

# Is it time to close the book on endometrial scratching?

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## INTRODUCTION

Multiples studies have been conducted hoping to improve pregnancy rate in IUI cycles by improving ovarian stimulation, adding bed rest, providing luteal phase support, using platelet rich plasma or performing endometrial scratching (ES).

The role of ES, also known as endometrial injury, has been a debate for many years, with conflicting results between studies. While some studies showed up to 2.5 times better implantation rates, others showed no benefit on pregnancy rates. It is believed that the inflammation caused by endometrial injury can lead to the release of growth factors and cytokines that may improve embryo implantation. Another theory is that ES can lead to improved endometrial vascularisation, hence improving endometrial thickness and enhancing the uterine receptivity.

## AIM

This prospective randomized study aimed to explore the effect of endometrial scratching performed during the follicular phase of the IUI cycle, compared to no endometrial scratching, on pregnancy rates in IUI cycles.

## METHOD

- Design: Randomised controlled trial, May 2018 to March 2022, Clinique Ovo, Montreal
- Participants: Women aged 18-41 years with unexplained infertility or mild male factor,  $\geq 1$  patent tube, AFC  $\geq 5$ , normal/ mild abnormal (<10M motile sperms) sperm analysis
- Exclusion : PCOS, irregular cycles, stage 3-4 endometriosis, intrauterine procedure within 3 months, or patients with  $\geq 4$  follicles  $\geq 14$  mm at trigger. Patients using donor sperm had to have  $\geq 3$  prior failed inseminations to be eligible.
- Randomisation: Opaque envelope (group A= ES group, group B= control group)
- Intervention: ES during follicular phase between day 3 to 8 of stimulation or the ES group
- Follow-up: 3 consecutives months (with or without IUI)
- Outcomes:
  - Primary: clinical pregnancy rate at first trimester ultrasound
  - Secondary: Livebirth, ongoing pregnancy and miscarriage rates

Table 1. Participants baseline characteristics

	Scratching Group (n=189)	Control Group (n=192)	P-value
Age, years	34.1 $\pm$ 4.3	33.9 $\pm$ 4.0	0.48
BMI, kg/m <sup>2</sup>	25.4 $\pm$ 5.1	25.3 $\pm$ 5.7	0.57
FSH (IU/L)	7.1 $\pm$ 2.7	7.0 $\pm$ 2.8	0.79
E2 (pmol/L)	167.0 $\pm$ 97.0	165.3 $\pm$ 106.6	0.41
AMH (ng/ml)	3.9 $\pm$ 6.1	3.5 $\pm$ 3.6	0.94
AFC	20.8 $\pm$ 11.6	20.3 $\pm$ 11.3	0.58
Total Number of previous pregnancy			0.79
0	105 (55.6%)	117 (61.0%)	
1	50 (26.5%)	36 (18.8%)	
2	20 (10.6%)	16 (8.3%)	
3	8 (4.2%)	14 (7.3%)	
$\geq 4$	6 (3.2%)	9 (4.7%)	
IUIs over the 3 months	1.6 $\pm$ 0.8	1.9 $\pm$ 0.8	0.001

Data are presented as mean  $\pm$  SD or n (%).

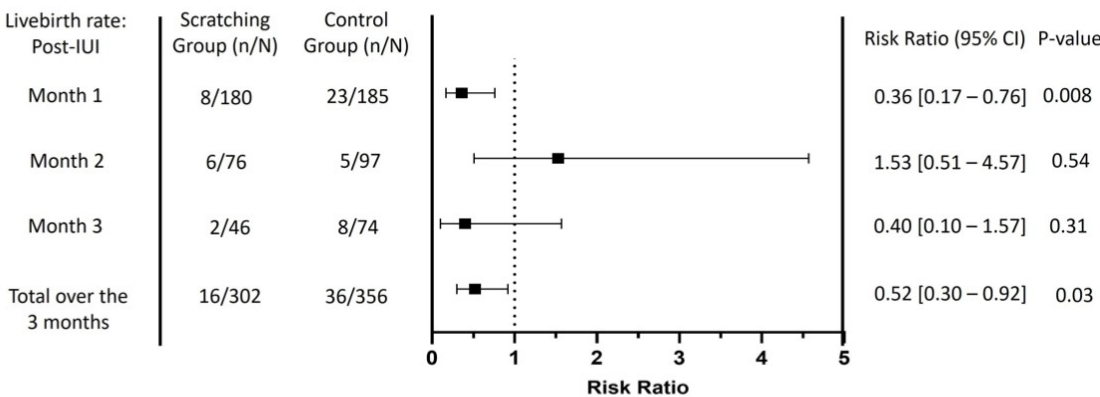


Figure 1. Forest plot comparing the livebirth rate following IUI for patients with and without scratching

n correspond to the number of livebirth and N, the number of IUI

## CONTACT INFORMATION

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Table 2. Patients' pregnancy outcomes post-IUI

	Scratching Group	Control Group	P-value
<b>Month 1</b>	n=180	n=185	
Biochemical pregnancy	16 (8.9%)	27 (14.6%)	0.10
Miscarriage	6 (37.5%)	4 (14.8%)	0.13
Ectopic pregnancy	1 (6.2%)	0 (0.0%)	0.37
Abortion	1 (6.2%)	0 (0.0%)	0.37
Livebirth	8 (50.0%)	23 (85.2%)	0.03
<b>Month 2</b>	n=76	n=97	
Biochemical pregnancy	8 (10.5%)	7 (7.2%)	0.56
Miscarriage	2 (25%)	2 (28.6%)	>0.99
Ectopic pregnancy	0 (0.0%)	0 (0.0%)	>0.99
Abortion	0 (0.0%)	0 (0.0%)	>0.99
Livebirth	6 (75.0%)	5 (71.4%)	>0.99
<b>Month 3</b>	n=46	n=74	
Biochemical pregnancy	8 (17.4%)	10 (13.5%)	0.60
Miscarriage	5 (62.5%)	2 (20%)	0.14
Ectopic pregnancy	1 (12.5%)	0 (0.0%)	0.44
Abortion	0 (0.0%)	0 (0.0%)	>0.99
Livebirth	2 (25.0%)	8 (80.0%)	0.05
<b>Total over of the 3 months</b>	n=302	n=356	
Biochemical pregnancy	32 (10.6%)	44 (12.4%)	0.54
Miscarriage	13 (40.6%)	8 (18.2%)	0.04
Ectopic pregnancy	2 (6.2%)	0 (0.0%)	0.17
Abortion	1 (3.1%)	0 (0.0%)	0.42
Livebirth	16 (50%)	36 (81.8%)	0.005

n corresponds to the number of IUIs performed. Biochemical pregnancy was defined as a positive serum  $\beta$ -hCG. Data are presented as n(%)

Table 3. Number of spontaneous pregnancies

	Scratching group n=189	Control group n=192	P-value
<b>Number of spontaneous pregnancy</b>			
Month 1	0/16 (0.0%)	1/28 (3.6%)	>0.99
Month 2	4/12 (33.3%)	1/8 (12.5%)	0.60
Month 3	4/12 (33.3%)	3/13 (23.1%)	0.67
Over the 3 months	8/40 (20.0%)	5/49 (10.2%)	0.23

## RESULTS

- A total of 394 participants were recruited for the study and were randomized into the control group (n=196) and the scratching group (n=198). After exclusions, 189 remained in the scratching group and 192 in the control group.
- Analysis of live birth following IUI showed that in the first cycle, the odds of live birth were significantly higher in the control group (OR 0.36, 95% CI 0.17–0.76, p = 0.008). In the second and third cycles (p = 0.54 and p = 0.31, respectively), livebirth rates were not significantly affected by endometrial scratching.  
Across the three cycles following ES, the risk ratio for live birth was 0.52 (95% CI: 0.30–0.92), indicating a significantly lower livebirth rate in the scratching group compared with the control group (p = 0.03).
- During the first month, miscarriage rate were higher in the scratching group (37.5%) compared to the control group (14.8%) (p = 0.13). Conversely, the livebirth rate was significantly higher in the control group than in the scratching group (over 85.0% vs. 50.0%), with a p-value of 0.03  
At the 2<sup>nd</sup> and 3<sup>rd</sup> month, miscarriage and livebirth rate were not significantly different between the two groups (p: NS)  
Over the 3-month period, the miscarriage rate was significantly lower in the control group (18.2 vs 40.6%, p=0.04), while the livebirth rate was significantly higher (81.8% vs 50.0%, p=0.005).
- There was a trend toward a higher rate of spontaneous pregnancies in the scratching group compared with the control group, but the differences were not statistically significant.

## CONCLUSIONS

In conclusion, our study demonstrated that endometrial scratching does not increase pregnancy rates in our population on the other hand that it might have negative impact on pregnancy outcomes, since it was shown to decrease live birth rates, especially in the month in which the endometrial scratching was performed. Moreover, since the procedure carries extra cost and could be painful, we suggest that endometrial scratching must not be routinely employed prior to IUI cycles.