

Intrauterine Injection of Human Chorionic Gonadotropin at the time of Blastocyst Transfer: A Systematic Review and Meta-analysis

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Introduction

Intrauterine instillation of hCG before embryo transfer (ET) has been proposed as an intervention to enhance implantation success rates.¹ A number of studies have been conducted evaluating the impact of this procedure; however, the findings are inconsistent and differ with respect to stage of embryo at transfer.²

Objective

To determine the impact of intrauterine installation (IU) of Human Chorionic Gonadotropin (hCG) at the time of blastocyst transfer on assisted reproductive technology (ART) outcomes.

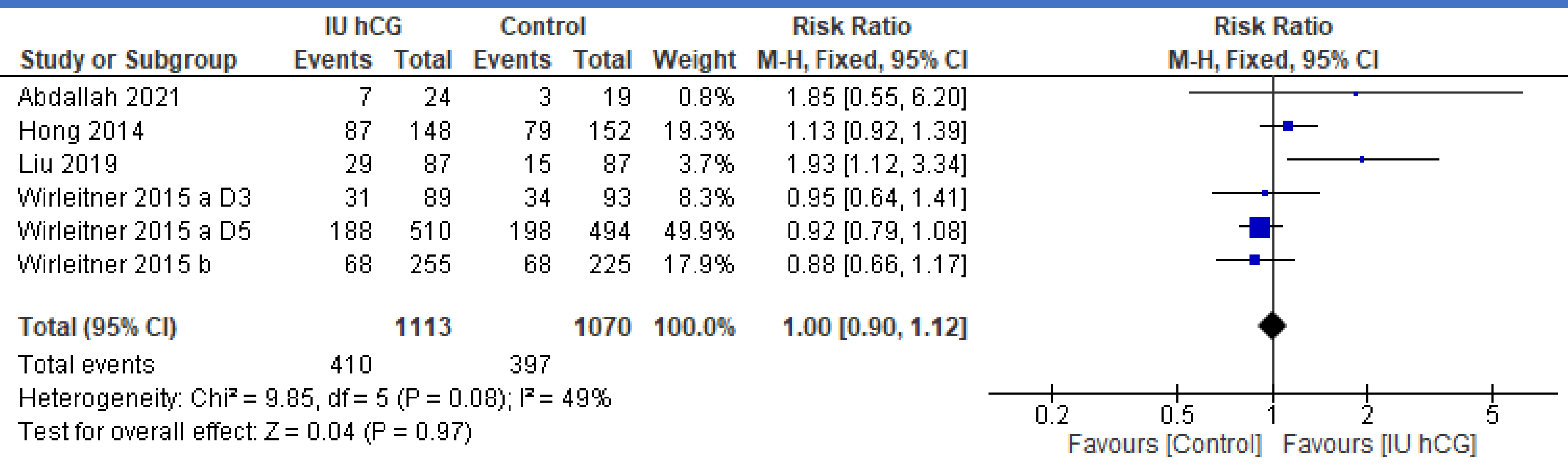
Methods

- A systematic literature search was performed using Medline, Embase, Cochrane Library and Google Scholar databases for relevant randomized controlled trials (RCTs) from inception until July 2022.
- Studies evaluating IU hCG instillation versus either a placebo procedure or no intervention, around the time of blastocyst-stage embryo transfer (ET).
- Studies were included if they were randomized clinical trials (RCTs).
- The primary outcome combined live birth rate (LBR) and ongoing pregnancy rate (OPR).
- The secondary outcomes were clinical pregnancy rate (CPR), implantation rate (IR) and miscarriage rate (MR).

Results

- 93 citations were identified, of which seven eligible RCTs were included.
- Within this meta-analysis a total of **2499 participants were included**, of which 1331 were assigned to an experimental group and 1168 were assigned to the control group.
- The overall effect of IU hCG instillation on combined **LBR** and **OPR** was not significant: risk ratio (RR) 1.00 (95% CI, 0.90 – 1.12).

Forest Plot: Combined Live Birth and Ongoing Pregnancy Rate following Blastocyst Transfer with IU hCG vs no IU hCG or placebo infusion



- Analysis of the incidence of **CPR** per ET using the fixed effects model demonstrated that the effect of IU hCG injection was not significant: RR 0.95 (95% CI, 0.85 – 1.06).
- The incidence of **MR** per ET using the fixed effects model demonstrated the effect of IU hCG was not significant: RR 0.97 (95% CI, 0.70 – 1.34). The effect of IU hCG injection on MR per clinical pregnancy was also not significant: RR 0.88 (95% CI, 0.62 – 1.23).
- Analysis of **IR** following blastocyst transfer, using the random effects model, showed no significant difference to the IR between the control and IU hCG intervention group: RR 1.08 (95% CI, 0.78 – 1.48).

Key Results Summary Table

	RR (95% CI)	I ²	p value
Live Birth Rate (LBR) and Ongoing Pregnancy Rate (OPR) combined	1.00 [0.90-1.12]	49%	0.97
Clinical Pregnancy Rate (CPR)	0.95 [0.85-1.06]	22%	0.33
Miscarriage rate(MR) per Embryo Transfer (ET)	0.97 [0.70-1.34]	0%	0.86
Miscarriage rate per Clinical Pregnancy (CP)	0.88 [0.62-1.23]	0%	0.45
Implanatation Rate (IR)	1.08 [0.78-1.48]	70%	0.65

Conclusion

- The meta-analysis we conducted focused solely on blastocyst-stage transfer.
- Despite the large number of cycles, the findings demonstrated that **there is insufficient evidence at present to support the use of IU hCG instillation prior to blastocyst-stage ET**.
- Analysis of the data suggests that the studies conducted have too much heterogeneity to identify whether a specific cohort may have a significant benefit, further studies are required.

References

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Declaration of interests

No competing interests. For more information, please email sughashini.murugesu@nhs.net