

新鲜周期卵裂期胚胎移植日子宫内膜厚度对单胎妊娠母儿妊娠结局的影响

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【摘要】 目的 探讨新鲜周期卵裂期胚胎移植日子宫内膜厚度对单胎妊娠母儿妊娠结局的远期影响。方法 回顾性分析2016年1月至2022年3月同济大学附属第一妇婴保健院生殖医学中心的1 845例单胎妊娠者,根据移植日内膜厚度分为3组:A组 ≤ 8 mm, B组 $> 8 \sim 14$ mm, C组 ≥ 14 mm。主要观察指标:早产、出生体重及出生体重z-score、小于胎龄儿、大于胎龄儿、极低出生体重儿、低出生体重儿及巨大儿比率;次要观察指标:妊娠期及分娩期并发症发生率。Logistic回归分析评估移植日子宫内膜厚度与新生儿不良结局的相关性。**结果** A组异位妊娠发生率显著增加。3组间新生儿出生体重及出生体重z-score值、早产、小于胎龄儿、大于胎龄儿、低出生体重儿、极低出生体重儿及巨大儿比率差异无统计学意义。Logistic回归分析示A组及C组新生儿不良结局与B组相比,无论校正前还是校正后差异均无统计学意义。**结论** 新鲜周期卵裂期胚胎移植日薄型子宫内膜异位妊娠发生率增加,但不增加新生儿不良结局。

【关键词】 新鲜周期移植; 卵裂期胚胎; 子宫内膜厚度(EMT); 新生儿结局; 单胎妊娠

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Effect of endometrial thickness on obstetric and neonatal outcomes of monoparous pregnancy in fresh cleavage-embryo transfer

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【Abstract】 Objective To investigate the association of endometrial thickness (EMT) with obstetric and neonatal outcomes of monoparous pregnancy in fresh cleavage embryos transfer. **Methods** A total of 1 845 patients of monoparous pregnancy after fresh cleavage embryos transfer cycles from Jan 2016 to Mar 2022 at Shanghai First Maternity and Infant Hospital, Tongji University were analyzed retrospectively. Patients were categorized into three groups by EMT on transferation day: ≤ 8 mm (group A), $8 \sim 14$ mm (group B) and ≥ 14 mm (group C). The primary outcomes were preterm birth (PTB), birth weight and birth weight z-score, small-for-gestation age, large-for-gestation age, very low birth weight, low birth weight and macrosomia. The second outcomes were pregnancy and perinatal complications. The relationship between EMT and adverse neonatal outcomes was estimated by Logistic regression analysis. **Results** The rate of ectopic pregnancy was increased significantly in group A. No significant differences were found among the three groups in gestation age, birth weight, birth weight z-score, PTB, small for gestation age, large for gestation age, low birth weight, very low birth weight and macrosomia. Compared

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with group B, the odds of adverse neonatal outcomes did not show significant differences before and after adjustment in both group A and group C by Logistic regression analysis. **Conclusion** Thinner EMT in fresh cleavage embryos transfer is associated with higher rate of ectopic pregnancy, while it is not independently associated with adverse perinatal outcomes.

【Key words】 fresh embryo transfer; cleavage embryos; endometrial thickness (EMT); neonatal outcomes; monoparous pregnancy

随着辅助生殖技术在全球范围的广泛应用,子代健康问题得到了更多的关注。已有研究^[1-4]报道与自然受孕相比,通过辅助生殖技术妊娠产科并发症及新生儿低出生体重儿的发生率显著增加。已有研究^[5-6]提示与新鲜周期性比,冷冻胚胎移植新生儿不良结局发生率显著降低。

一项 Meta 分析证实人绒毛膜促性腺激素(human chorionic gonadotrophin, HCG)日子宫内膜厚度 ≤ 7 mm 显著降低临床妊娠率^[7]。Guo 等^[8]研究发现与 HCG 日子宫内膜厚度 > 12 mm 相比,子宫内膜厚度 < 7.5 mm 的单胎妊娠者新生儿小于胎龄儿发生风险增加 2 倍,但出生体重无显著差异。有研究^[9-10]发现 HCG 日子宫内膜厚度 ≤ 7.5 mm 新生儿出生体重显著降低。一项基于 4 537 例单胎妊娠的研究^[11]发现, HCG 日子宫内膜厚度与前置胎盘发生风险显著相关。目前, HCG 日子宫内膜厚度对母儿妊娠结局的影响尚无定论,上述研究中采取的是 HCG 日内子宫膜厚度,但其并不能真实反应移植日内膜厚度,各研究采用的内膜厚度截断值不同,且将卵裂期胚胎与囊胚期胚胎移植混杂在一起进行妊娠结局的风险分析,已有研究^[12-13]证实囊胚期胚胎移植早产与极早产的发生率显著高于卵裂期胚胎,其大于胎龄儿的发生率显著高于卵裂期胚胎。本研究采用更能反映真实情况的移植日子宫内膜厚度,回顾性分析新鲜周期卵裂期胚胎其对母儿妊娠结局的影响。

资料和方法

研究对象 回顾性分析 2016 年 1 月至 2022 年 3 月在同济大学附属上海市第一妇婴保健院生殖医学中心行体外受精/卵胞浆内单精子注射-胚胎移植(*in vitro* fertilization /intracytoplasmic sperm injection embryo transferation, IVF/ICSI-ET)治疗单胎妊娠患者的临床资料。纳入标准:(1) 20 岁 $<$ 年龄 ≤ 42 岁;

(2)新鲜周期卵裂期胚胎移植;(3)单胎妊娠(包括双胎自然减胎);(4)接受 IVF 或 ICSI 治疗;(5)供精。排除标准:(1)囊胚移植;(2)植入前遗传学检测;(3)子宫畸形、子宫黏膜下肌瘤及子宫内膜息肉;(4)孕前慢性高血压、糖尿病、甲状腺疾病、高泌乳素血症;(5)供卵。新鲜周期移植当日由 B 超医师通过阴道探头测量子宫内膜厚度,根据所有患者内膜厚度第 10 百分位数及第 90 百分位数分为 3 组:A 组 ≤ 8 mm, B 组 $> 8 \sim 14$ mm; C 组 ≥ 14 mm(图 1)。本研究系回顾性研究,获得同济大学附属上海市第一妇婴保健院伦理委员会批准【批准号:(2024)伦审第(140)号】,豁免知情同意。

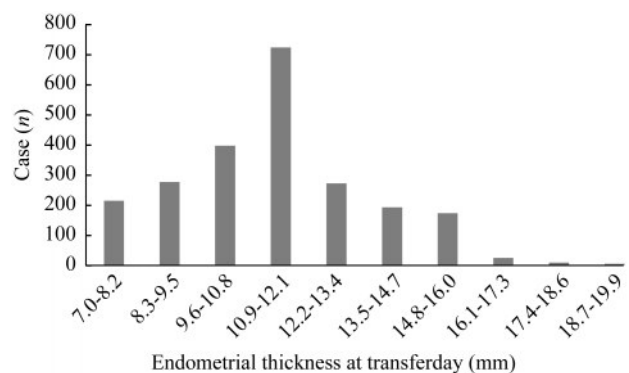


图 1 移植日子宫内膜厚度分布

Fig 1 Endometrial thickness profile at transferday

观察指标 主要观察指标:新生儿出生结局,包括分娩孕周、新生儿出生体重、新生儿出生体重[z-score=(新生儿体重-均数)/标准差,根据 Dai 等^[12]研究的中国新生儿参考人群相应分娩孕周、相同性别平均体重及标准差计算]、早产(分娩孕周 < 37 周)、小于胎龄儿(出生体重低于相应孕周平均体重的第 10 百分位数)、大于胎龄儿(出生体重高于相应孕周平均体重的第 90 百分位数)、极低出生体重儿(出生体重 $< 1 500$ g)、低出生体重儿(出生体重 $< 2 500$ g)、巨大儿(出生体重 $\geq 4 000$ g)。次要观察指标:妊娠期及分娩期并发症,包括异位妊娠率、流

产率、妊娠期高血压综合征、先兆子痫/子痫、妊娠期糖尿病、前置胎盘、胎盘早剥、胎膜早破、产后出血、羊水少、妊娠期肝内胆汁淤积。

统计学分析 应用R语言(4.1.1)进行统计学分析。定量资料符合正态分布的数据用 $\bar{x} \pm s$ 表示,非正态分布的数据用M(P₂₅,P₇₅)表示,正态分布及方差齐性数据,组间比较采用方差分析,其他采用Kruskal-Wallis秩和检验。定性资料采用百分比表示,组间比较采用 χ^2 检验或者Fisher确切概率检验。单因素或者多因素Logistic回归分析比较移植日子宫内膜厚度对新生儿结局的影响。采用以下协因子进行校正Logistic回归分析:男方年龄、女方年

龄、女方BMI、不孕因素、不孕年限、产次、原发/继发不孕、控制性卵巢刺激(controlled ovarian stimulation,COS)方案、吸烟与否、双胎自然减胎、新生儿性别、妊娠期及分娩期并发症、分娩年份。 $P < 0.05$ 为差异有统计学意义。

结 果

一般资料 本研究共纳入2 282例单胎妊娠者,其中A组213例,B组1 666例,C组403例。共纳入单胎活产(不包括3例新生儿死亡)者1 845例,其中A组160例,B组1 348例,C组337例(图2)。

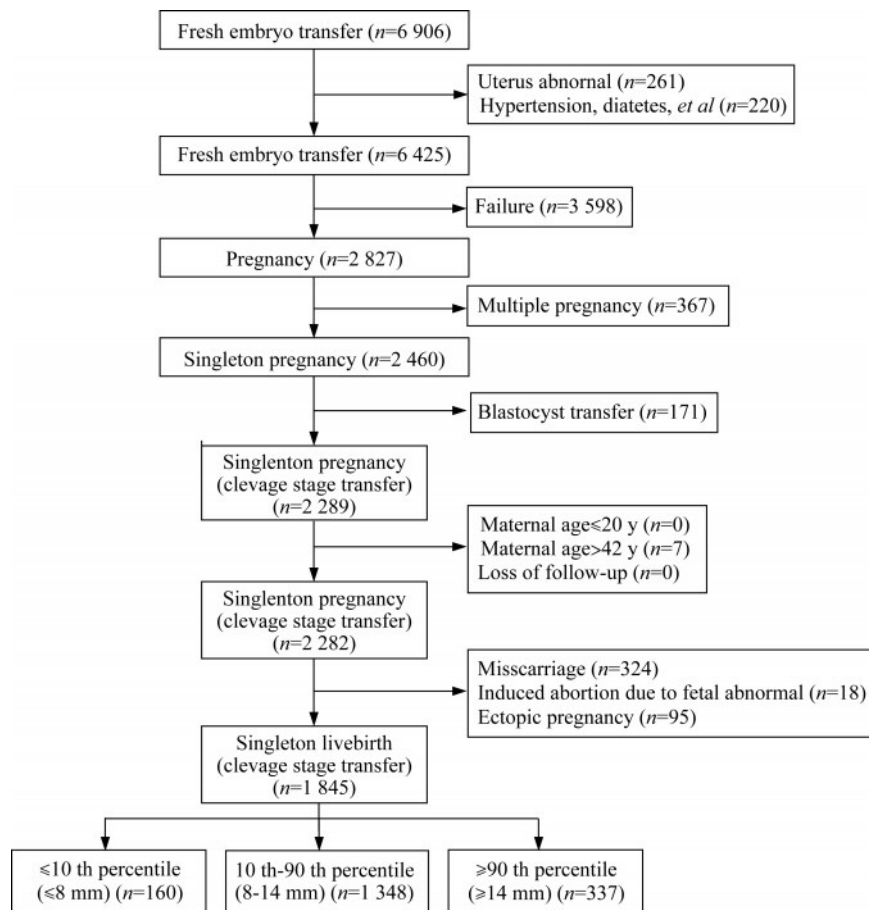


图2 患者筛选流程图

Fig 2 Flow chart of patient enrollment

3组单胎妊娠者女方年龄、男方年龄、BMI、基础卵泡刺激素(follicle stimulating hormone,FSH)、不孕年限、不孕因素、受精方式差异均无统计学意义;促排Gn用量、促排天数、移植胚胎天数、移植胚胎数及种植率差异均无统计学意义。3组不孕类型、COS方案、HCG日E2水平、获卵数及移植日内

膜厚度差异有统计学意义(表1)。

3组早期妊娠并发症比较 A组异位妊娠的发生率显著增加($P < 0.05$),然而3组的自然流产率、因胎儿异常人工流产率、宫内外同时妊娠、Vanishing Twin综合征发生率及死胎率差异均无统计学意义(表1)。

表1 3组患者一般情况及早期妊娠并发症比较

Tab 1 Comparison of clinical characteristics and first-trimester complications in the 3 groups [$\bar{x} \pm s$, M(P₂₅,P₇₅) or n(%)]

Parameters	Group A (n=213)	Group B (n=1 666)	Group C (n=403)	P
Maternal age (y)	31.9 ± 3.8	31.5 ± 3.8	31.1 ± 3.7	0.006
Paternal age (y)	33.5 ± 5.5	33.3 ± 5.2	32.7 ± 4.6	0.052
BMI (kg/cm ²)	21.97 ± 2.72	22.18 ± 3.26	21.79 ± 2.84	0.221
Basal FSH (mIU/mL)	6.65 (5.66, 7.85)	6.46 (5.40, 7.66)	6.68 (5.58, 7.88)	0.189
Duration of infertility (y)	3.0 (2.0, 4.0)	3.0 (2.0, 4.0)	3.0 (2.0, 4.0)	0.251
Infertility diagnosis				<0.001
Primary infertility	86 (40.4)	1 013 (60.8)	287 (71.2)	
Secondary infertility	127 (59.6)	653 (39.2)	116 (28.8)	
IVF indication				0.381
Female	131 (61.5)	938 (56.3)	214 (53.1)	
Male	47 (22.1)	386 (23.2)	108 (26.8)	
Both female and male	17 (7.9)	192 (11.5)	42 (10.4)	
Unexplained	18 (8.5)	150 (9.0)	39 (9.7)	
Parity				0.085
0	194 (91.1)	1 574 (94.5)	384 (95.3)	
≥1	19 (8.9)	92 (5.5)	19 (4.7)	
COS protocol				0.001
Long protocol	100 (46.9)	875 (52.5)	251 (62.3)	
GnRH antagonist protocol	89 (41.8)	668 (40.1)	133 (33.0)	
Ultra-long protocol	6 (2.8)	24 (1.4)	9 (2.2)	
Short protocol	7 (3.3)	46 (2.8)	3 (0.7)	
Natural cycle	11 (5.2)	53 (3.2)	7 (1.8)	
Type of ART procedure				0.084
IVF	106 (49.8)	763 (45.8)	180 (44.7)	
ICSI	75 (35.2)	607 (36.4)	131 (32.5)	
Short-time incubation of gamete	32 (15.0)	296 (17.8)	92 (22.8)	
Total dose of Gn (IU)	1 800 (1 375, 2 400)	1 875 (1 500, 2 400)	1 875 (1 500, 2 325)	0.610
Days of stimulation (d)	10.2 ± 3.8	10.2 ± 2.9	10.4 ± 2.5	0.194
Hormone level on HCG day				
E2 (pg/mL)	2 184.30 (1 601.60, 2 797.90)	2 277.50 (1 549.10, 2 932.60)	2 528.80 (1 804.00, 3 162.90)	0.011
LH (mIU/L)	1.56 (0.82, 2.59)	1.54 (0.87, 2.57)	1.32 (0.78, 2.32)	0.119
P (ng/mL)	0.84 (0.61, 1.01)	0.8 (0.59, 1.03)	0.84 (0.62, 0.8)	0.859
No. of retrieved oocytes (n)	9 (5, 12)	9 (6, 12)	10 (7, 13)	0.000
Days of transferred embryos (d)	2.96 ± 0.20	2.96 ± 0.19	2.96 ± 0.18	0.791
No. of transferred embryos (n)	1.71 ± 0.45	1.66 ± 0.47	1.65 ± 0.48	0.156
Endometrial thickness at transfer (mm)	7.79 ± 0.52	10.96 ± 1.33	14.89 ± 1.11	<0.001
Implantation rate (n/n)	62.2 (227/365)	64.4 (1 778/2 760)	64.2 (426/664)	0.706
Misscarriage rate	35 (16.4)	239 (14.3)	50 (12.4)	0.375
Induced abortion due to fetal abnormal	2 (0.9)	14 (0.8)	2 (0.5)	0.724
Ectopic pregnancy rate	16 (7.5)	65 (3.9)	14 (3.5)	0.034
Heterotopic pregnancy rate	1 (0.5)	8 (0.5)	3 (0.7)	0.704
Vanishing twin syndrome	13 (6.1)	101 (6.1)	20 (5.0)	0.693
Stillbirth	0 (0)	3 (0.2)	1 (0.2)	0.716

COS: Controlled ovarian stimulation; IVF: *In vitro* fertilization; ART: Assisted reproductive technology; ICSI: Intracytoplasmic sperm injection; FSH: Follicle stimulating hormone; E2: Estrodial; LH: Luteinizing hormone; P: Progesterone.

新生儿结局比较 3组单胎活产者的胎儿出生体重及出生体重 z-score 值、新生儿性别、新生儿先天畸形率、早产、极低出生体重儿、低出生体重儿、小于胎龄儿、大于胎龄儿及巨大儿比例差异均无统计学意义(表2)。分层比较足月分娩新生儿出生体重与早产儿出生体重发现,3组足月分娩新生儿体重无显著差异,对于早产儿,A组平均出生体重低于B组与C组,但差异无统计学意义(表2)。与B组相比,Logistic回归分析发现3组间上述主要观察指标差异无统计学意义。采用男方年龄、女方年龄、女方BMI、不孕因素、不孕年限、产次、原发/继发不

孕、COS方案、HCG日E2水平、吸烟与否、双胎自然减胎、新生儿性别、妊娠期及分娩期并发症、分娩年份等协因子进行校正Logistic回归分析后3组间差异均无统计学意义(表3)。

妊娠期及分娩期并发症 3组间前置胎盘、胎盘早剥、妊娠高血压综合征、妊娠期糖尿病、胎膜早破、产后出血等妊娠期及分娩期并发症的发生率差异均无统计学意义(表2)。与B组相比,Logistic回归分析显示3组间妊娠期及分娩期并发症发生率差异无统计学意义(表3)。

表2 3组新生儿结局、妊娠期及分娩期并发症比较

Tab 2 Comparison of neonatal outcomes and complications during pregnancy and delivery in the 3 groups

Parameters	Group A (n=160)	Group B (n=1 348)	Group C (n=337)	P
Gestational age (wk)	38.99 ± 1.48	38.98 ± 1.47	39.10 ± 1.28	0.272
Year of birth				0.068
2016–2017	41 (25.6)	219 (16.3)	69 (20.5)	
2018–2019	80 (50.0)	780 (57.9)	179 (53.1)	
2020–2022	39 (24.4)	349 (25.8)	89 (26.4)	
Birth weight (g)	3 269.59 ± 497.70	3 288.91 ± 474.54	3 287.54 ± 444.90	0.774
Z-score	0.04 (−0.47, 0.72)	0.17 (−0.47, 0.84)	0.06 (−0.49, 0.76)	0.322
Term birth weight (≥37 wk)	3 345.71 ± 397.67	3 342.42 ± 417.60	3 322.981 ± 413.06	0.486
Preterm birth weight (<37 wk)	2 238.64 ± 585.22	2 503.67 ± 561.31	2 576.56 ± 477.28	0.148
Neonatal gender				0.309
Male	89 (55.6)	676 (50.1)	179 (53.0)	
Female	71 (44.4)	674 (49.9)	159 (47.0)	
Malformation rate	5 (3.1)	29 (2.1)	3 (0.9)	0.165
Preterm	11 (6.9)	86 (6.4)	16 (4.7)	0.492
Very low birth weight	2 (1.3)	4 (0.3)	1 (0.3)	0.170
Low birth weight	7 (4.4)	62 (4.6)	11 (3.3)	0.560
Macrosomia	14 (8.8)	87 (6.5)	22 (6.5)	0.542
Smal for gestational age	7 (4.4)	84 (6.23)	27 (8.0)	0.270
Large for gestational age	17 (10.6)	134 (9.9)	28 (8.3)	0.610
Placenta previa	2 (1.25)	38 (2.8)	10 (3.0)	0.580
Placenta abruption	0 (0)	5 (0.4)	2 (0.6)	0.806
Premature rupture of membrane	6 (3.8)	42 (3.1)	7 (2.1)	0.506
Eclampsia	3 (1.9)	40 (3.0)	6 (1.8)	0.445
Gestational diabetes	2 (1.3)	22 (1.6)	4 (1.2)	0.947
Oligohyframnios	5 (3.1)	38 (2.8)	11 (3.3)	0.868
Intrahepatic cholestasis of pregnancy	1 (0.6)	8 (0.6)	4 (1.2)	0.395
Postpartum hemorrhage	1 (0.6)	27 (2.0)	2 (0.6)	0.132
Obstetric complications	20 (12.5)	214 (15.9)	53 (15.7)	0.535

[$\bar{x} \pm s$, M(P₂₅,P₇₅) or n(%)]

表3 3组新生儿结局、妊娠期及分娩期并发症 Logistic 回归分析

Tab 3 Logistic regression analysis of neonatal outcomes and complications during pregnancy and delivery in the 3 groups

Neonatal outcomes	Group A vs. Group B				Group B vs. Group C				Group A vs. Group C			
	Unadjusted OR (95% CI)	P	Adjusted OR (95% CI)	P	Unadjusted OR (95% CI)	P	Adjusted OR (95% CI)	P	Unadjusted OR (95% CI)	P	Adjusted OR (95% CI)	P
Small for gestational age ^a	1.45 (0.71-3.51)	0.354	1.05 (0.92-1.20)	0.459	1.31 (0.82-2.03)	0.242	1.04 (0.95-1.15)	0.344	1.1 (0.99-1.24)	0.088	1.14 (0.98-1.30)	0.054
Large for gestational age ^a	0.93 (0.56-1.64)	0.785	0.95 (0.85-1.05)	0.314	0.82 (0.53-1.24)	0.361	0.94 (0.86-1.02)	0.147	0.97 (0.89-1.05)	0.422	0.96 (0.88-1.05)	0.389
Very low birth weight ^a	0.24 (0.05-1.71)	0.096	0.69 (0.42-1.14)	0.148	1.0 (0.05-6.79)	1.000	1.01 (0.62-1.53)	0.949	0.86 (0.59-1.19)	0.346	0.86 (0.59-1.18)	0.341
Low birth weight ^a	1.05 (0.51-2.57)	0.898	0.93 (0.80-1.08)	0.334	0.69 (0.35-1.29)	0.283	0.93 (0.82-1.05)	0.271	0.99 (0.88-1.14)	0.953	1.01 (0.88-1.16)	0.916
Macrosomia ^a	0.72 (0.41-1.35)	0.274	0.93 (0.82-1.06)	0.275	1.01 (0.61-1.61)	0.961	0.98 (0.89-1.08)	0.732	0.96 (0.87-1.06)	0.419	0.95 (0.86-1.05)	0.304
Obstetric complications ^b	1.32 (0.83-2.22)	0.266	0.64 (0.31-1.20)	0.198	0.99 (0.71-1.36)	0.947	1.00 (0.94-1.07)	0.968	1.07 (0.99-1.16)	0.109	1.08 (0.99-1.18)	0.079

^aAdjusted for maternal age, maternal BMI, neonatal gender and vanishing twins syndrome; ^bAdjusted for maternal age, maternal BMI, parity, smoking and vanishing twins syndrome.

讨 论

本研究发现移植日子宫内膜厚度 ≤ 8 mm组女方年龄高于其他两组,但差异无统计学意义,已有研究^[7,9]报道HCG日薄型子宫内膜与女方高龄、卵巢储备功能下降相关,我们的研究发现高龄女性子宫内膜偏薄,但差异无统计学意义。

Rombauts等^[14]发现与HCG日子宫内膜厚度 > 12 mm组相比,内膜厚度 < 9 mm组异位妊娠的发生风险增加了4倍;本研究发现与移植日子宫内膜厚度 ≥ 14 mm组相比,内膜厚度 ≤ 8 mm组异位妊娠的发生率增加将近2倍,差异有统计学意义,两者结果一致。

Oron等^[15]分析了864例新鲜周期移植单胎妊娠者HCG日子宫内膜厚度与新生儿出生结局的关系,发现内膜厚度 < 7.5 mm组新生儿出生体重偏低,但差异无统计学意义。Guo等^[8]研究发现新鲜周期HCG日子宫内膜厚度 ≤ 7.5 mm组新生儿体重低于内膜厚度 > 12 mm组,但无差异统计学意义,然而内膜厚度 ≤ 7.5 mm组小于胎龄儿发生率显著增加。Rebeiro等^[16]研究发现新鲜周期HCG日子宫内膜厚度 < 7.0 mm组新生儿出生体重z-score值显著降低,然而新生儿出生体重与低出生体重儿发生风险与厚型子宫内膜组相比无显著差异。Zhang等^[17]

分析了6 181个单胎分娩的新生儿,发现子宫内厚度 < 8 mm者新生儿出生体重显著降低。目前关于HCG日子宫内膜厚度对新生儿结局的研究结论不一,这主要是由于不同的研究所采用的截断值不统一,移植胚胎包括卵裂期胚胎与囊胚期胚胎,已经有研究^[12]证实卵裂期胚胎移植小于胎龄儿的发生率显著高于囊胚期胚胎移植。本中心新鲜周期移植当天常规阴道超声检查测量子宫内厚度,如果内膜厚度 < 7 mm时则取消移植,因此采用移植日子宫内膜厚度7.5 mm做为截断值会导致 < 7.5 mm组病例数过少而出现选择偏倚,为了避免此问题,参考文献^[15-16,18-19],我们采用所有卵裂期胚胎移植日内膜厚度的第10位及第90位百分位数做为子宫内厚度的截断值。有研究^[20]发现子移植日子宫内膜厚度不影响新生儿出生结局,单因素Logistic回归分析证实移植日子宫内膜厚度不影响新生儿出生结局,已有研究发现女方高龄妊娠期及分娩期并发症发病率增加,孕前母体BMI影响胎儿及新生儿体重^[21],男性胎儿比女性胎儿出生体重偏重^[22],Vanishing Twin综合征新生儿出生体重偏低^[23]。因此,我们采用女方年龄、BMI、新生儿性别及Vanishing Twin综合征等协同因子进行Logistic多因素分析,多因素分析同样证实移植日子宫内膜厚度不影响新生儿出生结局。虽然分层分析发现子宫内厚度 ≤ 8 mm组早产儿出生体重偏低,但差

异无统计学意义,由于我中心移植当日内膜厚度 <7 mm 则取消移植,出现这一结果可能与未纳入内膜厚度 <7 mm 者有关,需要通过纳入这一部分患者后进一步研究薄型子宫内膜与新生儿出生体重的关系。我们研究只纳入卵裂期胚胎移植的单胎妊娠者,去除了囊胚期胚胎移植等混杂因素的影响。

子宫内膜厚度对妊娠期及分娩期并发症的影响目前研究结果不一。Rombauts等^[11]分析了4 537例辅助生殖技术单胎妊娠的产科结局,其中295例为新鲜周期,1 566例为冷冻胚胎移植周期,研究发现与子宫内膜厚度 <9 mm 者相比,子宫内膜厚度 >12 mm 者前置胎盘发生风险增加4倍,子宫内膜厚度9~12 mm 者前置胎盘发生风险增加2倍,然而基于5 251例冷冻胚胎移植单胎妊娠者的研究发现薄型子宫内膜妊娠者前置胎盘发生风险显著增加^[24]。Oron等^[15]研究发现薄型子宫内膜单胎妊娠者产科并发症的发生风险显著增加。研究^[25]发现多卵巢巢综合征患者冷冻胚胎移植周期薄型子宫内膜妊娠者胎膜早破的风险增加,但差异无统计学意义;前置胎盘、胎盘早剥、妊娠期糖尿病、产后出血及妊娠期高血压综合征等妊娠期及分娩期并发症的风险与厚型子宫内膜妊娠者相比无显著差异。这主要是与不同研究采用的截断值不同,同时纳入新鲜周期移植与冷冻胚胎移植,未区分卵裂期胚胎移植与囊胚期胚胎移植相关。本研究只纳入新鲜周期卵裂期胚胎移植单胎妊娠者,发现移植日子宫内膜厚度不影响妊娠期及分娩期并发症的发病风险。

本研究证实新鲜周期卵裂期胚胎移植日薄型子宫内膜患者异位妊娠发生风险增加,但不增加不良新生儿结局、妊娠期及分娩期并发症的发生风险,由此认为移植日子宫内膜厚度不影响新生儿健康状态。本研究样本量偏少,还需大样本多中心的研究来进一步验证。

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利益冲突声明 所有作者均声明不存在利益冲突。

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