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P-785 Promising Reproductive Outcomes In Patients With Refractory Thin Endometrium After Autologous Bone Marrow Regenerative Cell Therapy (ABM-RCT) – A Case Series

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Study question: Does Autologous Bone Marrow Regenerative Cell Therapy (ABM-RCT) improve endometrial thickness and receptivity and restoration of fertility in refractory cases of thin endometrium?

Summary answer: Selective Autologous Bone Marrow Regenerative Cell Therapy from Seragen (ABM-RCT) improves endometrial thickness, pregnancy, and live birth rate in refractory cases of thin endometrium.

What is known already: The impaired endometrial function can limit implantation due to insufficient tissue regeneration. Clinical investigation has proved that stem cells existing in the endometrium might originate from bone marrow and provides evidence that bone marrow-derived cells have a non-hematopoietic physiologic contribution to decidual stroma and play a vital role in implantation and pregnancy maintenance and non-hematopoietic BMSCs are able to impact decidual molecular milieu and overcome implantation defects. ABM-RCT is the most commonly used cell therapy and its safety and efficacy are well-established and documented. This forms the basis for exploring and standardizing ABM-RCT in the management of refractory thin endometrium.

Study design, size, duration: Eleven patients (from age 29 to 43 with refractory thin endometrium resistant to conventional treatment modalities were recruited and obtained informed consent with detailed explanation that the therapy is still experimental and the risk of failure was given to the couple as part of gynec-oncology treatment. Five patients had asherman’s syndrome, two patients had genital tuberculosis, two patients had thin endometrium hypo-responsive/unresponsive to estrogens, with RIF and two patients underwent chemo and radiotherapy

Participants/materials, setting, methods: BM aspiration was performed under local anesthesia, from the iliac crest using a disposable BM aspiration needle (Jamshidi, 11 G) and collected in heparinized syringes. Progenitor cell enrichment was done by Seragen’s Selective Enrichment Protocol. Peripheral blood was collected to enrich growth factor concentrate. A 2.9mm Hysteroscope was used with an operating channel and egg pickup needle attached to it and cells were implanted in subendometrial zone in all four walls of the uterine cavity.

Main results and the role of chance: All patients presented to us with refractory thin endometrium in HRT cycle despite giving all possible medications. Hence the decision was taken for Autologous Bone Marrow Cell Concentrate Therapy. Post ABM-RCT, endometrial thickness showed increase 100% (11/11) of more than 8 mm in all cases on day of embryo transfer with average endometrial thickness improvement was 1.8 mm than previous cycles, with uniform triple layer pattern.10 out of 11 (91%) patients conceived after autologous stem cell injection. 9 Out of 10 (90%) patients conceived had delivered healthy babies and 1 patient (9%) had a miscarriage at 12th week of pregnancy. 1 patient did not conceive will be assessed for immunoprofiling and one more rejuvenation cycle.

Limitations, reasons for caution: Our study outcomes are consistent with several previous studies and the feasibility of treatment at an IVF setup and encouraging results. Well-planned study with more patients is warranted to evaluate safety, effectiveness, and cost of this modality before it becomes integrated in treatment of this frustrating condition during IVF procedures

Wider implications of the findings: Our results demonstrates selectively enriched ABM-RCT enhances endometrial thickness, tissue remodeling, uneventful gestation, improved pregnancy and live birth rate. Need for Surrogacy in Non-Responsive Thinendometrium May Be Re-Evaluated. Role of hematopoietic stem cell research and knowledge generated is representing reliable strategy in IVF that may be routinely used in clinical practice.

Trial registration number: Not applicable