

# The 25° World Congress on Controversies in Obstetrics, Gynecology & Infertility (COGI)

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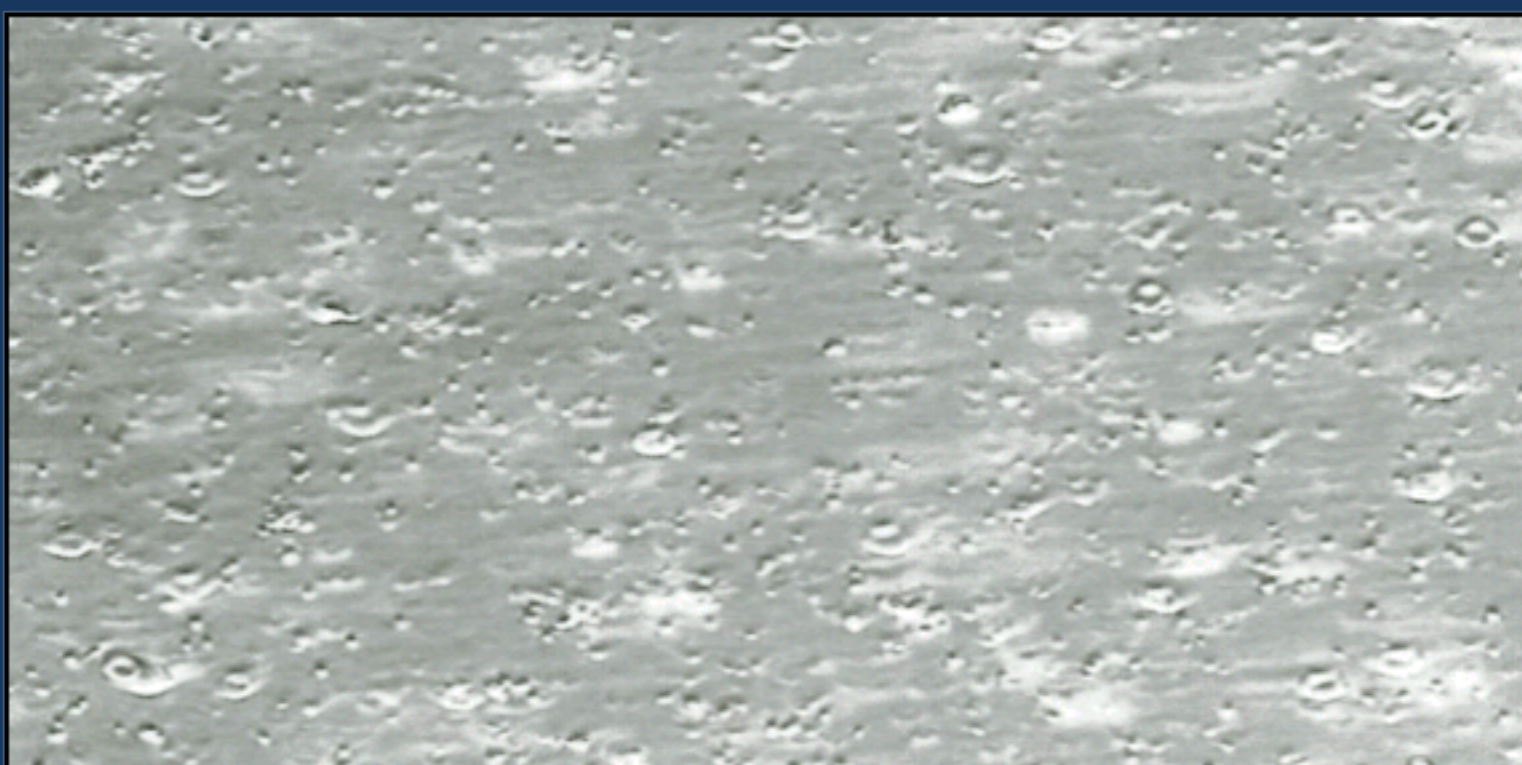
## USE OF PRP (PLATELET RICH PLASMA) WITH PLATELET DEGRANULATION IN TREATMENT OF INFERTILITY

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**INTRODUCTION:** PRP is a new promising regenerative therapeutic application which can offer therapeutic benefits without detrimental side effects as it is a direct product of own blood sample. PRP has been employed in several fields of medicine: from plastic surgery, maxillo-facial surgery, dental surgery, orthopedics, eye surgery and gynecology. PRP is highly rich in several growth factors that have a significant role in tissue regeneration. The main ones include epidermal growth factor, vascular endothelial growth factor, transforming growth factor beta 1 and beta 2, interleukin 10, several classes of platelet-derived growth factors, insulin like growth factor and hepatocyte growth factor. More recently, clinical trials have provided substantial amount of evidence that PRP can have many beneficial effects in the field of infertility through its regenerative effects. PRP applications have been demonstrated to have cell proliferative effects as well as anti-inflammatory effects while working on tissue repair. PRP application has also been associated with increased progesterone receptor activity. Progesterone receptors are the main actors that help maintain a thick and healthy endometrial lining, which in turn, helps with embryo implantation.

**METHODS:** We have started offering PRP applications for 10 patients with: recurrent implantation and IVF failures and patients who cannot obtain a desired level of endometrial thickness for a successful embryo transfer. The endometrial PRP application is administered approximately in 10 day of menstrual cycle and 48 h before embryo transfer. PRP was prepared from autologous blood. On around 10 day of menstrual cycle 8 ml of venous blood was drawn from the syringe pre-filled with anticoagulant solution and centrifuged immediately at 1200g for 12 min. The blood was divided in three layers: red blood cells at the bottom, cellular plasma in the supernatant and a coat layer between them. The plasma layer and buffy coat were collected to another tube and re-centrifuged at 3300g for 7 min. The resultant pellet of platelets was mixed with 2 ml of supernatants and 100  $\mu$ l of calcium gluconated was added. After 5-6 min there it was happened the formation of a clot obtaining platelet degranulation. The clot has been removed, so 2 ml of PRP was obtained. The PRP was subsequently infused on the endometrium after controlling platelet degranulation at microscope.



A.Before calcium gluconated



B.After calcium gluconated: platelet degranulated

**RESULTS:** After application of PRP, the endometrial thickness was satisfactory in all the patients (>8 mm), with endometrial three-layer pattern, before progesterone administration and embryo transfer was performed; of these patients with previous IVF failures, despite good quality embryos, beta-HCG was positive in 7 of them: the pregnancy is progressing normally in 5 women, one had an early miscarriage at 9 weeks pregnancy and 1 with biochemical abortion.

**CONCLUSION:** We can suppose that multiple implantation failures were caused by inefficient expression adhesion molecules and insufficient endometrial thickness which can hypothetically be more represented after PRP application; so this application, in our lab, has replaced common treatments to obtain a desired level of endometrial thickness that are extended estrogen administration, vaginal sildenafil citrate and LPS with triptorelin injection, because anyone of these have proved effective.