



Middle East Fertility Society
Middle East Fertility Society Journal

www.mefsjournal.org
 www.sciencedirect.com



REVIEW

Modern management of thin lining

Youssef Mouhayar^a, Fady I. Sharara^{b,c,*}

^a Dept of OB/GYN, University of Miami/Jackson Memorial Hospital, Miami, FL, United States

^b Virginia Center for Reproductive Medicine, Reston, VA, United States

^c Dept of OB/GYN, George Washington University, Washington, DC, United States

Received 31 May 2016; revised 23 June 2016; accepted 4 September 2016

KEYWORDS

Thin endometrium;
 Endometrial thickness;
 Endometrial pattern;
 Pregnancy rates;
 G-CSF;
 Stem cell therapy

Abstract Objective: To define “thin” endometrium in fertility treatment, and to critically explore the available treatment options.

Design: A review of the scientific literature.

Setting: N/A.

Methods: An electronic literature search pertaining to patients with “thin” endometrium undergoing fertility treatment was performed through April 2016.

Results: Adequate endometrial growth is an integral step in endometrial receptivity and embryo implantation. Whether idiopathic or resulting from an underlying pathology, a thin endometrium of <7 mm is linked to a lower probability of pregnancy; however, no reported thickness excludes the occurrence of pregnancy. Several treatment modalities have been studied and include extended estrogen, gonadotropin therapy, low-dose hCG, tamoxifen, pentoxifylline, tocopherol, l-arginine, low-dose aspirin, vaginal sildenafil, acupuncture and neuromuscular electric stimulation, intrauterine G-CSF, and stem cell therapy. All treatment modalities except vaginal sildenafil, intrauterine GCF, and stem cell therapy were inconsistent in showing significant improvement in pregnancy rates. Early results of stem cell therapy trials seem promising.

Conclusions: EMT <7 mm is associated with lower probability of pregnancy in ART. Vaginal sildenafil appears to be a reasonable first line therapy option, and G-CSF appears to be a potential second option, while stem cell therapy seems to be a promising new treatment modality.

© 2016 Middle East Fertility Society. Production and hosting by Elsevier B.V. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

* Corresponding author at: Virginia Center for Reproductive Medicine, 11150 Sunset Hills Rd, Suite 100, Reston, VA, United States.

E-mail address: fsharara@vcrmed.com (F.I. Sharara).

Peer review under responsibility of Middle East Fertility Society.



Production and hosting by Elsevier

<http://dx.doi.org/10.1016/j.mefs.2016.09.001>

1110-5690 © 2016 Middle East Fertility Society. Production and hosting by Elsevier B.V.

This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

Please cite this article in press as: Mouhayar Y, Sharara FI. Modern management of thin lining, Middle East Fertil Soc J (2016), <http://dx.doi.org/10.1016/j.mefs.2016.09.001>

Contents

1. Introduction	00
2. Materials and methods	00
3. Results	00
3.1. Hormonal adjustment	00
3.2. Pentoxifylline and tocopherol	00
3.3. Low-dose aspirin	00
3.4. Acupuncture, neuromuscular electric stimulation and electro-acupuncture	00
3.5. Vaginal sildenafil	00
3.6. Granulocyte colony-stimulating factor (G-CSF)	00
3.7. Stem cell therapy	00
4. Discussion	00
Conflict of interest	00
References	00

1. Introduction

Embryo implantation is a very delicate and well-orchestrated process that is governed by the interaction between several maternal and embryonic factors, ultimately resulting in adherence of the blastocyst to the endometrium (1–5). For a short period of time during the normal menstrual cycle, the endometrium represents the fertile “soil” for the implanting embryo (6). The human endometrium undergoes complex changes, in response to circulating estrogen and progesterone, which culminate at the mid-luteal phase of the menstrual cycle when it becomes suitable to host the blastocyst (7–9). These changes occur at the morphological, biochemical, and molecular levels; any faux pas may result in failed implantation (10–13). Identifying a receptive endometrium is essential; however, an ideal method that can reliably predict endometrial receptivity has yet to be determined. In clinical practice, high-resolution ultrasonography is routinely used to monitor follicular development and endometrial responsiveness during controlled ovarian stimulation. Several ultrasound markers, such as endometrial thickness (EMT), pattern, blood flow impedance, and uterine volume have been evaluated for their predictive role of endometrial receptivity; however, they had low specificity and positive predictive value for detecting a receptive endometrium (14,15). Endometrial patterns, such as a triple-layer endometrium on day of human chorionic gonadotropin (hCG) trigger or oocyte retrieval and embryo transfer might be a better predictor of implantation than endometrial thickness (16–25). A certain endometrial development however, is an integral part of a receptive endometrium. Despite that a minimal endometrial thickness of 6 mm has been reported to be essential for achieving implantation in assisted reproductive technologies (ART), successful pregnancies were documented with a minimum EMT of 4 mm (26–29). In fact and up to this date, there is no consensus on a cutoff value of an EMT below which implantation rates even decline in ART. Using receiver operating characteristics (ROC) area under the curve, a cutoff limit of endometrial thickness (on day of hCG trigger) above which implantation could be predicted was not detected by three reports, whereas two studies reported a threshold thickness of 8 mm (30–34). While several reports showed that endometrial thickness has a predictive value for successful pregnancies in ART, others have demonstrated the opposite

(18,22,35–58). Moreover, most of the reports used a cutoff EMT of 7 mm while others used 6 mm, 8 mm, 9 mm, or 10 mm (18,32–34,38,40,44,46–52,56–60).

Several mechanisms have been proposed to explain the underlying pathophysiology of thin endometrium. Intrauterine adhesions, ovarian stimulation with clomiphene citrate (CC), as well as prolonged use of progesterone, or combined oral contraceptive pills have been associated with thin endometrium (61–63). Vascular epithelial growth factor (VEGF), which plays a critical role in angiogenesis, appears to be an important factor in the pathophysiology of thin endometrium. Adequate endometrial development, which is hormonally mediated, is highly dependent on adequate blood supply. Miwa et al. elegantly described that with increased impedance across the radial uterine arteries, there is resultant decrease in VEGF expression and subsequent poor vascular development, resulting in thin endometrium (64).

In 2008, Senturk et al. reviewed thin endometrium in ART and the available treatment modalities (extended estrogen administration, vaginal sildenafil, vitamin E, pentoxifylline, and luteal phase GnRH-a supplementation), and concluded that these were ineffective (65). More recently, Lebovitz et al. concluded that the treatment of “thin” endometrium remains a challenge, with only minor improvements achieved with the currently available treatment modalities (66). A recent systematic review and meta-analysis of 10,724 cases showed that EMT as an independent variable is not predictive for the occurrence of pregnancy (67). This meta-analysis however, found that the most commonly reported cutoff of 7 mm occurred in only 2.4% of the cases (260/10,724), and this cutoff was associated with a significant drop in the probability of pregnancy (67). We have elected to review this topic as new treatment modalities emerge. Here we provide a more thorough review of the available literature to date, aiming to define “thin” endometrium in infertile patients, and to critically analyze the proposed treatment modalities.

2. Materials and methods

We performed a review of the literature on thin endometrium, its pathophysiology, and treatment. Abstracts, case reports, original, and review articles were considered. A computer-based systematic literature review was performed through

Download English Version:

<https://daneshyari.com/en/article/8783319>

Download Persian Version:

<https://daneshyari.com/article/8783319>

[Daneshyari.com](https://daneshyari.com)