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ASSISTED REPRODUCTION AND PREGNANCY OUTCOMES

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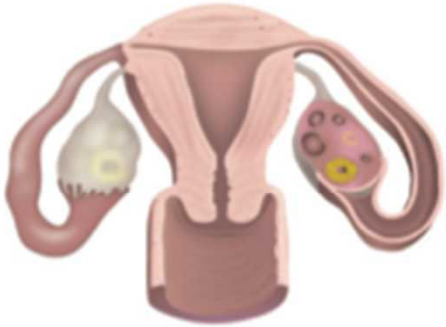
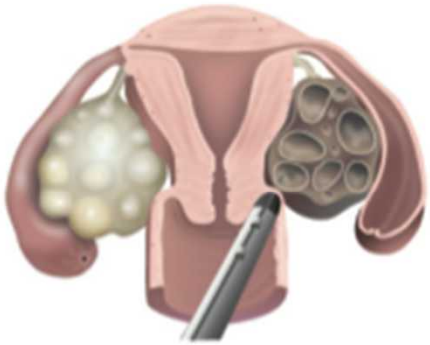
Case

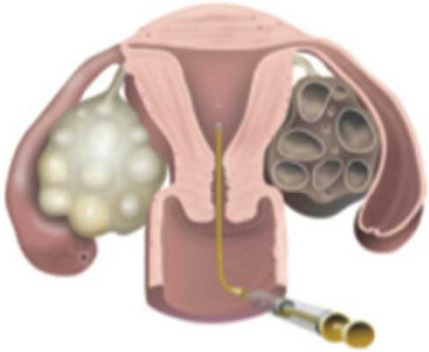


Step 1



Step 2

Step 3



Step 4

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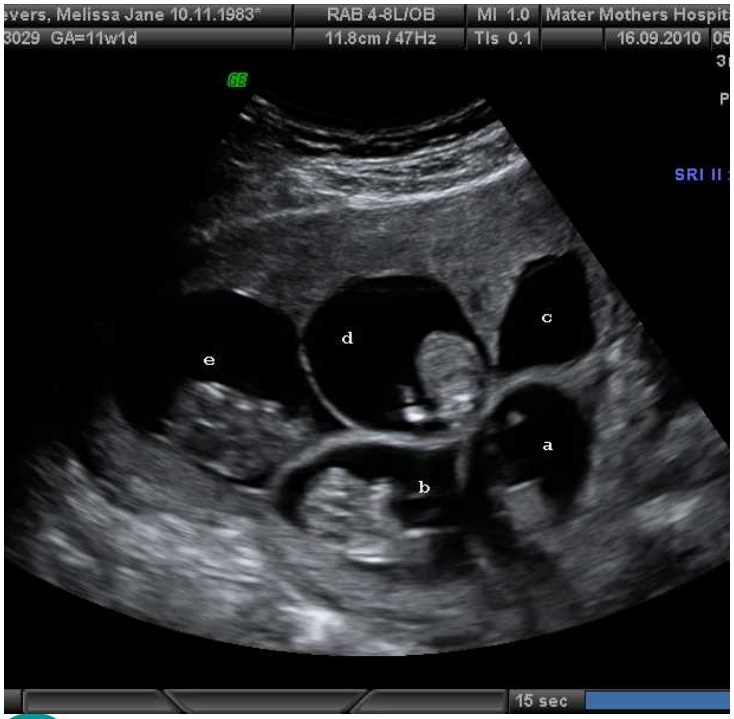
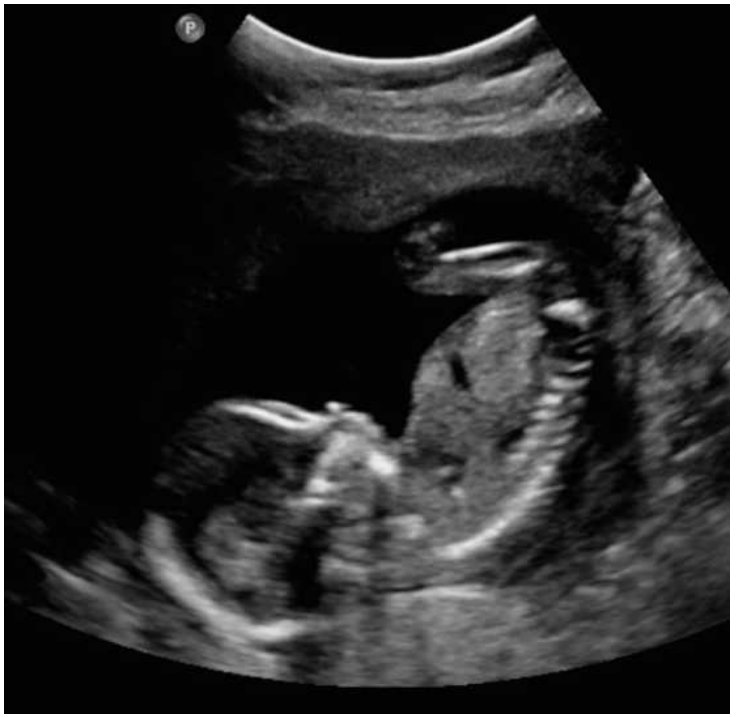
More than one…..





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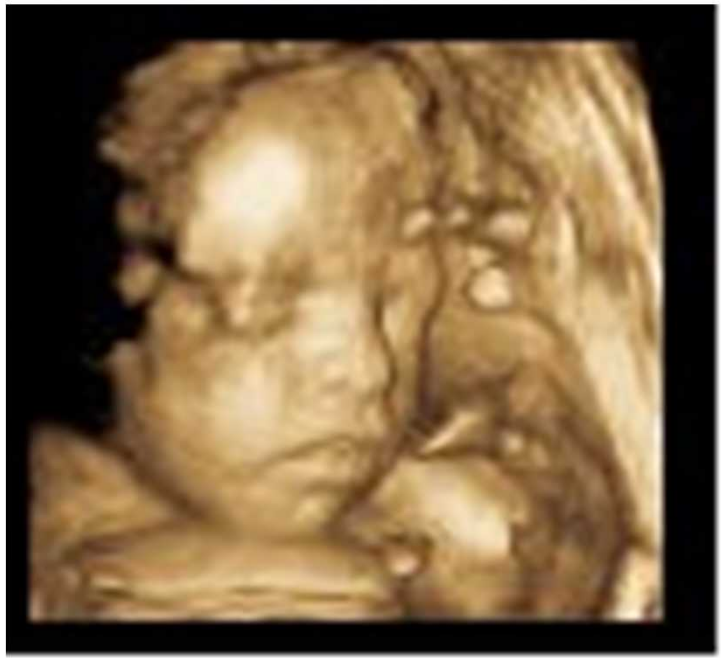
Singletons…..

- Many individual factors
- Difficult to isolate as most are inter-related

- Subdivide into type of ART



General Evolving Trends

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Preterm Birth

- <32 weeks RR 2.3
- <37 weeks RR 1.84-2.3

- Contribution of spontaneous PTB is unknown

Risk Factors

- Primiparity
- Smoking
- BMI
- Vanishing twin
  - *Sasanova et al. Hum Reprod 2011*

Low Birth Weight

Relative Risks (RR)

- <2500g RR 1.40-2.20
- <1500g RR 2.7-3.78
- SGA <10th centile RR 1.98

Risk Factors

- Smoking
- BMI
- Maternal age
- Duration of infertility
  - *Sasanova et al. Hum Reprod 2011*

Fresh vs Frozen

- Higher birth weight
- Reduced risk
    - SGA
    - Preterm Birth

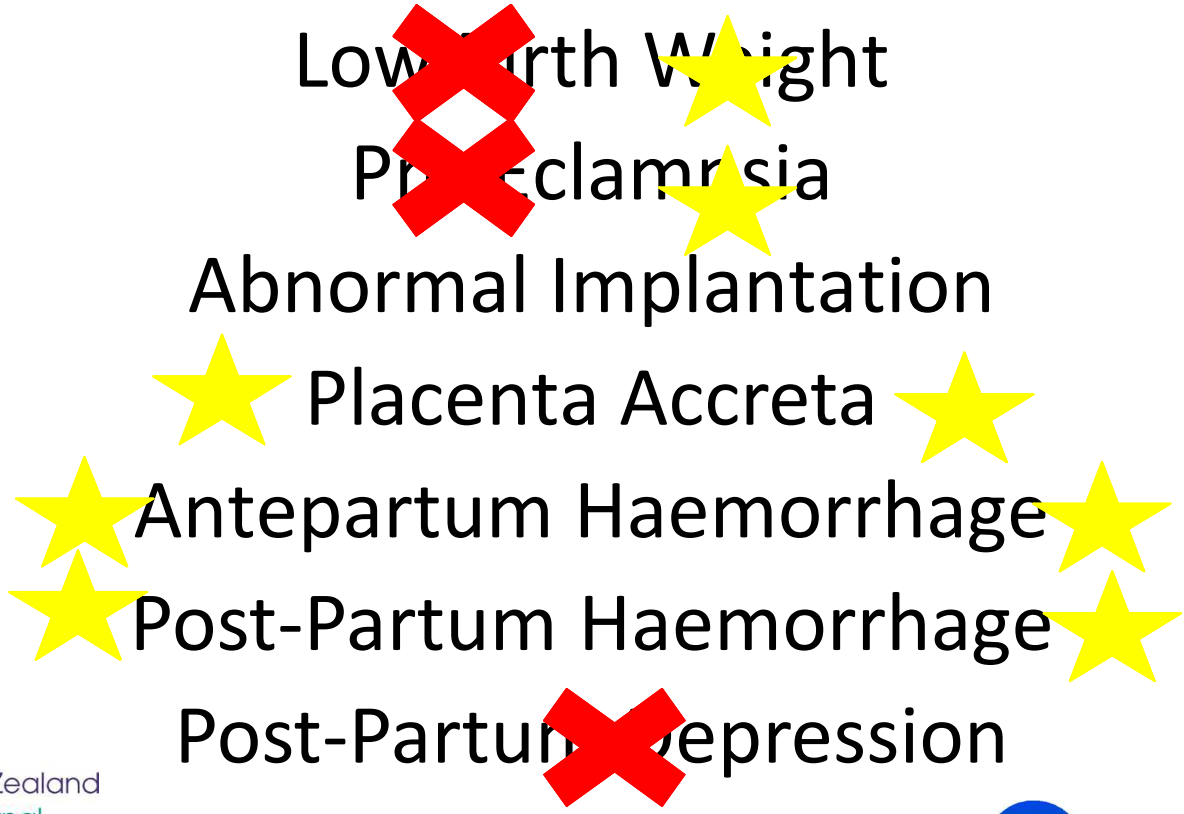
- *Henningsen et al. Fert Steril 2011*

Birth Defects

- Mixed results
  - Confounders
    - BMI
    - IVF/ICSI >IVF
- No association
    - *Davies et al NEJM 2012*

- Genital organ malformation
  HR 2.32
    - *Basso O and Olsen DD. Hum Reprod 2003*
- Septal heart defects aOR 2.1
- Oesophageal atresia aOR 4.5
- Anorectal atresia aOR 3.7
    - *Reefhuis et al. Hum Reprod 2009*

Placental Associated Disorders



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Imprinting Disorders

- Beckwith-Widemann
- Russell-Silver
- Prader-Willi
- Angelman
- McCune Albright

- Actual risk is low
  - < 1 in 5000
- Exact biological etiology is uncertain

No. 231, August 2009

Guidelines for the Management of Vasa Previa

This guideline has been prepared by the Diagnostic Imaging Committee and the Maternal Fetal Medicine Committee and approved by Executive and Council of the Society of Obstetricians and Gynaecologists of Canada.

Abstract

Objectives: To describe the etiology of vasa previa and the risk factors and associated condition, to identify the various clinical presentations of vasa previa, to describe the ultrasound tools used in its diagnosis, and to describe the management of vasa previa.

The Royal Australian and New Zealand College of Obstetricians and Gynaecologists

College Statement
C-Obs 47
1st Endorsed: July 2012
Current: July 2012
Review: July 2015

C-Obs 47

Vasa Praevia

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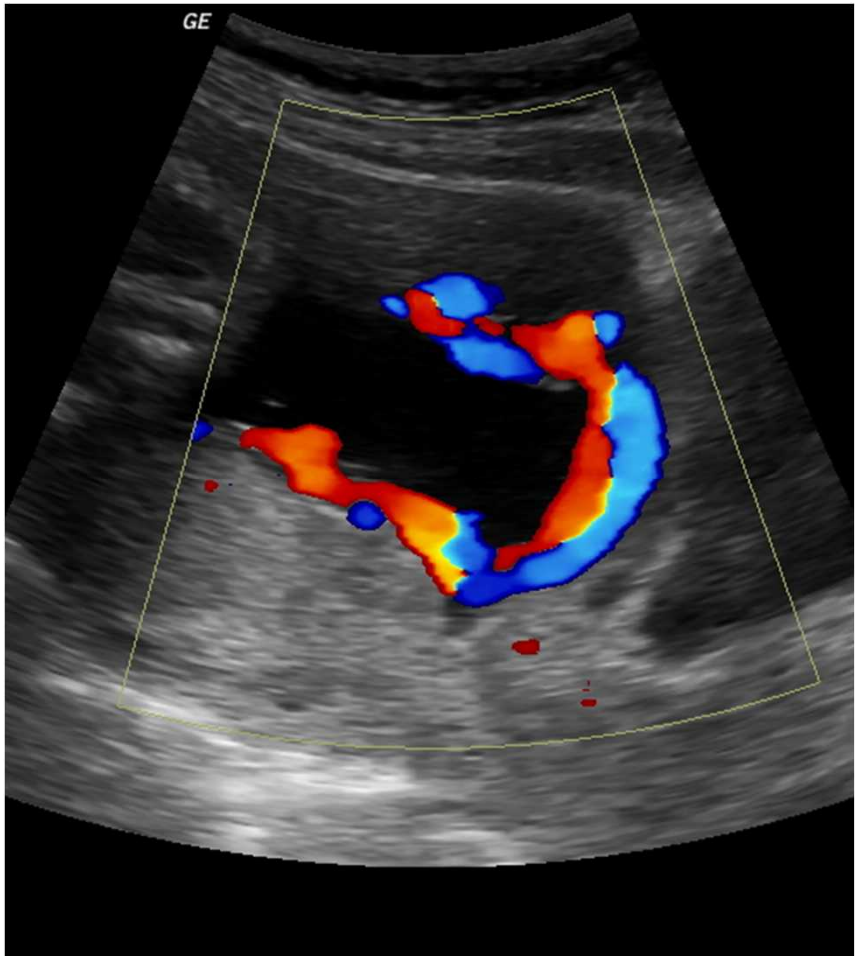
- Background rate 1:2200
- IVF Rate 1:202

- LR 7.75



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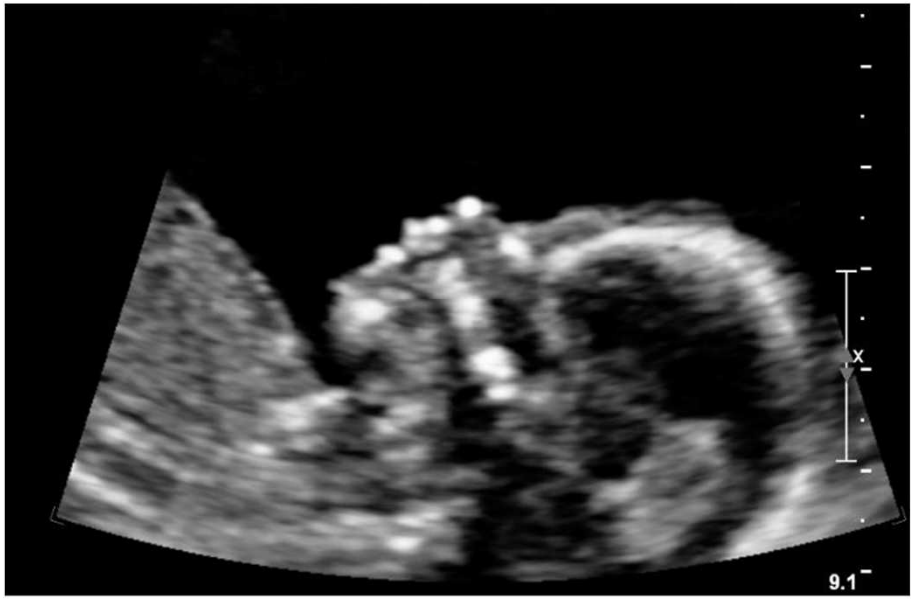
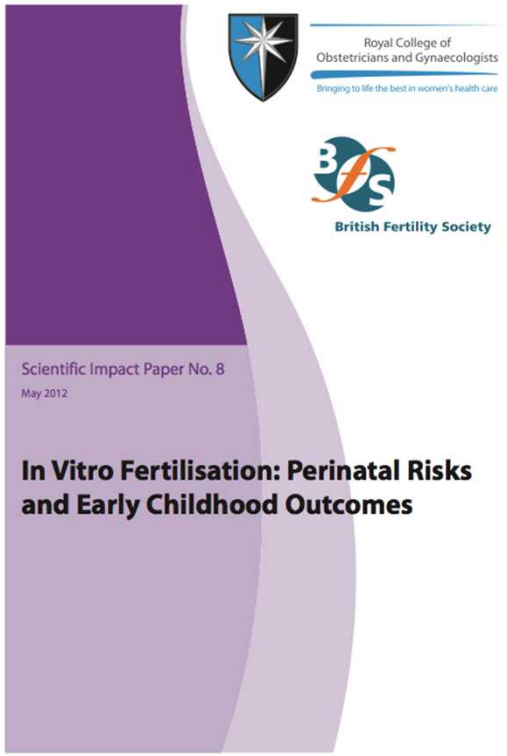
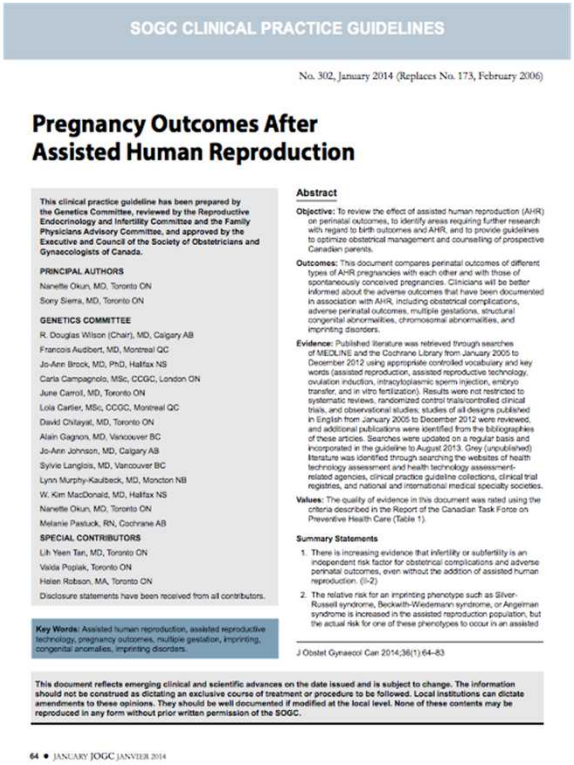
Overall Approach

- Obstetric Surveillance
  - PTB
  - LBW
  - PET
- USS Screening
  - Abnormal Implantation
  - Congenital Anomalies
  - Vasa Previa



Guidelines





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Advanced Maternal Age

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OBSTETRICS

Pregnancy outcome at extremely advanced maternal age

Yariv Yogev, MD; Nir Melamed, MD; Ron Bardin, MD; Kinneret Tenenbaum-Gavish, MD; Gadi Ben-Shitrit, MD; Avi Ben-Haroush, MD

OBJECTIVE: The purpose of this study was to evaluate pregnancy outcome in women at extremely advanced maternal age (≥45 years).

STUDY DESIGN: We compared the condition of women aged ≥45 years (n = 177) in a 10:1 ratio (20-29, 30-39, and 40-44 years.). Subgroup analysis compared the condition of women aged 45-49 years with those women aged ≥50 years.

RESULTS: The rates of gestational diabetes mellitus and hypertensive complications were higher for the study group, compared with the whole group (17.0% vs 5.6% and 19.7% vs 4.5%, respectively; $P <$ .001), as was the rate of preterm delivery at <37 and <34 weeks of gestation (odds ratio [OR], 2.1; 95% confidence interval [CI], 1.2–3.6 and OR, 3.5; 95% CI, 1.4–9.0, respectively). The rates of cesarean delivery (OR, 31.8; 95% CI, 18.0–56.1), placenta previa, postpartum hemorrhage, and adverse neonatal outcome were significantly higher among the study group. The risk for gestational diabetes mellitus, preeclampsia toxemia, preterm delivery, and neonatal intensive care unit admission was increased for women aged ≥50 years.

CONCLUSION: Pregnancy at extreme advanced maternal age is associated with increased maternal and fetal risk.

Key words: advanced maternal age, complication, neonatal, pregnancy

elamed N, Tenenbaum-Gavish K, et al. Pregnancy outcome at extremely advanced maternal age. Am J Obstet Gynecol

TABLE 2

Delivery outcome for the study and comparison groups

Variable	Overall (n = 5487)	Group 1: 20-29 y (n = 1770)	Group 2: 30-39 y (n = 1770)	Group 3: 40-44 y (n = 1770)	Group 4: ≥45 y (n = 177)	*P* value
Gestational age, wk[a]	38.8 ± 2.2	39.2 ± 2.0	38.9 ± 2.2	38.5 ± 2.4[b]	37.6 ± 2.5	< .001 (4≠3≠2,1)
<37, n (%)	541 (10.3)	130 (7.7)	152 (9.1)	221 (12.8)	38 (21.5)	< .001
<34, n (%)	149 (2.8)	27 (1.6)	49 (2.9)	62 (3.6)	11 (6.2)	< .001
<32, n (%)	76 (1.4)	15 (0.9)	23 (1.4)	34 (2.0)	4 (2.3)	.04
Spontaneous preterm delivery (<37 wk), n (%)	255 (47)	75 (58)	82 (54)	92 (42)	6 (15)	.01
Delivery mode, n (%)						
Normal vaginal delivery	3655 (66.6)	1384 (78.2)	1275 (72.0)	965 (54.5)	31 (17.5)	< .001
Instrumental delivery[b]	255 (4.6)	113 (6.4)	87 (4.9)	49 (2.8)	6 (3.4)	< .001
Cesarean delivery	1587 (28.9)	277 (15.7)	412 (23.3)	759 (42.9)	139 (78.5)	< .001
Elective cesarean delivery	551 (37.5)	55 (21.6)	131 (35.5)	293 (41.5)	72 (51.8)	< .001
Indication for cesarean delivery, n (%)						
Breech	265 (16.7)	55 (19.9)	79 (19.2)	101 (13.3)	30 (21.6)	.006
Multifetal gestation	75 (4.7)	13 (4.7)	28 (6.8)	26 (3.4)	8 (5.8)	.07
Dystocia	56 (3.5)	23 (8.3)	11 (2.7)	16 (2.1)	6 (4.3)	< .001
Nonreassuring fetal heart rate	79 (5.0)	14 (5.1)	13 (3.2)	40 (5.3)	12 (8.6)	.04
Placenta previa	35 (2.2)	2 (0.7)	10 (2.4)	20 (2.6)	3 (2.2)	.3
Previous cesarean delivery	461 (29.0)	43 (15.5)	127 (30.8)	268 (35.3)	23 (16.5)	< .001
Macrosomia	114 (7.2)	29 (10.5)	28 (6.8)	49 (6.5)	8 (7.0)	.13
Maternal request	NA	NA	NA	NA	20 (14.4)	
Preeclampsia	38 (2.4)	3 (1.1)	12 (2.9)	17 (2.2)	6 (4.3)	.18
Other	444 (28.0)	95 (34.3)	104 (25.2)	222 (29.2)	23 (16.5)	.001
Placenta previa	49 (0.9)	3 (0.2)	11 (0.6)	25 (1.4)	10 (5.6)	< .001
Placental abruption	37 (0.7)	6 (0.3)	12 (0.7)	17 (1.0)	2 (1.1)	.13
3rd-4th degree vaginal tears	26 (0.7)	9 (0.6)	15 (1.1)	2 (0.2)	0	.054
Postpartum hemorrhage	76 (1.4)	18 (1.0)	21 (1.2)	30 (1.7)	7 (4.0)	.007
Blood transfusions	24 (0.4)	3 (0.2)	5 (0.3)	14 (0.8)	2 (1.1)	.012
Postpartum fever	183 (3.3)	83 (4.7)	43 (2.4)	27 (1.5)	22 (12.5)	< .001
Prolonged hospitalization[c]	111 (2.0)	23 (1.3)	36 (2.0)	40 (2.3)	12 (7.2)	< .001
Intensive care unit admission	53 (0.96)	17 (1.0)	14 (0.8)	19 (1.1)	3 (1.7)	.1

NA, not applicable.

[a] Data are presented as mean ± SD; [b] Vacuum extraction or forceps delivery; [c] Hospitalization for more than 4 or 7 days after vaginal or cesarean delivery, respectively.

	Maternal Age			
	20-29 years	**30-39 years**	**40-44 years**	**Over 45 years**
Gestational Diabetes	1.4%	4.2%	10.2%	17%
Gestational Hypertension	2.0%	2.3%	3.2%	9.0%
Pre-Eclampsia	0.7%	1.5%	2.4%	10.7%
Placental Abruption	0.3%	0.7%	1.0%	1.1%
Placenta Previa	0.2%	0.6%	1.4%	5.6%
Delivery < 37 weeks	7.7%	9.1%	12.8%	21.5%
Caesarean Delivery	15.7%	23.3%	42.9%	78.5%
Birthweight <10th centile	10.7%	8.5%	9.8%	11.3%
Admission to NICU	6.3%	7.4%	8.6%	10.7%

Yogev Y, Melamed N, Tenenbaum-Gavish K, et al. Pregnancy outcome at extremely advanced maternal age. Am J Obstet Gynecol 2010;203:558.e1-7.

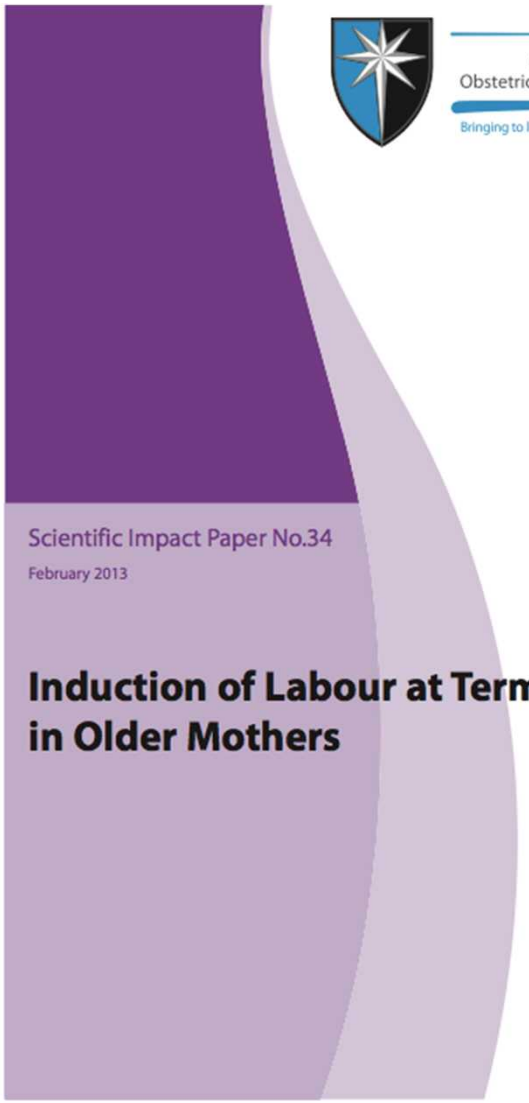

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Table 1. Rate and absolute risk of stillbirth and neonatal death by maternal age in the UK[14]

Maternal age (years)	Stillbirths[a]		Neonatal deaths[a]	
	Rate (95% CI)[b]	Absolute risk (95% CI)	Rate (95% CI)[c]	Absolute risk (95% CI)
25–29	4.6 (4.3, 4.9)	1/ 217 (1/204, 1/233)	2.9 (2.7, 3.2)	1/345 (1/312, 1/370)
30–34	4.7 (4.4, 5.0)	1/213 (1/200, 1/227)	2.6 (2.4, 2.8)	1/385 (1/357, 1/417)
35–39	5.5 (5.1, 5.9)	1/182 (1/169, 1/196)	2.9 (2.6, 3.2)	1/345 (1/312, 1/385)
≥40	7.6 (6.6, 8.7)	1/132 (1/115, 1/152)	3.8 (3.1, 4.6)	1/263 (1/217, 1/323)

[a] Second and subsequent deaths from pregnancies with multiple losses are excluded
[b] Rates per 1000 maternities
[c] Rates per 1000 live births

AMA Protocol

- Pre-Conceptional Counselling
  - Outline risks of pregnancy
  - Folic Acid 0.8 mcg/d

Antenatal Mx

- Booking scan

- Low-dose Aspirin
- Booking HbA1c, TFTs

- Aneuploidy
  - CFTS Screening
  - NIPT
  - Invasive

- 24-28 week polycose

- PET Screening

- Detailed Anatomy scan
- Consider ruling out vasa previa

- 24 week uterine artery Dopplers
- Serial Growth Scans

- From 37 weeks
  - Serial CTGs

- Delivery
  - By EDC
  - Consider El LSCS in some cases

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