

Does Endometrial Thickness Always Predict the Pregnancy in Intrauterine Insemination Programme ?

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Summary

Earlier reports observed a greater mean endometrial thickness in conception cycles compared with non-conception cycles. Recent studies have failed to confirm this. In this retrospective analysis done at Manipal Assisted Reproduction centre (MARC), Department of Obstetrics and Gynaecology, K.M.C. Manipal, the correlation between greater mean endometrial thickness and conception was evaluated. The mean endometrial thickness in conception cycle and in a cycle prior to this were observed in 53 women who conceived with ovulation induction and IUI. The mean endometrial thickness in conception cycle was 8.02 ± 1.80 mm and that in non-conception cycle was 7.36 ± 1.66 mm. The standard error of difference between the means of two groups was not significant. Further, the endometrial thickness of more than 7 mm was seen in 79% women in conception and 67% in nonconception cycles. It was interesting to note that in 21% of conception cycles, endometrial thickness was less than 7 mm. These findings suggest that the greater mean endometrial thickness is not always accompanied by conception.

Introduction

Technological advances such as transvaginal sonography have improved our ability to monitor folliculogenesis and endometrial thickness in response to ovulation induction therapy. Despite these advances most treatment cycles do not result in pregnancy. One of the explanation is that follicular development and ovulation occur dyssynchronous with maturation of endometrium and failure of proper implantation.

Early reports observed a greater mean endometrial thickness in conception cycles as compared with non-conception cycles (Shoham et al, 1991; Gonen et al 1989). Recent studies have failed to confirm this (Serafini et al, 1994; Coulam et al 1994). Other

investigations have focussed on defining a critical threshold of endometrial thickness below which pregnancy was unlikely to occur under any circumstances (Dickey et al, 1993; Karlstorm et al, 1992). We evaluated the ability of periovulatory mean endometrial thickness, assessed by transvaginal sonography, to predict the conception in patients with ovulation induction and intrauterine insemination (IUI).

Objectives

1. To find the correlation between greater endometrial thickness and prediction of pregnancy.
2. Comparison of endometrial thickness in conception cycle with the immediate previous non-conception cycle.

Materials and methods

In this retrospective analysis, 53 infertile women undergoing infertility treatment at Manipal Assisted Reproduction Centre, Manipal were recruited. All these women conceived following induction of ovulation with clomiphene citrate (CC) plus human menopausal gonadotropin (hMG) and intrauterine insemination (IUI). The endometrial thickness was analysed in their conceptional cycle and a cycle prior to that (non-conceptional cycle). Monitoring was done with transvaginal ultrasound (TVS) for endometrial thickness and ovarian response from Day 11 of the cycle. The maximum endometrial thickness was measured in the central longitudinal axis from the junction of the stratum basale and the inner myometrium on the anterior side of the endometrium to the same plane on the posterior side of the endometrium. The response to ovulation induction was considered good with the periovulatory endometrial thickness of 7 mm or more and leading follicular size of 16 mm or more.

Observations and analysis

In conception cycles, the endometrial thickness of more than 7 mm was observed in 42 (79%) women while 11 (21%) women had endometrial thickness of less than 7 mm. The endometrial thickness, in non-conception cycles, was more than 7 mm in 36 (67%) women and remaining 17 (33%) women had it less than 7 mm. It was interesting to note that some women conceived even with the endometrial thickness of less than 7 mm. The difference in these two groups was not significant ($p=0.1862$) (Table I).

Table I
Endometrial thickness in conception and non-conception cycles

Endometrial Thickness	Conception (n=53)	Non-conception (n=53)
≥ 7 mm	42 (79%)	36 (67%)
< 7 mm	11 (21%)	17 (33%)

$p=0.18262$

Table II
Leading follicle size in conception and non-conception cycles

Leading Follicle size	Conception (n=53)	Non-conception (n=53)
≥ 16 mm	53 (100%)	40 (75%)
< 16 mm	00	13 (25%)

$p=0.000184$

In current study, all 53 (100%) patients had leading follicle of 16mm or more in conception cycles. While in non-conceptional cycles, only 40 (75%) women had leading follicles of 16 mm or more while remaining 13 (25%) had smaller (<16 mm) leading follicle. The difference in conception and non-conception groups was significant ($p=0.00011$) (Table II).

The mean endometrial thickness in conceptional cycles was 8.02 ± 1.80 mm and that in non-conceptional cycle was 7.36 ± 1.66 mm. The standard error of difference between the means of two groups was not significant ($SE d = 0.67$). So, the mean endometrial thickness in conceptional cycles was not significantly different from that in non-conceptional cycle (Table III).

Table III
Mean endometrial thickness in conception and non-conception cycles

	Conception cycle (n=53)	Non-conception cycle (n=53)
Mean endometrial thickness	8.02 ± 1.8 mm	7.36 ± 1.66 mm

$SE (d) = 0.67$

Discussion

To achieve conception in infertile women undergoing ovulation induction and intrauterine insemination, the folliculogenesis and endometrial growth play important roles. The decision to trigger ovulation is made when the clinician judges that the endometrial and follicular responses are obtained adequately. This appropriate timing may tilt the scales in favour of pregnancy for that particular cycle.

It has been shown that endometrial thickness increases to maximum values around the ovulation and shows a positive correlation with serum oestradiol concentration (Hackeloer and Sallam 1983). Our results show that the good endometrial thickness of more than 7 mm was associated with conception in 79% women. However, in conception cycles, in 21% women it was less than 7.0 mm.

Comparison of the mean endometrial thickness in current study with that in other studies, showed mixed pattern of correlation between endometrial thickness and conception. The mean endometrial thickness in conceptional and non-conceptional cycles, respectively, was 15.0 ± 0.3 mm & 10.0 ± 0.4 mm (Serafini et al, 1994), 10.6 ± 2.9 mm & 10.0 ± 2.7 mm (Coulam et al, 1994), 11.6 ± 2.1 mm & 10.0 ± 2.5 mm (Shoham et al, 1991), and 8.02

$7.15 \text{ mm} \pm 1.36$ & $7.36 \pm 1.66 \text{ mm}$ (Current study) (Table IV).

Table IV
Comparison of mean endometrial thickness in conception and non-conception cycles.

Author	Conception	Non-conception
Coulam et al.	$10.6 \pm 2.9 \text{ mm}$	$10.0 \pm 2.7 \text{ mm}$
Serafini et al.	$11.0 \pm 0.3 \text{ mm}$	$10.0 \pm 0.4 \text{ mm}$
Shoham et al.	$11.6 \pm 2.1 \text{ mm}$	$10.0 \pm 2.5 \text{ mm}$
Current study	$8.02 \pm 1.8 \text{ mm}$	$7.36 \pm 1.66 \text{ mm}$

Early reports observed a greater mean endometrial thickness in conception cycles as compared with non-conception cycles (Dickey et al, 1993, Gonen et al, 1989, & Shoham et al, 1991). Our results failed to confirm this as the difference between the mean endometrial thickness in these two groups was not statistically significant as also observed by other authors in recent published literature (Coulam et al, 1994 & Serafini et al, 1991).

Hence, in our opinion, though conceptions are accompanied with greater endometrial thickness, latter cannot predict conception.

Reference

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