



Short Communication Article

How performing Single frozen blastocyst transfer might obviate the earlier anticipated problems in infertility related to Endometriosis-A short Communication

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Abstract

Earlier it had been believed that it is the oocyte quality that is compromised in endometriosis in addition to endometrial receptivity which was responsible for poor assisted reproductive technology (ART) outcomes in endometriosis-associated infertility with a lot of studies done to improve these factors. Recently however the group of Chapron, DeZiegler from France along with Bishop et al. from USA demonstrated that on performing euploid frozen blastocyst transfer (FBT) in endometriosis they observed parallel results as in male factor infertility and both groups showed that incidence of euploidy was equivalent to other causes of infertility, besides good pregnancy rates (PR),pregnancy losses, live birth rates(LBR), etc... Hence that way suggestions have been made that straight in vitro fertilization(IVF) be offered in patients with endometriosis with moderate to severe endometriosis and not offer fresh embryo transfer (ET) or intrauterine insemination(IUI)



in such cases even if tubes are patent in view of toxic environment in peritoneal contents to which oocytes and sperms get exposed to which obviates the endometrial receptivity problem as well if proper estradiol along with progesterone down-regulation done carefully in prior cycle. Even the group of Chapron having worked extensively on endometriosis further suggest that better avoid any cyst removal and one can prevent contamination with blood with careful needle placement.

Key Words; endometriosis; FBT; euploidy; PR; LBR

Earlier we have reviewed endometriosis in details as to its etiopathogenesis along with newer modes of treatment including stem cells where we discussed how oocyte quality might be disturbed in endometriosis along with endometrial receptivity due to which assisted reproductive technology (ART) results were compromised and things to be done to improve the same [1-6]. Endometriosis gets found in about 40% of infertile ladies. There are a lot of modes by which endometriosis results in infertility with none actually present in the clinical scenario usually seen. Additionally, infertility occurring secondary to endometriosis is not absolute, instead rather relative, as there are patients existing with spontaneous conception despite the existence of robust Endometriosis. In a review article team of DeZiegler, Chapron [7] detailed the Endometriosis associated factors as per the positioning of the Endometriosis lesions get expressed –like present in pelvic cavity, ovaries or uterus itself [7].

In the pelvic cavity, endometriosis-associated inflammation events result in toxic pelvic surroundings that has the probability of interfering with the chances of natural pregnancy. Oocytes in addition to sperms, that are bathing within the pelvic cavity fluid as well as when they come in contact with each other in the distal area of the fallopian tube, get exposure to these toxic actions that get modulated by the inflammatory events present within the pelvic cavity. This can result in changing sperm as well as oocytes quality along with the sperm as well as oocytes crosstalk or fertilization. From assisted reproductive technology (ART) experience we have gathered the knowledge that just a short period of sperms or embryos towards the toxic actions of a medium can change embryos in addition to changing their capacity to generate along with globally decrease the outcome of ART.

The ovarian actions of endometriosis, mainly cysts alias Endometriomas –change the reaction to ovarian stimulation primarily. It is well known that patients possessing Endometriosis have a tendency to produce lesser oocytes with greater cancellation rates secondary to an inadequate reaction to ovarian



stimulation (OS), as compared to age-matched patients with no endometriosis. Nevertheless, recently it has been documented that the ART results in women with as well as without Endometriomas are akin. Although the contamination of oocytes picked up with the fluid from Endometriomas would influence the results of ART. This side action nevertheless gets prevented, to the best capacity by putting the aspiration needle with caution avoiding the Endometrioma.

Lastly, endometriosis further impacts the uterus also, as well as interferes with the endometrial conversions taking place in the luteal phase of either natural or stimulated cycles. This problem gets initiated by the inflammatory events occurring in the eutopic endometrium. This results in resistance to the actions of Progesterone (P) that causes incomplete decidualization, as evaluated via Bruce Lessey & co-workers [8] in addition to other researchers. Nevertheless, these actions of endometriosis get overcome by ovarian suppression either by utilization of Combined Oral contraceptives (COC's) pill or gonadotropin-releasing hormone (GnRH)agonist.

Various published research has documented changes in the follicular physiology along with fluid amounts in women having endometriosis, with significantly escalated Oxidative stress(OS)products. This made Da Broi et al.[9],suspect probable changes in quality of oocytes in endometriosis,[9].In the case of in vivo models in mice both oocytes, as well as embryos,were changed along with bad implantation rates. These observations got utilized for claiming that the mode via which endometriosis changes fertility in women is a change in the quality of oocytes. Contradicting this Juneau et al.[10],found that in vivo studies euploidy rates were akin in endometriosis as well as age-matched controls[10]. Similar findings were seen by Bishop et al.[11],Agreeing with this a lot of published articles document assisted reproductive technology(ART) pregnancy rates(PR)in age-matched women with as well as without endometriosis.

Bishop et al.[11],performed a retrospective cohort study which was a multicentric private practice study with patients aged 24-44 yrs who underwent euploid frozen blastocyst transfer(FBT) from Jan 16-mar 2018 were studied.459 euploid frozen embryo transfer (FET) cycles in 328 separate patients were evaluated. No alteration in Clinical pregnancy, pregnancy loss, or live birth rates(LBR) in endometriosis patients in contrast to patients undergoing ART for evaluation of single gene transfer along with couples with isolated male factor infertility. Lowest aneuploidy rates were seen in preimplantation genetic testing(PGT) for monogenic disorders cohort as well as endometriosis patients had aneuploidy rates akin to that in male factor infertility patients. Thus concluding that it had not been clear if endometriosis influences IVF results primarily through oocyte quality or the endometrium. By regulation for quality of embryos by utilization of FET, they observed no variations in pregnancy results in endometriosis



patients in contrast to patients who had in vitro fertilization(IVF) for male factor infertility alone or non-infertile patients.

Bishop et al.[11],the revelation of akin euploidy rates in women with as well as without endometriosis, keeps the query of endometrial receptivity along with implantation rates open in these women with endometriosis. Bishop et al.[11], documented a seminal study where implantation rates of frozen euploid blastocysts in women presenting with endometriosis in contrast to controls influenced by male fertility in getting pre-implantation genotyping testing(PGT) for monogenic /single gene alterations.The results of these authors demonstrated similar implantation rates in women presenting with endometriosis, or male factor infertility(controls). This finding is of significance to get insight into the appropriate treatment of infertile women with endometriosis. Thus Bishop et al.[11], interpreted that endometrial receptivity is normal as long as while suppression of ovarian function with the utilization of estradiol(E2) as well as intramuscular(i/m) P caution is observed prior to embryo transfers (ET). Thus the actions of estradiol(E2), as well as i/m P treatment, are akin to the ones documented following the suppression of ovarian function with the utilization of COC or a GnRH agonist[12].

Conclusions

Thus, conclusions of normal euploidy rates in women with endometriosis in addition to now no changes in implantation rates of frozen euploid blastocysts [10,11] validate that ART remains the best therapy option and better avoid the concept of utilization of intrauterine insemination (IUI) for optimization of results. Despite endometriosis changes, natural conception rates resulting in infertility secondary to its negative actions which result from toxic pelvic cavity situations are overcome by shifting to ART, with postponed blastocyst transfers with the utilization of E2 as well as i/m P.Conversely, Nevertheless, therapies dependent on natural conception, like noticeably OS with as well as without intrauterine insemination(IUI) needs to be prevented. In the same way, ART with fresh ET should not be offered to endometriosis patients [12].

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