



## Pregnancy outcomes after assisted reproductive technology (Derna / Libya)

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<https://doi.org/10.37375/sjms.v3i2.3167>

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Keywords:

Assisted reproductive technology,  
Perinatal health, pregnancy  
outcomes, congenital anomalies..

### ABSTRACT

**Background:** Studies the outcome of pregnancy after assisted reproductive technologies (ART) pregnancies report heterogeneous results. Despite the success of ART to overcome infertility, concern is growing regarding both its safety and its effect on maternal and child health.

**objective:** The aim of this study is evaluation of pregnancy outcome (maternal and fetal) after ART.

**Methods:** A population-based birth prospective cross-section observational study was carried out among pregnant women by ART & expected to deliver in 2020 to 2022 at Al wahda hospital / Derna, maternal results included gravidity difficulties and weight gain during pregnancy.

**Results:** The study included 100 pregnant women after ART. Adjusted examines displayed that, more than 90% of pregnancies were multiple pregnancy. The OHSS was positive in 45.0%. The majority of the patients (97.0%) had anemia during pregnancy. The cervical cerclage done in 46.0% of the pregnant women.

**Conclusion:** the major bad effect on the child-health results is owing mostly to the increase occurrence of several pregnancies and not because of ART.

## Introduction

### INTRODUCTION

A rising number of babies are born as a result of assisted reproductive technology (ART) procedures globally due to advancements in technology and the proliferation of fertility services offering ART. Pregnancies using (ART) account for 1.5 to 5.9% of all births in high-income nations. Even while ART has been successful in treating infertility, worries over its safety and potential impact on the health of mothers and children are mounting.<sup>(1)</sup>

Due to the rising number of women seeking assisted reproductive technologies (ART), the prevalence of ART-conceived pregnancies in Irish maternity hospitals is rising. This is partly because women who are trying to conceive for the first time are getting older, but it's also because assisted reproductive

technology (ART) is becoming more and more successful.

Multiple pregnancies increased with the advent of ART and the rising number of deliveries brought on by ART. Preterm delivery and unfavorable obstetric and neonatal outcomes are highly incidence in numerous gravidities than in singleton gravidities.<sup>(3)</sup>

As a result, numerous regulatory organizations, such as the American Society for Reproductive Medicine (ASRM) in the USA and the Human Fertilization and Embryology Authority (HFEA) in the UK, called for a decrease in the amount of embryos transferred in order to lower the number of multiple pregnancies resulting from ART.<sup>(4)</sup>

For patients with an excellent prognosis—women under the ages of 35 and 37 who have more than one high-quality blastocyst available for transfer—elective single embryo transfer, or eSET—is recommended. The risk

of multiple pregnancy and its related difficulties is decreased in eSET cycles compared to double embryo transfer (DET) cycles, despite the lower live birth rates.<sup>(5)</sup>

In addition, several studies, including a Cochrane Database Systematic Review, have shown that when the overall live birth rates of a failed single embryo transfer (eSET) cycle followed by a subsequent frozen-thawed embryo transfer (FET) are compared to a double embryo transfer (DET) cycle, they are similar at 13%, with a significantly lower risk of multiple pregnancies.<sup>(6)</sup>

Maternal factors that increase the risk of stillbirth also independently increase the danger of negative obstetric consequences. Advanced motherly age is related with reduced fertility and several adverse outcomes during pregnancy, as highlighted in a recent SOGC group report on delayed childbirth.

Inquire about appears weight disables ripeness, in spite of the fact that whether this impact is essentially ovarian or endometrial is disputable. Corpulence is additionally freely related to unfavorable obstetrical results, numerous of them comparative to those related with progressing motherly age and covering with individuals related through AHR .

It has too been proposed that the more awful wellbeing in newborn children deliver is owing chiefly to the advanced hazard rate of different pregnancies and not related to Craftsmanship strategies. On the full, most of past gauges of potential antagonistic wellbeing results among Craftsmanship pregnancies have been based in thinks about from high-income nations. As distant as we are mindful, none ponder on the impact of Craftsmanship on maternal-child wellbeing have been showed in moo and-middle wage nations like as Brazil. Moreover, numerous earlier thinks about fizzled to control for maternal age and other important possible confounders as pregnancy and equality past. It remnants a test to fruitlessness inquire about.<sup>(9)</sup>

**THE AIM OF STUDY:**

Evaluation of pregnancy outcome (maternal and fetal) after ART.

**PATIENTS AND METHOD**

**Patients:**

Target for study are 100 pregnant women after ART at Al-Wahda hospital and outpatient clinics.

**Study Design**

The study will be prospective cross-sectional observational.

**Inclusion criterias**

- Age 18-40
- Sub fertile couple.
- No history for any medical diseases
- No Cervical incompetent

**Exclusion criteria**

- Extreme age less than 18 or more than 40
- Familial history for genetic abnormality or multiple pregnancy,
- History of medical diseases.

**Method:**

**Data collection**

Data were collected using questionnaire to gather sociodemographic and other relevant history data and findings on physical examination. (Appendix A). The data will be collected by us and our colleagues during duties at Al-Wahda hospital and outpatient clinics in Derna. Comprehensive history taken age, duration of infertility, cause of infertility and type of ART. Full examination general obstetric &gynecological. Collect investigation CBC, Blood fasting sugar, RFT, LFT. U\R. α fetoprotein. USG, TAS and TVS to detect number growth of fetus and any congenital anomaly. Maternal complication; As PIH, PET, GDM,UTI & anemia. Fetal complication; as multiple pregnancy, IUGR, IUFD, Risk of abortion, Preterm labour, stillbirth, congenital anomaly

**Statistical analysis:**

Statistical analysis was achieved by using SPSS software, version 24.0 (SPSS, Inc., Chicago, IL). Univariate analysis was achieved to describe the most likely predictors of pregnancy. The Chi saure (X<sup>2</sup>) test was used to examine nominal variable quantity in the form of occurrence tables.

**RESULTS**

Table (1) shows that maternal age ranged from 18-45 with mean value 33.22±6.717 while age of husband ranged from 27-51 with mean value 39.01±5.902.Primary infertility cases were 61(61%) while secondary were 39(39%).Duration of infertility ranged from 2-13 with mean value 5.52±2.272. Regarding cause of infertility, female factors were 38(38%), male factors were 34(34%) and unexplained were 28(28%).Drug of induction were 99(99%), Tocolytic 88(88%), Cortison 48(48%) and Heparin 12(12%).Drug of

induction were 99(99%), Tocolytic 88(88%), Cortison 48(48%) and Heparin 12(12%).

**Table 1:** Distribution of the studied patients group regarding basic demographic and clinical data

	Number	Percent
<b>Maternal age</b>		
<30	30	30.0
30-40	52	52.0
>40	18	18.0
Range	18-45	
Mean±SD	33.22±6.717	
<b>Age of husband</b>		
<35	22	22.0
35-39	31	31.0
>45	47	47.0
Range	27-51	
Mean±SD	39.01±5.902	
<b>Type of infertility</b>		
Primary	61	61.0
Secondary	39	39.0
<b>Duration of infertility (years)</b>		
<3	6	6.0
3 – 5	58	58.0
>5	36	36.0
Range	2-13	
Mean±SD	5.52±2.272	
<b>Cause of infertility</b>		
Female factor	38	38.0
male factor	34	34.0
Unexplain	28	28.0
<b>Drugs</b>		
Heparin	12	12.0
Cortison	48	48.0
Tocolytic	88	88.0
Drugs of induction	99	99.0
<b>Type ART</b>		
ICSI	54	54.0
IUI	46	46.0

Table (2) shows that OHSS cases were 45(45%) while non-OHSS cases were 55(55%). Regarding Complication during pregnancy. Anemia complication was 97(97%) followed by UTI 83(83%), PIH 62(62%) GDM 25(25%),

preterm 4(4%). cervical cerclage done in 46(46%) while non-cervical cerclage cases were 54(54%).

**Table 2:** Distribution of the studied patients group regarding presence of OHSS, complication during pregnancy and presence of cervical cerclage.

	Number	Percent
<b>OHSS</b>		
No	55	55.0
Yes	45	45.0
<b>Complication during pregnancy</b>		
GDM	25	25.0
Preterm	4	4.0
PIH	62	62.0
UTI	83	83.0
Anemia	97	97.0
<b>Cervical cerclage</b>		
No	54	54.0
Yes	46	46.0

Table (3) demonstrations that there was statistically significant association among kind of ART and cervical cerclage (P< 0.05), while there remained no statistically significant association among kind of ART with mode of delivery, time of delivery and postnatal complication (P> 0.05).

**Table 3:** Relation among kind of ART and final result parameters.

	ICSI		IUI		X <sup>2</sup> P
	No	%	No	%	
<b>Cervical Cerclage</b>					19.965 0.001*
No	19	35.2	35	76.1	
Yes	35	64.9	11	23.9	
<b>Mode of delivery</b>					0.256 0.413

Caesarean section	45	83.3	40	87.0	N.S.
Vaginal delivery	9	16.7	6	13.0	
<b>Time of delivery</b>					2.390 0.089
Preterm	33	61.1	21	45.7	N.S.
Term	21	38.9	25	54.3	
<b>Postnatal complication</b>					0.123 0.468
Free	46	85.2	38	82.6	N.S.
PPH	8	14.8	8	17.4	

**DISCUSSION**

The maternal age was 33.22±6.7, whereas the age of hasbund was 39.01±5.90. The larger part of the couples (61.0%) with primary infertility. The duration of infertility was 5.52±2.27 a long time, the females factor was 38.0%, male factor was 34.0%, and unexplained in 28.0%. 54.0% of women underwent ICSI and 46% of women IUI. The OHSS was positive in 45.0%. The majority of the patients (97.0%) had anemia during pregnancy. The cervical cerculage was performed in 46.0% of women. Caesarean section done in 85.0% and vaginal delivery in 15.0%. It was found that 46.0% of deliveries at full term whereas 54.0% was preterm. The post-natal complication was found in 16.0% as PPH.

The discoveries of a later review cohort ponder of IVF/ ICSI women in a Canadian centre advise there's a better predominance of newborn children with inherited cardiac disease considered by IVF/ICSI (1.1%) more the spontaneous pregnancy (0.40%) (P < 0.01).

The results of a new retrospective cohort manuscript of IVF/ ICSI women’s in a Canadian centre propose there is a higher occurrence of newborns with inherited cardiac faults in newborns considered by IVF/ICSI (1.1%) than in instinctively considered newborns (0.4%) (P < 0.01). A motherly BMI

of  $> 30 \text{ kg/m}^2$  was found to spread this prevalence of natal defects.<sup>(10)</sup>

A meta-analysis studying the manuscripts results from 46 different papers, carried on 124468 newborns considered with ART, related with spontaneously considered infants, displayed that the total adjusted RR for ART events versus spontaneous beginning was 1.36 (95% CI 1.26 to 1.48), with no difference seen among IVF and IVF/ICSI.<sup>154</sup> Davies et al.<sup>38</sup> study the frequency of birth flaws, counting births and terminations of gravidity, in women in South Australia experiencing IVF (with or without ICSI) with those of spontaneous pregnancies. Amongst the whole IVF cases ( $\pm$  ICSI), the OR for IVF  $\pm$  ICSI was 1.28 (95% CI 1.16 to 1.41).<sup>(11)</sup>

In this study there is significant relation between cervical cerclage and type of ART. While the type of ART show insignificant effect of mode of delivery, time of delivery and postnatal complication.<sup>(12)</sup>

Some manuscripts have stated that the ART pregnancies in comparison with those conceived naturally, whether singleton or multiple, have high risk of motherly morbidity and increase the change of pre-term delivery, low birth weight, birth morbidity, defects and perinatal death, on the other hand, other manuscripts showed that the final outcomes has no difference among ART and spontaneous conception.<sup>(13)</sup>

In a manuscripts with 223 twin pregnancies (84 conceived by IVF and 139 spontaneously considered) no important changes was found on gestational age at birth, weight of new natal, perinatal death and mortality, and degree of deformities. In our study any of the disapproving health-related motherly results (excluding multiple pregnancies and Caesarean sections) were extra occurrence among the ART group, and child

disapproving health-related consequences in the ART group was arbitrated by multiple pregnancy.<sup>(14)</sup>

Comparable to our results, manuscripts with greater sample sizes have established that women's who underwent ART were at amplified risk for numerous opposing gravidity results as compared to females who considered impulsively. These difficulties were credited in part to the comparatively higher multiple pregnancy frequency after ART.<sup>(15)</sup>

These results were reliable with a prospective cohort study, portentous that twin pregnancies are certainly an significant factor foremost to adverse results.<sup>(16)</sup>

## CONCLUSIONS

Among singleton pregnancies, assisted reproductive technology is related with enlarged morbidity of preterm birth, multiple pregnancy and low birth weight newborns, and ovulation induction is related with an enlarged morbidity of OHSS and ART owing to increase caesarean section. The explanations for the rise in adversative pregnancy results linked with ART singleton pregnancies are still undefined and permits further study.

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