

Effect of endometriosis on the IVF/ICSI success outcomes!

Authors: Dr.Laxmi Shingshetty^1, Dr.Annalisa Retto^2, Mr.Muhammad Akhtar^3

1;*Abeerdeen fertility centre*, 2;*Policlinico Universitario”G. Martino”,Messina,Sicilia* 3; *Manchester University NHS foundation trust*

Introduction

Endometriosis is defined as the presence of endometrial-like tissue outside the uterus, which induces a chronic, inflammatory reaction. (ESHRE 2022)(1) Endometriosis is known to affect women in reproductive age group with a significant impact on their fertility. As per ESHRE guidelines, the exact prevalence is unknown and is estimated approximately up to 2-10 %, however with a surge of up to a 50% in women with endometriosis. In order to enhance their chances of having a child, these women are more likely to seek assistance from the fertility units. With increasing number of couples seeking fertility treatments, it is essential to understand how these women respond to MAR(medically assisted Reproductive Technology) treatments and the impact of endometriosis on their success rate. Insight on the same would aid clinicians to counsel their patients appropriately to help them make an informed decision.

This study aims to estimate the effect of endometriosis on the chances of success at the IVF/ICSI treatments as compared to women who do not have endometriosis.

Methods

This is a retrospective observational study conducted at St. Mary’s Hospital, Manchester, UK which includes women who underwent IVF/ICSI cycles from January 2013 till December 2016 over a period of 4 years. A total of 4369 fresh IVF/ICSI cycles were conducted over this time period. Women were categorised according to the presence of endometriosis as a major contributory factor for infertility, endometriosis along with other factors for infertility like tubal pathology, anovulatory cycles, male factor etc and finally women without any evidence of endometriosis. Diagnosis of endometriosis was made based on the symptoms, ultrasound findings or laparoscopic findings. Total of 182 women had endometriosis in the range of minimal to mild disease, moderate and severe disease as per ASRM classification for endometriosis. 69 patients had minimal to mild endometriosis, 42 patients had moderate endometriosis and 71 patients had severe endometriosis.Women were compared according to the stages of endometriosis and the outcomes measured were live birth rate, miscarriage, biochemical pregnancy, failed fertilisation, poor response, duration of ovarian stimulation and the total gonadotrophin dose required for IVF/ICSI cycles.

Results

Women with endometriosis generally had poor success outcomes in terms number of oocytes retrieved (6.8 vs 9.7) and increased risk of failed fertilisation (9% vs 5.6%; p value 0.04) as compared to women with no disease. Those with moderate-severe disease were affected significantly as the live birth rate was much lower (13.1% vs 33.29%; p value- 0.000068) as compared to women with no endometriosis even after they have had excisional surgery .The live birth rates were comparable between women with minimal-mild endometriosis (34.5%) and women without endometriosis. (33.29%)These findings are similar to previous reported studies where the livebirth rate has been equivalent in minimal to mild endometriosis as compared to women without endometriosis and is lower in women with moderate to severe disease. In addition, the number of oocytes retrieved has been lower in women with moderate to severe endometriosis as compared to women with no disease or only minimal to mild condition.(2–4)The increase in failed fertilisation rate seen in moderate to severe endometriosis could be explained possibly by the effect of endometriosis on the oocyte quality such as increased spindle abnormalities, higher percentage of abnormal mitochondria and overall lower number of mitochondria’s as compared to women with no endometriosis.(5,6)

	Total cycles	Livebirth rate	Miscarriage	Biochemical pregnancy	Failed fertilisation	Number of oocytes retrieved	Number of days gonadotrophins received	lvf/icsi (male factor)
Endometriosis only	113	25/89 28.08%	4/89 4.4%	1/89	8/97 8.2%	6.8	11.39days	21/113 18.5%
Endometriosis with other	121	30/91 32.96%	2/91 2.1%	5/91	10/102 9.8%	8.19	11.62 days	68/121 56.1%
NO endometriosis	4161	1132/3430 33.29%	132/3430 3.8%	229/3430	206/3672 5.6%	9.7	11.34 days	2382/4161 57.2%

	No of patients needing surgery	Number of patients needing medical therapy	Needing both	Live birth rate	Biochemical pregnancy/misc	Failed fert
Minimal -mild endometriosis 69	16	1	3	19/55 34.5%	3	5/60 8.3%
Moderate endometriosis 42	16	0	9	4/31 12.9%	2	1/33 3%
Severe endometriosis 71	23	0	48	8/60 13.3%	3	4/64 6.25%

Conclusions

Endometriosis is a disease which has detrimental influence over the success rates of ART (Artificial Reproductive Technologies) cycles.(4) It further deteriorates the chances of conception with severity of the disease.(7) ASRM classification helps to classify women as per the disease condition. Early diagnosis and prompt initiation of treatment may benefit these women rather advising women to continue their efforts for natural conception for a period of 12 months as per the NICE guidance before starting investigations and management.

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