Original Article

Recurrent Implantation Failure

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DOI: 10.47750/pnr.2023.14.02.189

Abstract

Implantation failure can occur during any of the three stages of implantation. It can be classified into four main categories, altered endometrial receptivity, embryonic defects, abnormal embryo-endometrial cross-talk and impairment in the regulation of immunologic mediators. Recurrent implantation failure needs a wide range of investigations. Several methods have been performed for RIF management but there is little consensus on the most effective one. Recently, some progress in treating RIF and thin endometrium has been made with the use of the PRP. Its main idea in patients with previous ET failures is based on the regulation of expression of growth factors and cytokines in the endometrium.

Keywords: Implantation failure.

INTRODUCTION

Implantation failure can occur during any of the three stages of implantation, i.e., apposition, adhesion, and invasion (**Hoozemans et al., 2004).**

There are several reasons for implantation failure, but it can be classified into four main categories, altered endometrial receptivity, embryonic defects, abnormal embryo-endometrial cross-talk and impairment in the regulation of immunologic mediators **(Diedrich et al., 2007).**

Recurrent implantation failure is a nightmare for both the patients and the doctor. It needs a wide range of investigations and there is a debate about the lines of management. Several methods have been performed for RIF management but there is little consensus on the most effective one. Blastocyst transfer, pre-implantation genetic screening (PGS), assisted hatching, co-culture system, sequential transfer, hysteroscopy, endometrial scratching, salpingectomy for tubal disease, extra number embryo transfer, natural cycle, oocyte donation, intra-tubal ET, immune therapy and endometrial receptivity array (ERA) have been used but till now the pregnancy rate after ICSI cycle in RIF patients still unsatisfactory **(Tanya et al., 2014).**

Recently, some progress in treating RIF and thin endometrium has been made with the use of the PRP. PRP, also known as autologous conditioned plasma, is a concentrate of PRP protein derived from fresh whole blood, centrifuged to remove red blood cells and has anti-inflammatory and pro-regenerative functions **(Bos-Mikich et al., 2018).**

The main idea of using the PRP in patients with previous ET failures is based on the regulation of expression of growth factors and cytokines in the endometrium which was first presented by Chang et al., 2015 **(Chang et al., 2015).**

PRP is prepared from fresh whole blood that contained several growth factors and cytokines including fibroblast growth factor (FGF), platelet derived growth factor (PDGF), vascular endothelial growth factor (VGEF), transforming growth factor (TGF), insulin-like growth factor I, II (IGF-I, II), connective tissue growth factor (CTGF) and interleukin 8 (IL-8) **(Garcia-Velasco et al., 2014).**

PRP has been investigated as a therapeutic approach for several medical disorders including nerve injury, ocular epithelial defects, alopecia, cardiac muscle injury, osteoarthritis, and tendinitis. Despite the wide

use of PRP in several fields in medicine, it's efficacy in obstetrics and gynecology is limited **(Maria-Angeliki et al., 2015).**

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