

Conference Paper

Comparative Study between Mock Embryo Transfer Prior to The Treatment Cycle and Real Embryo Transfer in In Vitro Fertilization

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Abstract

Introduction. A trial or mock embryo transfer (ET) may influence pregnancy rates and it performed prior to ET allows the clinician to assess the uterine cavity and the utero-cervical angle. The aim of this study is to compare the consistency of the type of ET in mock ET with real ET. **Material and Methods.** A retrospective comparative analysis of patients who underwent in vitro fertilization or ICSI cycle from January 2014 to December 2014 in Halim Fertility Center was done. The type of transfer was divided into two groups: 'easy' or 'difficult'. An easy ET was defined as a transfer that occurred without the use of manipulation or other instrumentation and difficult ET was considered when additional instrumentation was required. **Results.** From the study, 103 patients who underwent Mock-ET, we found 58 patients (56.3%) with easy ET and 45 patients (43.7%) with difficult ET, which with hard catheter ET in 17 patients (16.5%), with osfander assistance in 20 patients (19.4%) and with stylet in 8 patients (7.8%). 58 patients with Easy Mock ET group were entirely easy real ET (100%) and 45 patients with difficult Mock ET group also entirely were difficult real ET (100%). The Statistical analysis shows no significant difference between the mock ET and real ET groups ($p > 0,05$). In easy real ET, clinical pregnancy rates were 32.8% and in difficult real ET, clinical pregnancy rates were 26.7% with no significant difference between the groups ($p > 0,05$). **Conclusion.** Mock ET prior to the treatment cycle is consistent with real ET.

Keywords: Mock ET, Real ET, consistency, embryo transfer

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1. Introduction

Despite numerous developments in the field of assisted reproduction, the implantation rate of replaced embryos remains low. It is estimated that 85% of the embryos replaced during in vitro fertilization (IVF) or intracytoplasmic sperm injection (ICSI) fail to implant [1,2]. The exact cause of this low implantation rate is unknown, but may reside in the technique of embryo transfer (ET), the efficiency of endometrial receptivity, or the ability of the embryo to invade the endometrium properly [1,3,4]. A successful embryo transfer (ET) is the final step of the IVF process [3,5]. The failure of embryo transfer occurs due to lack of good quality embryos, the lack of receptivity

of the embryo or the transfer technique itself [5-7]. Several factors before and during embryo transfer play the role in determining the successful of embryo transfer procedures [8-10]. Some evidence was good in optimizing pregnancy and the number of implantation is a procedure in atraumatic, transabdominal ultrasound-guided embryo transfer, perform a dummy or mock ET before starting the cycle of IVF, secrete mucus or blood in the catheter ET, straightening angle utero-cervical, soft catheter and catheter echogenic, transfer the depth and experience of clinicians in performing embryo transfer [1,3,10,11]. A mock ET allows the physician to choose the appropriate transfer catheter and anticipate potential problems during ET. However, a mock transfer remote from the actual ET is done under different circumstances and may not be reflective of the actual conditions encountered on the day of ET [1,3,5]. Mansour reported the use of a mock ET before starting an IVF cycle in 1990 [12]. Sharif et al. (1995) proposed to circumvent this problem by performing a mock ET immediately before the actual ET [10]. There are several ways to overcome the mechanical problem in the embryo transfer technique. Some of them evaluate uterine cavity length and direction to find a difficulty that can not be anticipated and also choose the most suitable catheter for embryo transfer. Mock ET was introduced to minimize the problem of embryo transfer and improve the pregnancy rate [1,3,13,14]. Mock ET can be done before starting the IVF cycle, during the initial cycles of IVF, before oocytes retrieval or immediately before real embryo transfer. Mock ET was performed to assess the uterine cavity and utero-cervical angle [1,2]. Although Mock ET is expected to improve pregnancy rates, but Henne concluded that it does not guarantee that ET occurs easier because of the mobility of uterus [9]. The aim of this study is to compare the consistency of the type of ET in mock ET with real ET.

2. Materials and Methods

Retrospective analysis was conducted in patients with IVF or ICSI procedure starting from January 2014 until December 2014 at Halim Fertility Center, Medan, Indonesia. In each cycle, mock ET performed on the 10th day of menstrual cycle before starting IVF cycle. Mock ET performed with transabdominal ultrasound guidance with a full bladder in the lithotomy position. During mock ET the cervix was first inspected for unusual findings like

polyp, fibroid and erosions. After cleaning the cervix, a reesterilized ET Wallace catheter was gently inserted into the internal cervical os, while observing the catheter passage by ultrasonography. If the insertion of the catheter was done without difficulty or if slight manipulations of speculum or outer sheath of the catheter overcame the obstacle, the mock ET was graded as easy transfer. But if such maneuvers didn't work and a tenaculum was used or if there was a need to change to rigid catheters, the mock ET was graded as difficult transfer. In addition to grading of the transfer, the length and position of uterine cavity were recorded. The patients began their IVF treatment cycles with control ovarian stimulation and oocyte retrieval was performed, the ones that had embryo were scheduled for ET. In real ET patients, the transfer was done with ET Wallace catheter under ultrasound guidance. The other procedures were similar to

Characteristics	Mock ET
Female age (y)	35,14 ± 5,08
Body Mass Index (BMI) (kg/m ²)	24,84 ± 3,48
Duration of infertility (y)	7,30 ± 4,35
Type of Infertility	
Primary	86(83,5%)
Secondary	17(16,5%)
Etiology of Infertility	
Woman Factor	8(7,8%)
Male Factor	27(26,2%)
Mixed Factor	68(66,0%)
Total	103 (100%)

TABLE 1: Table Distribution of Respondents.

mock ET. Embryos were replaced about 1 cm below the uterine fundus. Category of easy and difficult embryo transfer was the same as in the category of mock ET. The outcome of each cycle (observation of beating fetal heart in a gestational sac of 6-7 weeks considered as positive) were recorded.

Processing and analyzing data were using SPSS 17 (Statistic Package for Social Science) software. The statistical analysis was performed using Chi-Square test.

3. Results

From January to December 2014, we included 103 patients in this study. The patient demographics, duration of infertility, etiology and type of infertility were depicted in Table 1. Table 1 showed that the mean (SD) age of woman was 35,14 ± 5,08 years old with body mass index (BMI) was 24,84 ± 3,48 kg/m². The mean (SD) duration of infertility was 7,30 ± 4,35 years. Table-1 also showed that majority of the type of infertility was primary as many as 86 patients (83,5%), then 17 patients (16,5%) with secondary infertility. Majority of the etiology infertility was mixed factor as many as 68 patients (66%) , then male factor in 27 patients (26,2%) and woman factor in 8 patients (7,8%).

Table 2 showed that majority type of embryo transfer was easy ET as many as 58 patients (56,3%) and difficult ET in 45 patients (43,7%). Majority of difficult ET was difficult ET with osfander assistance as many as 20 patients (19,4%) then 17 patients (16,5%) with hard catheter and 8 patients (7,8%) with stylet.

Table 3 showed that 58 patients with Easy Mock ET group were entirely easy real ET (100%) and 45 patients with difficult Mock ET group also entirely were difficult real ET (100%).

Table 4 showed that In easy real ET, clinical pregnancy rates were 32.8% and in difficult real ET, clinical pregnancy rates were 26.7% with no significant difference between the groups ($p = 0,504$).

Characteristics	Mock ET
Easy ET	58 (56,3%)
Difficult ET	45 (43,7%)
Difficult ET with hard catheter	17 (16,5%)
Difficult ET with osfander assistance	20 (19,4%)
Difficult ET with stylet	8 (7,8%)
Total	103 (100%)

TABLE 2: Table distribution of type embryo transfer.

ET	Easy Real ET		Difficult Real ET		Total
	N	%	N	%	
Easy Mock ET	58	56,3	0	0	58(56,3%)
Difficult Mock ET	0	0	45	43,7	45(43,7%)

TABLE 3: Table correlation between Mock ET and Real ET.

4. Discussion

Embryo transfer is the final and most critical step in IVF cycles. About 80% of patients undergoing IVF reach the embryo transfer stage, but only minority of them achieves pregnancy [4]. Improper placement of the embryo into the uterine cavity is another important factor that may lead to a desperate end to an elaborated process. Therefore, it is important to evaluate the uterine cavity before the IVF cycle in order to ensure the proper placement of the embryo. A trial or mock embryo transfer (ET) may influence pregnancy rates and it performed prior to ET allows the clinician to assess the uterine cavity and the utero-cervical angle. Knowledge of the uterine cavity depth is crucial at the time of embryo transfer. If the pre-cycle measured uterine cavity depth is not accurate and not realized at the time of embryo transfer, the success of the IVF cycle can be jeopardized. It seems that mock ET before the stimulation cycle enable us to determine the most suitable catheter and technique for transfer before beginning the cycle, so we will not confront a difficult or even impossible ET without having the required equipment and facilities [4,7]. From our study, there was no significant difference in clinical pregnancy rates between easy real ET and difficult real ET. We also found that Easy Mock ET group were entirely easy real ET and difficult Mock ET group also entirely were difficult real ET.

Moosavifar et al. (2006) stated that Mock ET before beginning of the treatment cycle is highly consistent with real ET. They also found that difference between pregnancy

Clinical Pregnancy Rate	Easy Real ET		Difficult Real ET		p value
	N	%	N	%	
Negatif	39	67,2%	33	73,3%	
Positif	19	32,8%	12	26,7%	0,504
Total	58	100%	45	100%	

TABLE 4: Clinical pregnancy rate between easy real ET and difficult real ET.

rate in easy and difficult real transfer was not statistically significant (37.2% versus 25.8%) [4]. Torre et al. (2010) stated that the introduction of a catheter up to the inner cervical os, as usually performed in mock ET, does not stimulate uterine contraction frequency, irrespective of catheter stiffness [16]. Ghaffari et al. (2013) found that ET should be smooth with easy passage of the transfer catheter. Since any uterine manipulation during ET adversely affects IVF results, therefore precaution should be taken to identify possibly difficult ET cases in advance [7]. Katariya et al. (2007) stated that the timing of mock ET does not affect IVF implantation or pregnancy rates, but there was a statistically significant difference in the uterine cavity length at the time of early mock ET when compared with mock ET performed at oocyte retrieval. They found that assessment of the uterine cavity length closer to the time of the actual ET may be more accurate and identify yet another potential variable associated with ET success [17].

5. Conclusion

Mock ET prior to the treatment cycle is consistent with real ET.

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There is no conflict of interests in this manuscript.

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