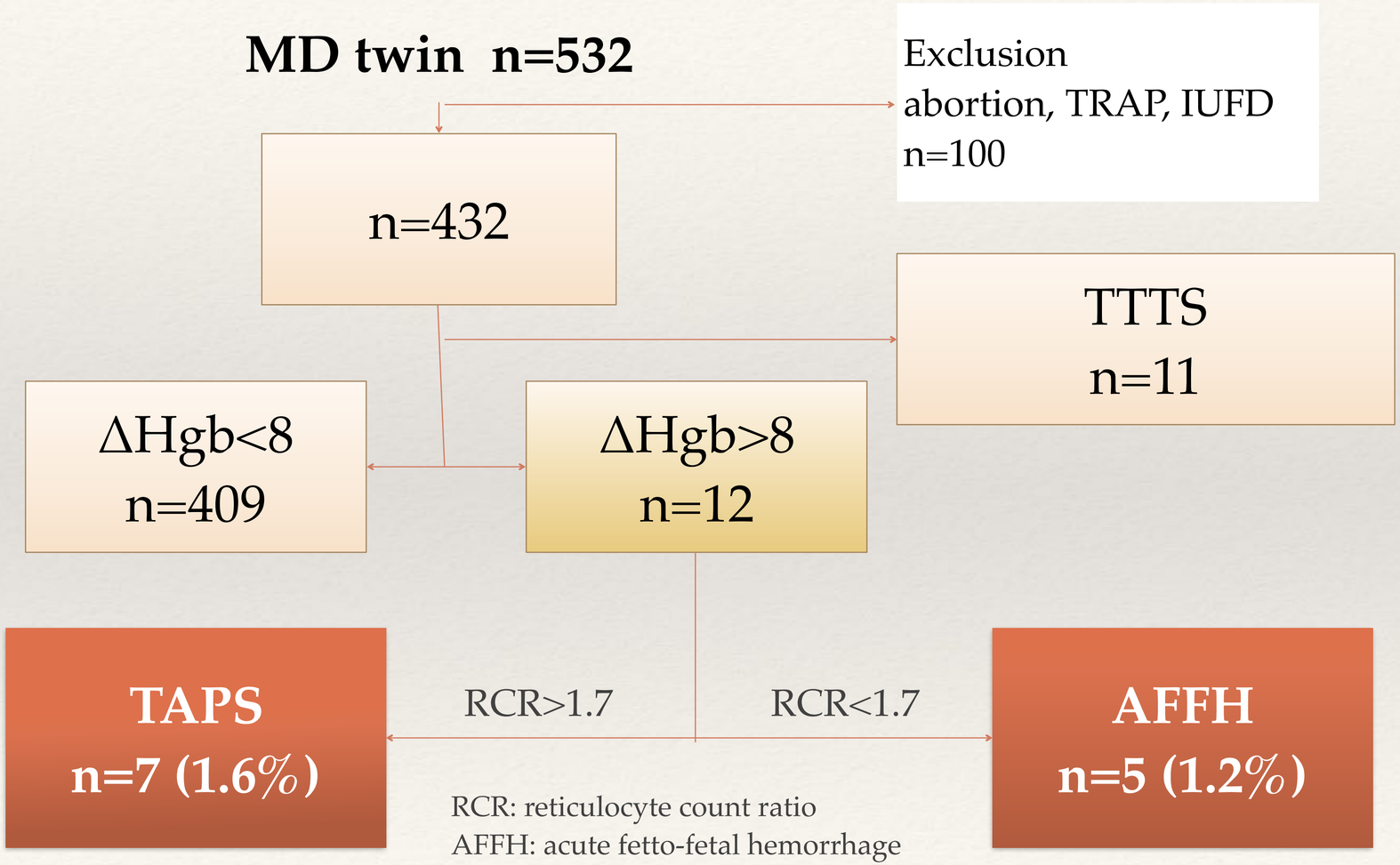
Placental dichotomy

Starry sky liver

Slaghekke F, FDT

36w MD @大阪母子医療センター

出生時にHb差のあるMD双胎の過半数はTAPS, AFFHは分娩様式と関連がない



TAPSの出生前管理

Table 4 Outcome of twin anemia–polycythemia sequence according to management

Parameter	*Expectant management* (n = *27*)	*Intrauterine transfusion* (n = *17*)	*Laser therapy* (n = *8*)	P
GA at treatment (weeks)		27 (22–32)	20 (17–25)	0.06
PPROM	4/27 (15)	1/17 (6)	6/8 (75)	< 0.01
GA at PPROM	30 (25–34)	26	32 (32–34)	0.04
Intrauterine fetal death*	4/54 (7)	2/34 (6)	1/16 (6)	0.69
GA at birth (weeks)	33 (23–41)	31 (24–34)	32 (30–36)	0.07
GA at birth < 30 weeks	7 (26)	7 (41)	—	0.10
Neonatal death*	5/50 (10)	3/32 (9)	—	0.16
Time between diagnosis and birth (weeks)	8 (0–21)	5 (1–14)	11 (8–18)	< 0.01
Intertwin hemoglobin difference at birth (g/dL)	13.1 ± 4.4	14.9 ± 2.9	3.1 ± 2.1	< 0.01
Hematological complications*	26/50 (52)	23/32 (72)	—	< 0.01
Severe neonatal morbidity*	12/50 (24)	12/32 (38)	1/15 (7)	0.17
Respiratory distress syndrome*	10/50 (20)	12/32 (38)	—	0.01
Patent ductus arteriosus*	1/50 (2)	1/32 (3)	—	1.0
Necrotizing enterocolitis*	3/50 (6)	—	—	0.60
Severe cerebral injury*	4/50 (8)	1/32 (3)	1/15 (7)	0.87
Perinatal survival*	45/54 (83)	29/34 (85)	15/16 (94)	0.30
Adverse perinatal outcome*†	16/54 (30)	14/34 (41)	2/16 (13)	0.11

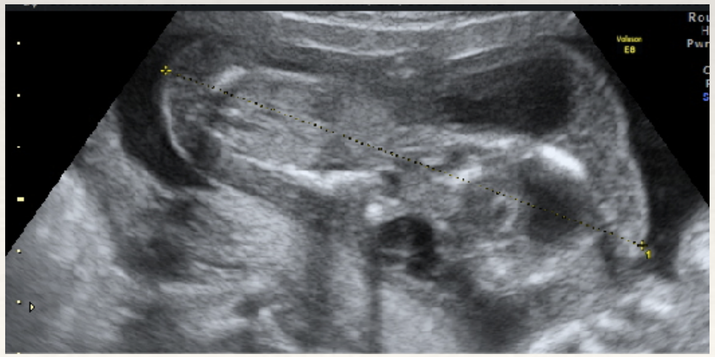
Slaghekke F, UOG 2014

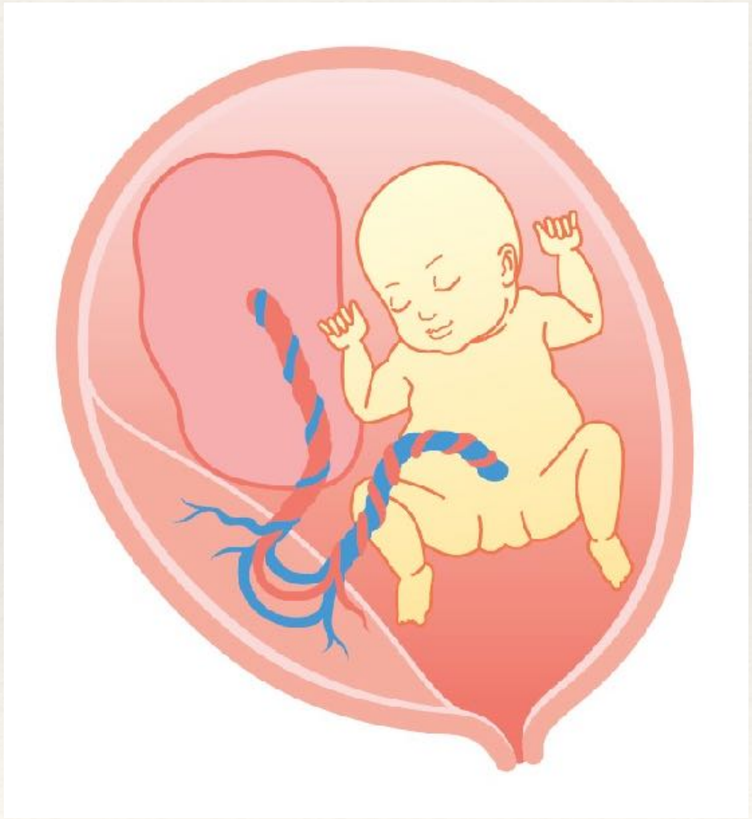
一絨毛膜双胎のリスク

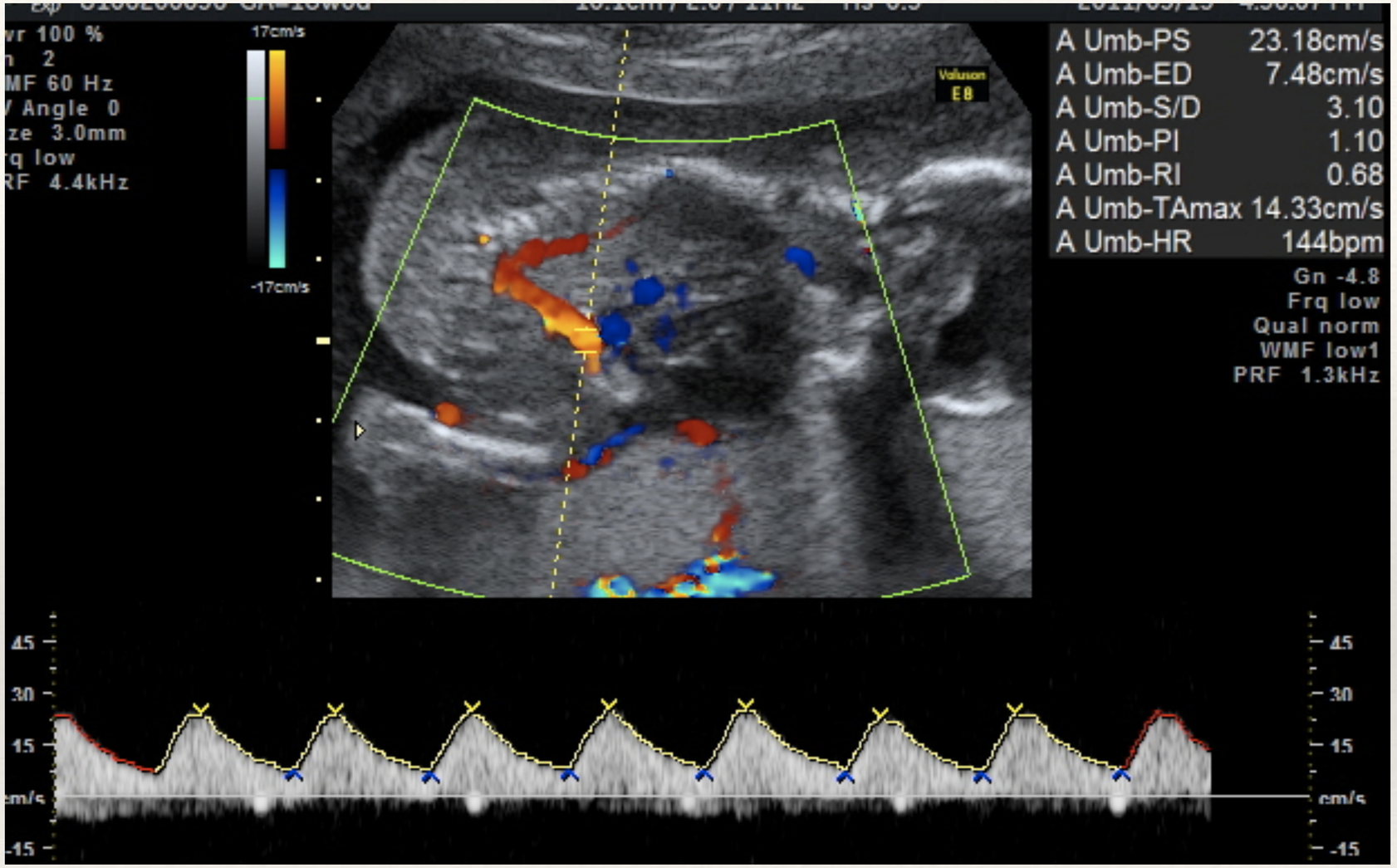
- 双胎間輸血症候群 (TTTS)
- Selective IUGR
- Twin anemia polycythemia sequence (TAPS)
- TRAP sequence
- 一児死亡とAcute fetofetal hemorrhage
- MM双胎

Twin reversed arterial perfusion (TRAP) sequence

- 動脈動脈吻合からの臍帯動脈の逆行性血流
- 血流の自然消失あり
- ポンプ児の心不全
- 血流遮断術 (RFAなど)







診断：無心体内の逆行性血流

RFA (Radiofrequency ablation)

適応：ポンプ児のサイズ＞無心体のサイズ　（AC)

RFA

Table 2. Clinical details of pregnancy outcomes

Variable	n = 25
Overall survival rate	22/25 (88)
Intrauterine demise of the pump twin	3/25 (12)
Miscarriage of the pump twin	0/25 (0)
PPROM	8/25 (36)
PPROM before 32 weeks	2/25 (8)
Days from procedure to PPROM	64 (6–111)
Preterm delivery	14/22 (64)
Preterm delivery before 32 weeks	5/22 (23)
GA at delivery of survivors	36 w 3 d (25 w 2 d–40 w 5 d)
Body weight at delivery of survivors	2,293 g (778–3,294 g)

Data presented as n (%) or median (range).
w = Weeks; d = days.

一絨毛膜双胎のリスク

- 双胎間輸血症候群 (TTTS)
- Selective IUGR
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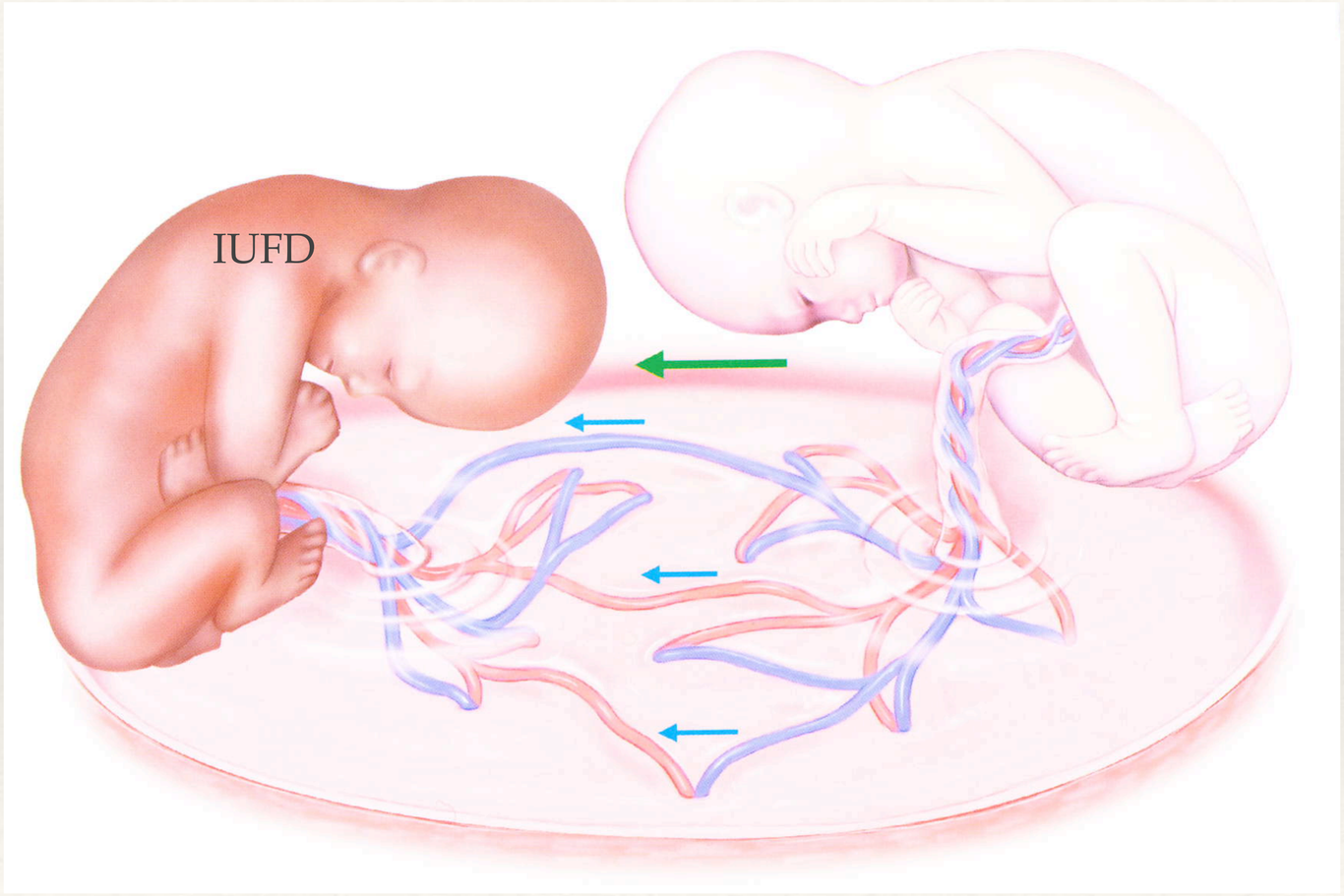
- 一児死亡とAcute fetofetal hemorrhage
- MM双胎

一児死亡後のAcute feto-fetal hemorrhage



双胎一児死亡　A Systematic Review & Meta-analysis

	MC (%)	DC (%)	*OR (MCvsDC)*
胎児死亡	41.0	22.4	*2.06*
早産	58.5	53.7	*1.42*
出生前　脳の画像異常	20.0	NA	
出生後　脳の画像異常	43.0	21.2	*5.41*
新生児死亡	27.9	21.2	*1.95*
神経学的異常	28.5	10.0	*3.06*

Mackie FL. BJOG 2019

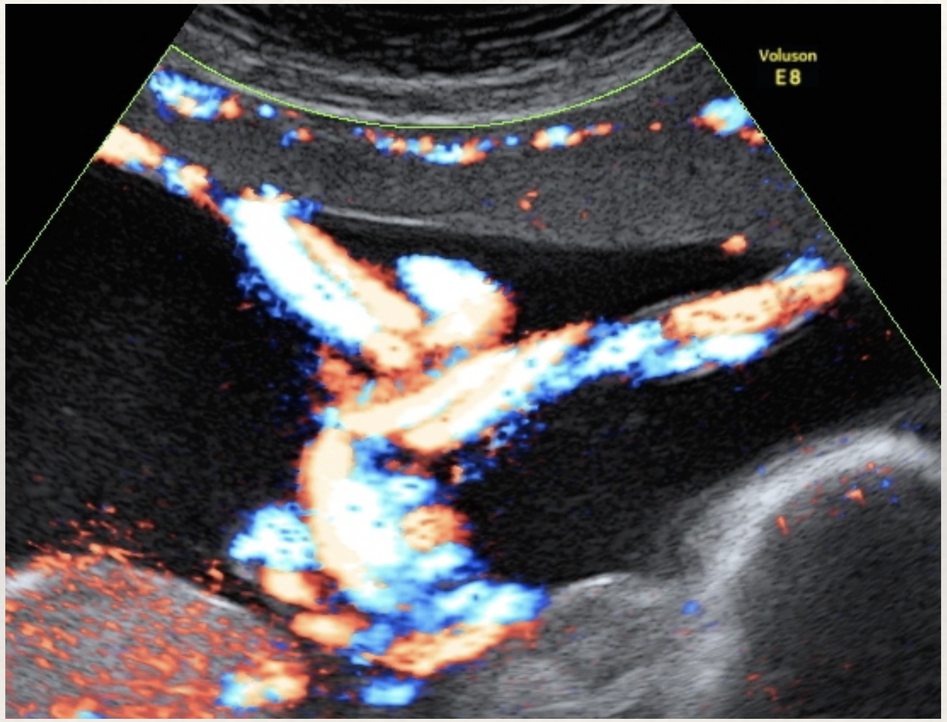
一絨毛膜双胎のリスク

- 双胎間輸血症候群 (TTTS)
- Selective IUGR
- Twin anemia polycythemia sequence (TAPS)
- TRAP sequence
- 一児死亡とAcute fetofetal hemorrhage
- MM双胎

MM双胎の臨床像

- 診断は妊娠14週までに（10週未満はMDと鑑別困難？）
- 臍帯相互巻絡は>90%
- IUFDの多くはPre-viableな時期 (<20w)
- 臍帯相互巻絡とViableな時期(>22w)のIUFDに関連なし
- 胎児機能不全のリスクあり →Intensive monitoring
- 一絨毛膜双胎としてのリスク有り：吻合血管

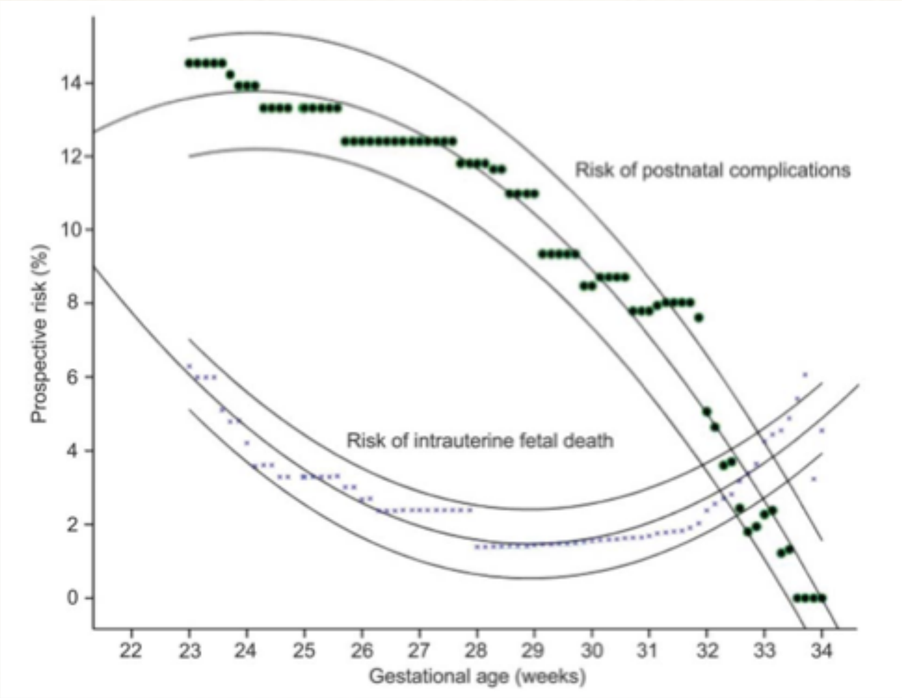
臍帯相互巻絡



Literature Review

Author	N	構造異常	TTTS	管理	分娩時期(w)	FD	NND	**Total PMR**	**PMR Non-anomalous**
Hack 2009	98	7%	6%	入院 30-32	32-34	22/196 (11%)	12/196 (6%)	**19% ≥20w**	**17% ≥20w**
Dias 2010	18	11%	0	不詳	34	2/36 (6%)	2/36 (6%)	**11% ≥16w**	**6% ≥16w**
Baxi 2010	25	18%	4%	入院 26-28	By 34	1/50 (2%)	3/50 (6%)	**8% ≥20w**	**2% ≥20w**
Murata 2013	38	除外	N A	入院 24-26	32-34	17/76 (22%)	0	**2% ≥22w**	**2% ≥22w**
Mieghe m 2014	193	14%	3%	入院 26-28	32-34	70/386 (18%)	17/386 (4%)	**23% ≥11w**	**18% ≥11w**

MM双胎の分娩時期



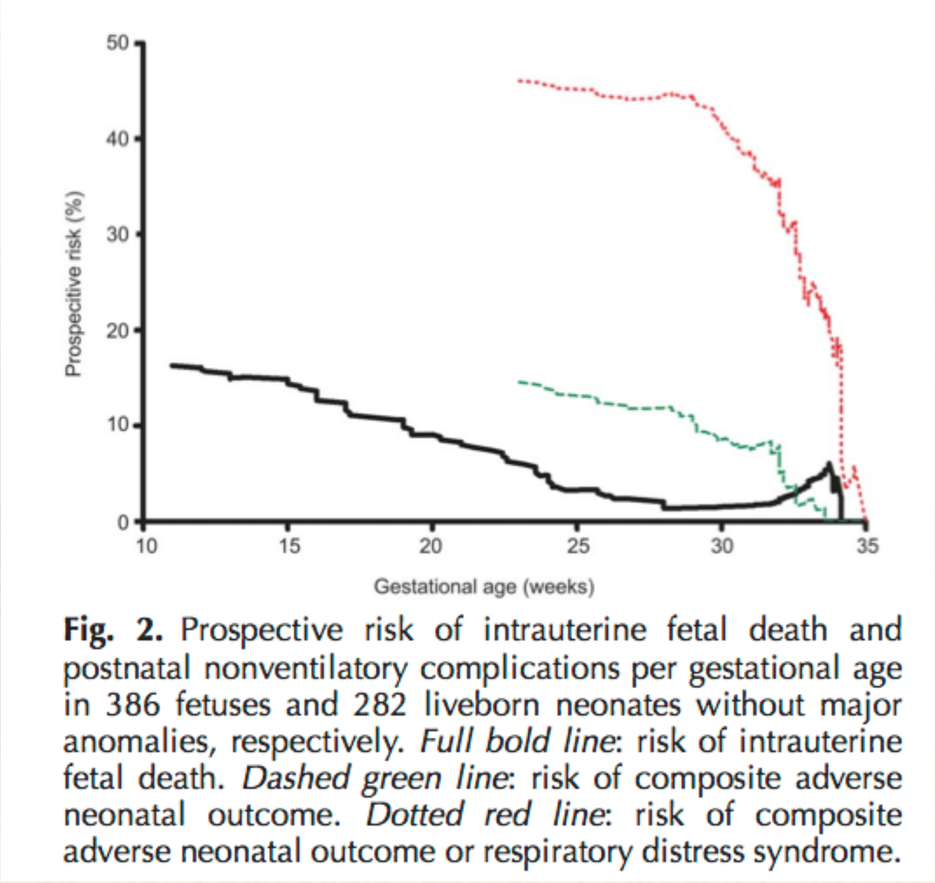
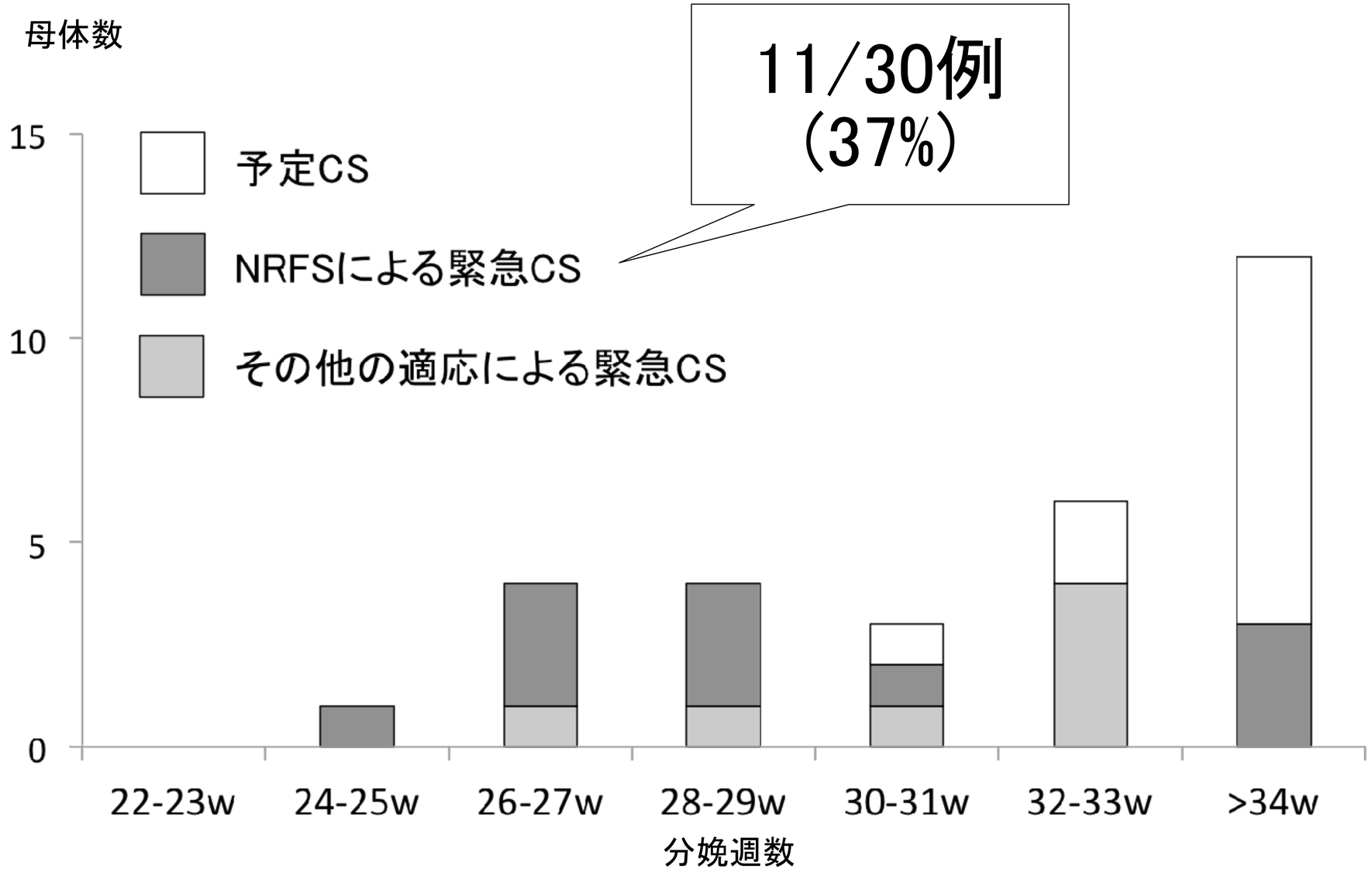


Fig. 2. Prospective risk of intrauterine fetal death and postnatal nonventilatory complications per gestational age in 386 fetuses and 282 liveborn neonates without major anomalies, respectively. *Full bold line*: risk of intrauterine fetal death. *Dashed green line*: risk of composite adverse neonatal outcome. *Dotted red line*: risk of composite adverse neonatal outcome or respiratory distress syndrome.

Mieghem V. Obstet Gynecol. 124

本邦の多施設共同研究



JAPAN. JOGR. 39

３.一絨毛膜双胎特有の病的状態の診断と管理 まとめ

1. 一絨毛膜双胎では、第2三半期前半より2週毎の健診(胎児発育と羊水量を確認)が推奨される
2. TTTS, Selective IUGR(臍帯動脈血流異常), TAPSの発症に留意する。疑う場合はFLP実施施設にコンサルトする
3. 一絨毛膜双胎での一児胎児死亡では他方の児の予後不良のリスクがある。胎児死亡の診断後は原則的に待機的管理を行う
4. 一絨毛膜一羊膜双胎では、第2三半期前半の胎児死亡、および妊娠後期の胎児機能不全に留意する

４.妊娠第３三半期以降分娩までの双胎管理

欧米で推奨される双胎分娩様式

- 米国、英国、オランダなど

  先進児頭位であれば経腟分娩

The NEW ENGLAND JOURNAL of MEDICINE

ESTABLISHED IN 1812 OCTOBER 3, 2013 VOL. 369 NO. 14

A Randomized Trial of Planned Cesarean or Vaginal Delivery for Twin Pregnancy

Jon F.R. Barrett, M.B., B.Ch., M.D., Mary E. Hannah, M.D.C.M., Eileen K. Hutton, Ph.D., Andrew R. Willan, Ph.D., Alexander C. Allen, M.D.C.M., B. Anthony Armson, M.D., Amiram Gafni, D.Sc., K.S. Joseph, M.D., Ph.D., Dalah Mason, M.P.H., Arne Ohlsson, M.D., Susan Ross, Ph.D., J. Johanna Sanchez, M.I.P.H., and Elizabeth V. Asztalos, M.D., for the Twin Birth Study Collaborative Group*

	経腟分娩 (n=2783)	CS (n=2782)	OR (95%CI)	*P*
NND / serious morbidity, n(%)	60 (2.2)	52 (1.9)	1.16 (0.77-1.74)	NS

Twin Birth Study Collaborative Group: RCT.

先進児頭位の双胎分娩では、CSのメリット無し

大阪母子医療センターにおける双胎分娩管理

- 経腟分娩の条件(妊娠38週以降では分娩誘発を考慮)

  ①先進児が頭位

  ②在胎週数34週以降

  ③両児の推定体重1800g以上

  ④既往子宮手術後でない

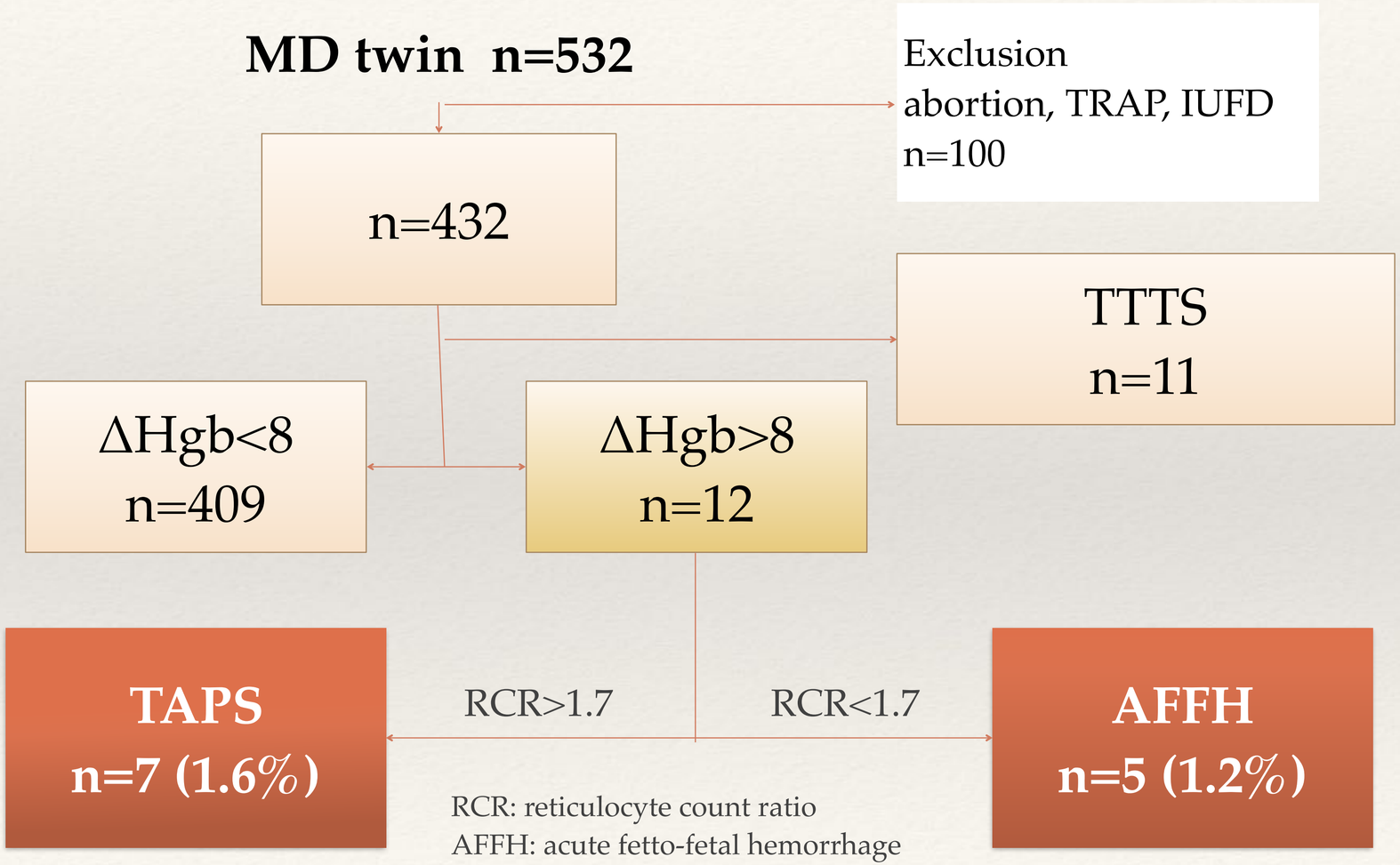
  CSを希望した場合はCS. 全例において夫婦の文書同意を得る.

<分娩時の体制>

- ORは24時間対応. 超緊急全身麻酔CSが随時可能.
- 2人以上の産科医が分娩に対応(骨盤位分娩、内・外回転にも対応).
- 全例で新生児科医の立ち会い.

36w MD @大阪母子医療センター

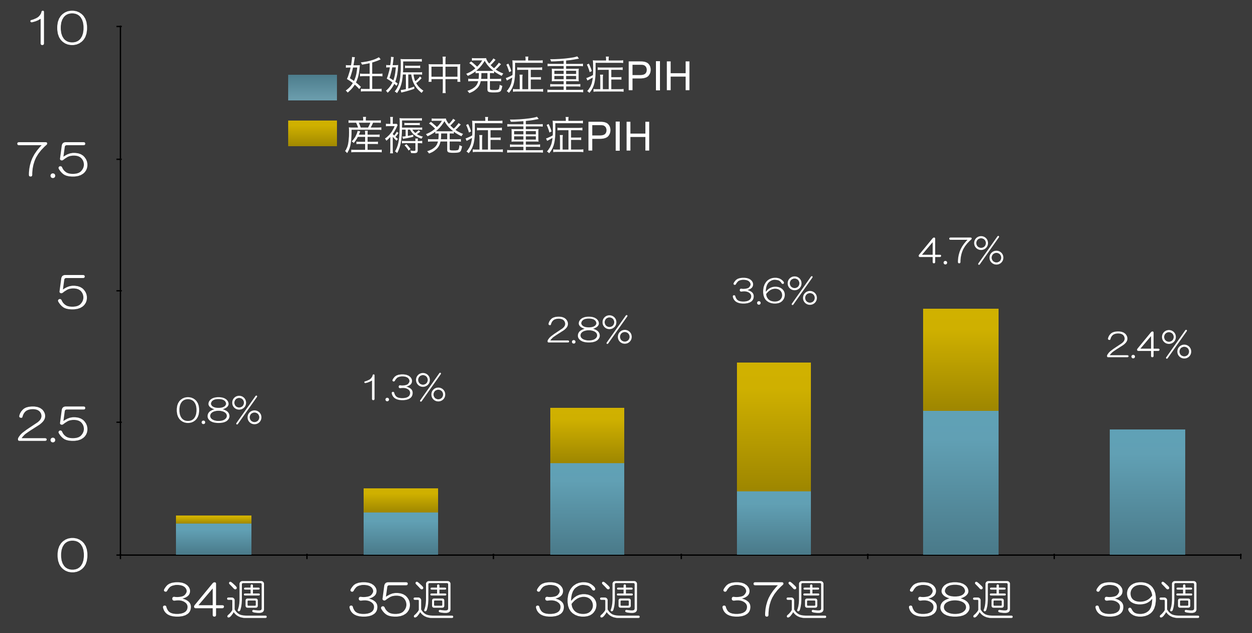
出生時にHb差のあるMD双胎の過半数はTAPS, AFFHは分娩様式と関連がない



～双胎妊娠のHDPリスク～

- 妊娠高血圧症候群(HDP)が単胎に比して多い
- 妊娠後半に向けて重症PIHの頻度は上昇する

Sibai et al. 2010



大阪母子, *JOGR 2014*

妊娠36週以降の双胎におけるHDPおよび関連合併症の頻度
(A prospective cohort study)

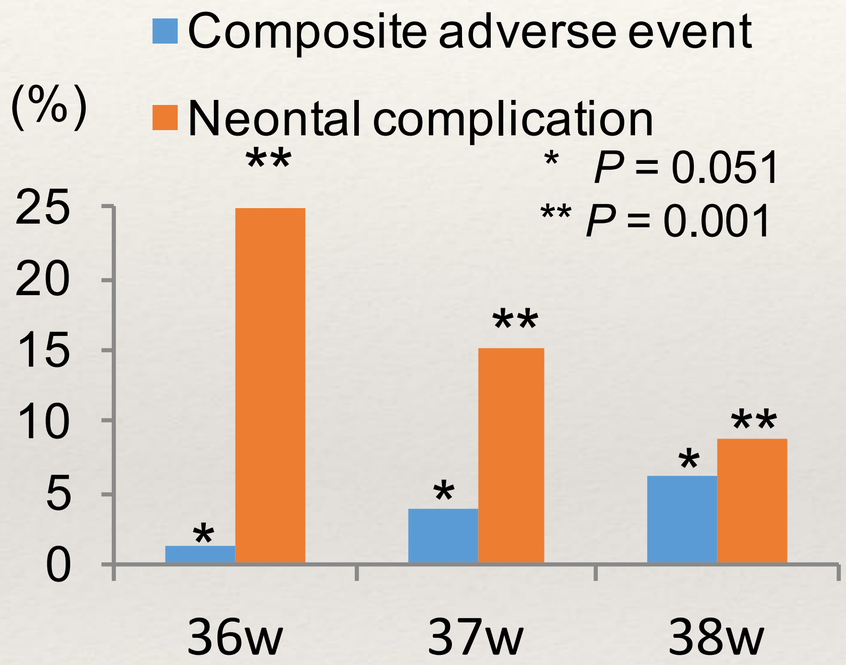


Figure 1. Maternal and neonatal complications of each GA

Table 2. Odds ratio for risk for outcome

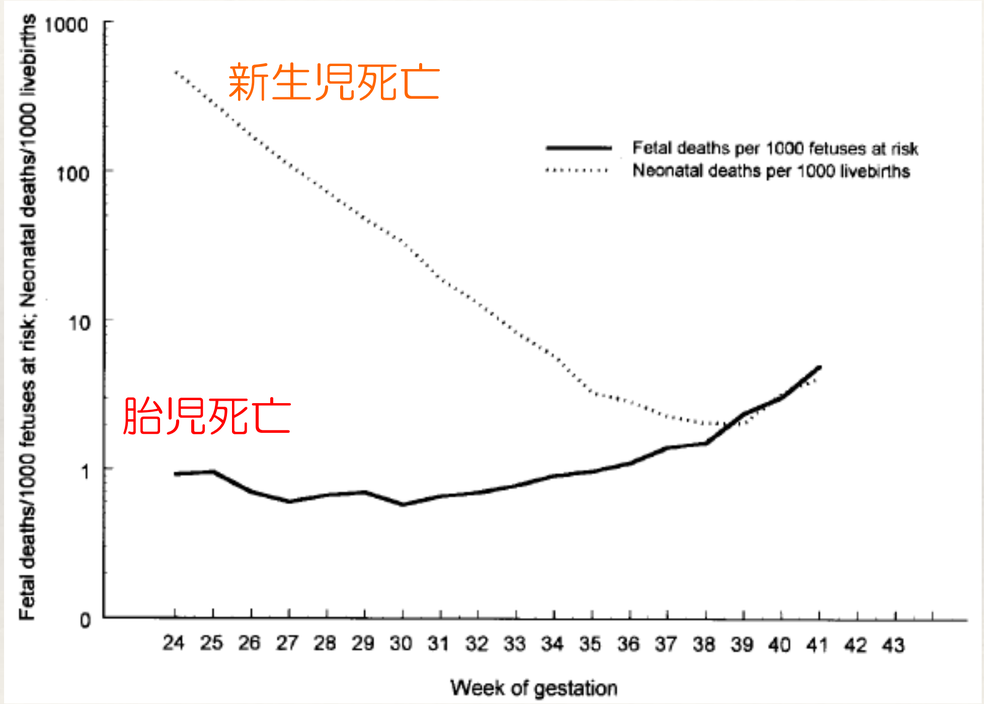
	cOR	*P**	aOR	*P*
MCDA	1.47	0.44	-	-
Age ≥35 y.o.	1.34	0.55	-	-
Primipara	2.19	0.14	1.39	0.63
ART	1.26	0.69	-	-
Tobacco	5.85	0.11	4.22	0.40
BMI ≥35	0.49	0.49		
Proteinuria >2g/d	**30.0**	**<0.001**	**28.2**	**<0.001**
GDM	2.67	0.22	1.46	0.77
Platelet <150,000/μl**	1.98	0.19	1.70	0.43
Fibrinogen <300mg/dl**	1.91	0.55	-	-
AT <70%**	1.56	0.58	-	-
AST >30IU/l**	1.42	0.75	-	-

大阪母子, *JOGR 2018*

Termにむけた双胎児の予後

- 新生児死亡は妊娠38週まで減少し、その後増加する
- 胎児死亡は増加し、妊娠37-38週の頻度は0.15%である

Minakami et al. 1996
Kahn et al. 2003



- 新生児合併症は妊娠34週以降、週数と共に減少する

Breathnach et al. 2012
Burgess et al. 2014

４.妊娠第３三半期以降分娩までの双胎管理　まとめ

1. 先進児頭位の双胎分娩では帝王切開の利点は示されず、経腟分娩が選択される（施設の事情で判断する）
2. 妊娠後期では妊娠高血圧症候群の発症に留意する
3. 妊娠38週以降では児の死亡頻度がわずかに上昇すること、妊娠36週では新生児呼吸障害の頻度が高いことを考慮して分娩時期を決定する