REMOVAL OF CERVICAL DISCHARGE BEFORE EMBRYO TRANSFER IN ICSI CYCLES
RANDOMIZED CLINICAL TRIAL

Thesis

Submitted for Partial Fulfillment of Master Degree in Obstetrics and Gynecology

By

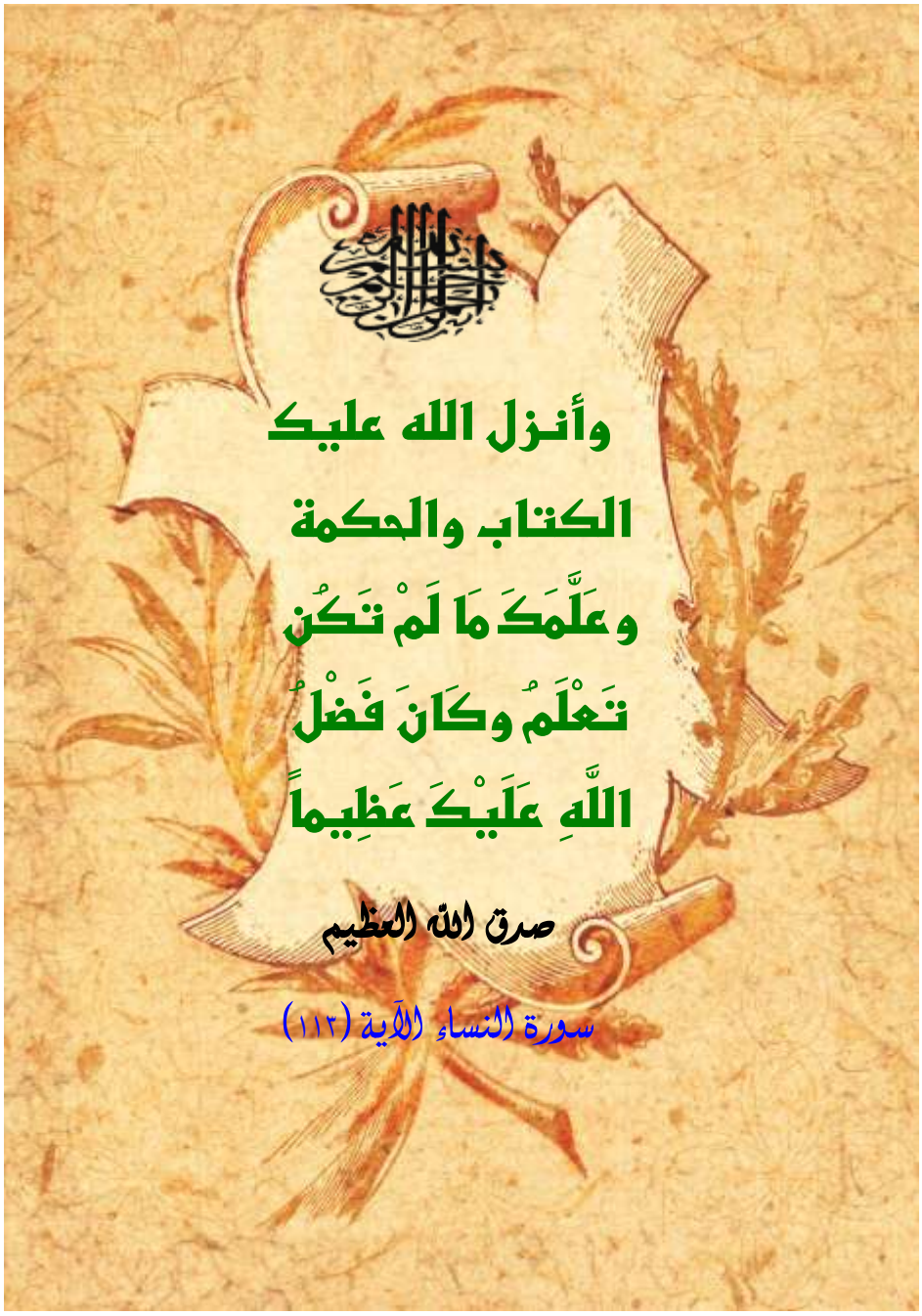
Gehan Ahmed Abd Elgawad Omran
M.B.,B.Ch,Cairo university(2011)
Resident of Obstetrics and Gynecology
In ministry of Defense (specialized Medical center)

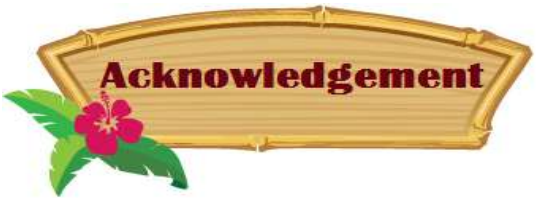
Supervised by

Prof. Hazem Amin Hassan El Zeneiny
Professor of Obstetrics and Gynecology,
Faculty of Medicine - Ain Shams University

Dr. Tarek Aly Raafat
Assistant Professor of Obstetrics and Gynecology,
Faculty of Medicine - Ain S hams University

Faculty of Medicine
Ain Shams University
2016


وأنزل الله عليك
الكتاب والحكمة
وعلَّمَكَ مَا لَمْ تَكُن
تَعْلَمُ وكَانَ فَضْلُ
اللَّهِ عَلَيْكَ عَظِيماً
صدق الله العظيم
سورة النساء الآية (١١٣)



First of all I thank **God** for all his giving throughout my life, I thank my *Family* for their continuous support through all the hard and difficult times.

I wish to express my deepest thanks to *Prof. Hazem Amin Hassan El Zeneiny*, Professor of Obstetrics and Gnecology, Faculty of Medicine - Ain Shams University who gave me the honor of working under his supervision.

I wish to express my deepest thanks and gratitude to *Dr. Tarek Aly Raafat*, Assistant Professor of Obstetrics and Gynecology, Faculty of Medicine - Ain S hams University for setting the guidelines which I followed throughout this thesis, revising it and all his valuable notes.

I wish to express my thanks to *Dr. Azza Awad Abd Elrazik*, Senior Embryology, Embyology lab director, Assisted reproduction Unit -Ain Shams University for guiding me all through this thesis to select the proper cases and revising all my work so I give her all my sincere thanks for her effort and time.

I wish to thank and appreciate my Patients who agree to participate in our study.

Gehan Ahmed Abd Elgawad Omran

List of Contents

List of Abbreviations

AH	Assisted Hatching
AMH	Anti-Müllerian hormone
ANOVA	A one-way analysis of variance
ART	Assisted reproductive technology
ASRM	American Society for Reproductive Medicine
COH	Controlled ovarian hyperstimulation
ECM	Extracellular matrix
ET	Embryo transfer
FSH	Follicle stimulating hormone
GnRh	Gonadotrophins releasing hormones
HB-EGF	Heparin-binding EGF-like growth factor
ICM	Inner cell mass
ICSI	Intracytoplasmic sperm injection
IL-11	Interleukin-11
IR	Implantation rate
IVF	Vitro fertilization
LH	Luteinizing hormone
LIF	Leukaemia inhibitory factor
MUC-1	Mucin 1
NK	Natural killer
PCR	Polymerase chain reaction
PGD	Pre-implantation genetic diagnosis

List of Abbreviations (Cont...)

PR	Pregnancy rate
PR	Progesterone receptor
P-value	Probability
2PN	Two pronuclei
SART	Society for assisted reproductive technology
SD	Standard deviation
SET	Single embryo transfer
SPSS	Statistical program for social science
SSS	Synthetic serum substitute
U/S	Ultrasound
x^2	Chi-square

List of Tables

List of Figures

Introduction

Infertility is a reproductive disorder defined clinically as the failure to achieve a clinical pregnancy following at least 12 months of unprotected sexual intercourse. It can be related to female factors (35% to 40% of couples), male factors (20× to 40% of couples), both (20% to 30% of couples), or remain unexplained. In women, it is commonly caused by ovulatory dysfunction, tubal obstructions, and/or endometriosis. In men, it is often a result of abnormalities in sperm production and function or sperm duct blockages ***(Macaldowie et al., 2010).***

Management includes fertility counselling, lifestyle modifications, medical/surgical treatment of underlying conditions, fertility medications, and assisted reproductive technologies (ARTs), such as intrauterine insemination (IUI) and in vitro fertilization (IVF)/intracytoplasmic sperm injection (ICSI) ***(Zegers et al., 2009).***

ICSI is a procedure where the embryologist directly injects a single sperm into the egg, causing fertilization. This may be helpful in cases where there is poor quality sperm from the male partner, or where there is an issue with the egg where fertilization can't occur due to changes in the membranes surrounding the egg.

The pregnancy rate following embryo transfer is generally dependent upon multiple factors including embryo quality,

endometrial receptivity and the technique of embryo transfer itself ***(Pandian et al., 2009).***

Embryo transfer (ET) is a crucial step for the success of assisted reproductive technology(ART). Therefore more stress, in recent trends among clinicians, is being placed for optimizing and stadardzing the embryo transfer protocol. Better knowledge of the preparation techniques preceding ET including the assesment of the cervico-uterine axis, the performance of mock transfer, and appropriate evaluation of the uterine cavity improves the process ***(Mains et al., 2010).***

Evaluating the cervico-uterine axis by both dummy embryo transfer and ultrasonography for evaluating the direction and length of the uterine cavity and cervical canal ***(Mansour et al., 1994).***

Performing a dummy or mock transfer. Many unexpected agents make entering the uterine cavity difficult, such as cervical polyps or fibroids, a pin-point external os, and cervical deformation due to congenital anomalies or resulting from a previous surgery, all of which can be discovered by a 'dummy' or 'mock' transfer ***(Mansour & Aboulghar, 2002).***

Appropriate evaluation of the uterine cavity by ultrasonography prior to the IVF cycle is essential for detecting uterine polyps as well as any fibroids that may be invading the

uterine cavity or deformities to the cervical canal ***(Mansour & Aboulghar, 2002).***

To ensure success, the crucial technique during embryo transfer is to deposit embryos in the uterine cavity in the least traumatic manner. Also the post transfer stage help improve pregnancy outcomes including

1) prevention of the expulsion of fluids and embryos from the cervix

2) the use of a fibrin sealant ***(Bar-Hava et al., 1999).***

3) bed rest after embryo transfer ***(Nabi et al., 1997).***

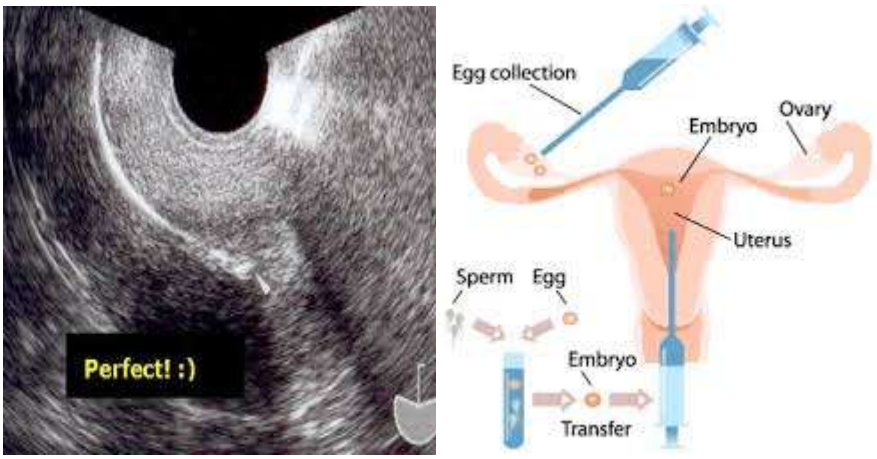


Fig. (1): Diagram showing embryo transfer process
(Mansour & Aboulghar, 2002).

Factors which appear to influence implantation rates are contamination of the catheter tip with cervical bacteria, stimulation of uterine contractions during the procedure, the type

of catheter, ultrasound guidance during the transfer, the position of the embryos in the uterine cavity and perhaps cervical mucus. The goal of trans-cervical embryo transfer is to non-traumatic deliver the embryo to an optimal intra uterine location for implantation ***(Goudas et al., 1998).***

The presence of mucus or blood on catheter tip can interfere with a successful ET and has been associated with lower pregnancy rates, higher incidence of retained embryos and higher rate of embryo expulsion into the cervix.The embryo(s) might adhere to the cervical mucus or blood around the catheter, which can then be expelled during the withdrawal of the catheter ***(Alvero et al., 2003).***

In addition Cervical canal mucus may cover the catheter tip and it can be a source of bacterial contamination of uterine cavity, resulting in lower implantation rate. Several studies have shown that cervical mucus aspiration can decrease infection rate with E. coli, Mycoplasma, Ureaplasma, Streptococcus B, D, Staphilococcus ***(Egbase et al., 1996).***

Several studies have shown a correlation between cervical mucus aspiration and increase pregnancy rates.Although some studies have reported the positive impact of removing cervical discharge on pregnancy rate, there are other studies that have not found such an effect.

Some researchers believe that, this is a time- consuming and that cervical mucus acts as a lubricant, the removal of which may increase the incidence of difficult ET. In addition, any cervical manipulation at the time of embryo transfer may cause unwarranted uterine contraction. According to some reports the presence of bacterial contamination of catheter tip during embryo transfer is evidently limited and does not significantly affect the cycle outcomes ***(Simsek et al., 2008).***

Fig. (2): Diagram showing suction of cervical discharge with insulin syringe ***(Alvero et al., 2003).***

Given the conflicting findings, this study was designed to evaluate the effect of suction of cervical discharge using insulin syringe on the rate of ICSI success.

Aim of the Work

Research hypothesis

In women undergoing ICSI, removal of cervical discharge before embryo transfer may improve pregnancy rate.

Research question

In women undergoing ICSI, does removal of cervical discharge before embryo transfer improve pregnancy rate?

The aim of the study is to asses whether removal of cervical discharge prior to embryo transfer in ICSI cycles improve pregnancy rate or not.