

Research Article

The Role of Endometrial Scratching in Couples with Unexplained Infertility Regarding Pregnancy Rate El-Minia Experience

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Abstract

Objectives: Endometrial injury is a simple, minimally invasive, low cost procedure that may enhance biochemical and molecular changes that increase pregnancy rates. **Methodology:** 100 patient of unexplained infertility recruited and divided into two groups for the study group (50) endometrial scratching done in preovulatory period after controlled ovarian stimulation by clomiphene citrate, then followed and compared to control group for 6 months to assess pregnancy rate. **Results:** Endometrial scratching increased pregnancy rate p value (0.028) and not affecting abortion rate. **Conclusion:** Endometrial scratching could be used in unexplained infertility patient before any complex intervention and further studies are needed **Key Words:** Endometrial, pregnancy rates, infertility

Introduction

. Unexplained infertility is a term that has been applied to as many as 30–40% of infertile couples (simur et al., 2009)⁽¹⁾. The potential causes of unexplained infertility have been described as disturbances in endocrinological balance, immunology, genetic and reproductive physiology (Pellicer et al., 1998)⁽²⁾

According to the American Society of Reproductive Medicine (ASRM, 1992)⁽³⁾ standard infertility evaluation includes a semen analysis, post-coital test, assessment of ovulation and a hysterosalpingogram and, if indicated, laparoscopy. However, the Practice Committee bulletin on unexplained infertility (ASRM, 2006)⁽⁴⁾ mentioned that the basic evaluation should provide evidence of ovulation, adequate sperm production and patency of Fallopian tubes

The ‘diagnosis’ of unexplained infertility is made when tubal patency (hystosalpingogram and/or laparoscopy), normal ovulatory function (basal body temperature, cervical mucus normal semen analysis are established

Endometrial injury is a simple, minimally invasive, low cost procedure that may boost biochemical and clinical pregnancy rates,

the endometrium is gently ‘scratched’ using the hystroscope or a thin catheter (a fine, flexible, sterile, plastic tube) which is passed through the cervix (Li 1 et al., 2011).⁽⁵⁾

Endometrial injury alters endometrial gene expression. In particular, it up-regulates the mucin-1 transmembrane, laminin a4, integrin a 6 (ITGa6), matrix metal oproteinase 1, bladder transmembrane, anal uroplakin IB and phospholipase A2 genes, all of which are thought to be involved in facilitating the preparation of the endometrium for embryo implantation via the regulation of cellular proliferation, differentiation and adhesion (Qin et al., 2003; Zhou et al., 2008; Kalma et al., 2009; Almog et al., 2010; Dekel et al., 2010; Dekel et al., 2012; Granot et al., 2012)^(6,7,8,9,10,11,12)

The aim of this study

To assess the role of endometrial injury (Scratching) on occurrence of pregnancy in women with unexplained infertility.

Patient and methods

A prospective case control Study was conducted in Minia Maternity University hospital from the period between the 1st of January 2015 to the 1st of January 2016

for evaluation 100 women from infertility clinic to evaluate the role of endometrial scratch in pregnancy rate in women with unexplained infertility Ethical permission was sought from a Local Research Ethic Committee, According to the hospital protocol. All patients consented for data retrieval for research purpose at time of admission after ensuring the confidentiality

Inclusion criteria:

Age: 20-35y

Unexplained infertility (1^{ry} & 2nd ry infertility):

- Normal hormonal profile of infertile woman.
- Normal hystrosalpingogram.
- Normal laparoscopy.
- Normal investigation of the cervical factor
- Fertile semen analysis (according to world health organization criteria 2015).

Exclusion criteria:

- Infertile semen analysis.
- Abnormal HSG.
- Abnormal laparoscopic findings.
- Disturbed hormonal profile.
- Evidence of cervical factor.
- Known genetic disorder
- Known autoimmune disease.

A total of 100 women with unexplained infertility aged 20-35 years old were randomly divided into two groups through closed envelope randomization

1- Study group (50 patients):

Induction of ovulation was done by clomophine citrate (selective estrogen modulator of triphenylethylene group, produced by (Sanafi Aventis company) from 3rd day of cycle till 7th day of cycle and HMG 75IU (MerionaL) produced by IBSA (Institute biochimique SA) given from 6th day of cycle till 8th of cycle once daily. folliculometry done regularly during induction of ovulation till dominant follicle reached 18_20mm in size.

Then endometrial injury performed in pre ovulatory day by a thin pipelle (a fine,

flexible, sterile, plastic tube) produced by Jiangsu Guard King Medical Equipment Co.

The procedure was carried out in pre-ovulatory day (known when dominant follicle reached 18-20 mm in diameter), usually, done around day 14-day of the cycle.

In the theatre, Patients put in a lithotomy position, sterilization was performed with the presence of good source of light, and the procedure was carried out using a thin pipelle tube as follow:

A cuscoe's speculum was inserted into the vagina in order to visualize the cervix.

Cervix was grasped by vollselum upwards backwards, and then pipelle tube passed through the cervix and uterine cavity, and then moved up and down to make a single induced scratch two times in the lining endometrium of posterior wall of uterus.

The procedure took approximately 15 minutes to complete.

It was uncomfortable or painful in some circumstances and that bleeding after the procedure happened in many cases. Post procedure antibiotics were given.

Couples were advised to practice timed sexual intercourse for next 6 months and couples in both groups were asked to phone a contact person whenever there was a missed period.

The patients followed up for six months for detecion of the biochemical pregnancy if occurred.

2- Control group (50 patients):

They received the same induction of ovulation as first group but without performing endometrial injury in preovulatory day.

We wait till time of period if missed period achieved serum pregnancy test done after one week of missed period.

All women followed for 6 months after treatment.

Comparative study was done for both groups and results presented in tables and statistically analyzed.

Analysis of data was done using SPSS (statistical program for social science version 12) as follows:

- Description of quantitative variables as mean, SD and range.
- Description of qualitative variables as number and percentage.
- Unpaired t-test was used to compare two groups as regard quantitative variable

in parametric data (SD<25% mean. Chi-square test was used to compare two groups as regard qualitative variable

Results

There is no statistical difference between both groups as regard sociodemographic criteria (table 1)

Table 1: shows Demographic data and base line characteristics of the patients.

	Without Endometrial Scratch (n=50)	With Endometrial Scratch (n=50)	P value
Age			
Range	(21-34)	(20-35)	0.092
Mean \pm SD	25.36 \pm 3.44	26.72 \pm 4.48	
Marriage duration			
Range	(2-9)	(2-10)	0.753
Mean \pm SD	4.38 \pm 1.93	4.26 \pm 1.87	
Previous marriage	0 (0%)	0 (0%)	-----
BMI			
Range	(19-27)	(18-30)	0.136
Mean \pm SD	21.52 \pm 2.38	22.34 \pm 3.03	

the pregnancy rate was significantly higher in study group as there were 10 cases (20%) got pregnant within 6 months follow up while in control group there were only 2 cases (4%) got pregnant within 6 months follow up (table 2)

Table 2: shows the Follow up of the cases for 6 month after treatment.

	Control group (n=50)	Study group (n=50)	P value
Pregnancy rate	2 (4%)	10 (20%)	0.028*
Duration of pregnancy after injury(month)			
Range	(0-1)	(0-4)	0.011*
Mean \pm SD	0.04 \pm 0.19	0.44 \pm 0.99	
Visible pulsation at 5ws by TVS	50 (100%)	50 (100%)	-----
Abortion rate in early pregnancy before completed 13ws	2 (4%)	4 (8%)	0.400

Timing of pregnancy was insignificantly different between both groups (Table 3)

Table 3: timing of occurrence of pregnancy at 2, 4, 6 months after treatment.

Time of pregnancy after scratching in month	Control group (n 50)	Study group (n 50)	P value
After 2 month	2 (4%)	6 (12%)	0.269
After 4 month	0 (0%)	4 (8%)	0.242
After 6 month	0 (0%)	0 (0%)	-----

Discussion

This is a prospective case control study where 100 unexplained infertility patients divided randomly into two groups, study and control groups, for both groups clomiphene citrate used as a method of induction of preovulatory endometrial scratching was done for the study group only

All patients followed up for 6 months to detect rate of pregnancy for both groups. Our results show increased pregnancy rate among endometrial scratching group at 20% while only 4% in the control group got pregnant which considered significantly different.

These results are similar to those obtained by Ebrahim et al., 2013⁽¹³⁾ who concluded that the pregnancy rate was significantly higher in the endometrial injury group compared to the control group [17/114 (14.9%) vs. 6/103 (5.8%) (OR: 2.83 95% CI: 1.07-7.49, p=0.03].

Also our results are similar to that of Maged et al., 2016⁽¹⁴⁾ who found that the cumulative PR was significantly higher in group S (39%) compared to group C (18.2%). The PR in group S was significantly higher compared to that in group C at the second and third trials.

Zouh et al.,⁽⁷⁾ who also investigated the possibility that local injury to the endometrium in COH cycle improves the incidence of embryo implantation in IVF-ET, ET and found that local injury to the endometrium during a COH cycle improved the rates of embryo implantation, clinical pregnancy, and live birth in ART.

However, our results against those obtained by Karimzade⁽¹⁵⁾ and colleagues, They evaluated the effect of local injury to the endometrium on the day of oocyte retrieval on implantation and pregnancy rates in assisted reproductive cycles. The results demonstrated that local injury to the endometrium on the day of oocyte retrieval Disrupted the receptive endometrium and had a negative impact on implantation in IVF cycles

As regard abortion rate no significant difference was found between the two groups concerning the abortion rate (p=0.4). These results are in agreement with Barash et al.,⁽¹⁶⁾ who found that pre-implantation endometrial scratching doubled the rate of getting pregnancy and not affecting the abortion rate.

The mechanisms by which the endometrial scratching could be beneficial for increased pregnancy rate is it might enhance endometrial decidualization and potentiate rapid growth of endometrial cells.

Also it enhances a massive secretion of different cytokines and growth factors which are beneficial for embryo implantation, Also, the last mechanism is synchronization of endometrial and embryo development. Mirkin et al.,⁽¹⁷⁾ reported that COH cycles resulted in different structural and functional changes in comparison to natural cycles, including histological advancement, pinopodes maturation advancement, and steroid receptor down-regulation

In conclusion, the results of the current study need to be confirmed by further studies on other populations.

Endometrial local injury could be considered as one of the treatment options for selected UI couples whose infertility most likely due to implantation failure.

This simple, easy, and cost effective procedure is worth considering in infertile couples especially in younger couples with shorter duration of infertility before complex treatments. This procedure may help reduce psychological tensions and high expenses imposed through such interventions

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