HOPE VS HYPE: IN-OFFICE INTRA-OVARIAN PRP INFUSION NEARLY DOUBLED THE NUMBER OF BLASTOCYSTS AND QUADRUPLED THE NUMBER OF EUPLOID EMBRYOS PER CYCLE IN LOW PROGNOSIS IVF PATIENTS

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Background: While there are studies exploring intra-ovarian PRP for ovarian rejuvenation in patients with diminished ovarian reserve, few describe its optimal approach and have focused on the higher cost and risk associated with OR based procedures which include propofol anesthesia.

Objective: This study describes our in-office intraovarian PRP injection technique and its effect on IVF outcomes in patients with a history of a low euploid embryo yield in a prior freeze-all IVF cycle employing PGT-A.

Materials and Methods: A single-institution retrospective cohort time-series, between August 2022 and August 2024. All patients underwent in-office intraovarian PRP injection following a failed IVF cycle. All freeze-all PGT-A IVF cycles were within 6 months of the procedure. Blood samples for autologous PRP were prepared using 20mL of venous blood placed in the centrifuge at 3500 RPM for 9 minutes then activated with calcium carbonate. Patients premedicated with 10 mg of valium underwent vaginal preparation and placement of a 17-gauge 35mm needle inserted through a transvaginal ultrasound needle guide with bilateral puncture of the central ovarian stroma and injection of 2-4mL of activated PRP. The first IVF cycle following PRP was compared to the IVF cycle immediately prior to the procedure with paired t-tests. All cycles within six months of the procedure were compared with unpaired statistics. The primary outcome was the number and percentage of euploid blastocysts. Secondary outcomes included: the number of blastocysts, the number and percentage of euploid and mosaic (E+M) embryos, and aneuploid embryos.

Results: 30 subjects met inclusion criteria. Mean age and initial AMH were 38.3$\pm$3.2 and 1.9$\pm$ 1.5 respectively. In paired data, in-office PRP was associated with an increase in the yield of blastocysts per cycle and an increase in the number of euploid embryos per cycle and the number and percentage of E+M per cycle (Table 1). For unpaired data, the 39 cycles prior to and 38 cycles after PRP resulted in increases in the number and percentage of euploid embryos and the number and percentage of E+M. For patients with an AMH $\geq$ 1, the number of blastocysts increased 2-fold, the number of euploid embryos increased 8-fold, the percentage of euploid embryos quadrupled, and the number of E+M increased 7-fold (Table 2). For patients with an AMH < 1 there was no difference in yield following PRP. For patients $\geq$ 40 years old (n=12) the number of euploids increased from 0.08$\pm$0.3 to 0.17$\pm$0.4, however this did not reach significance (p=0.6).

Conclusion: In-office intraovarian PRP injection is a well-tolerated procedure that resulted in an increase in euploid blastocysts when compared to a prior cycle. PRP should be considered in low-prognosis IVF patients with an AMH ≥ 1. PRP was of no benefit to patients with a low AMH.

Table 1. Effect of PRP on IVF outcomes: Paired and Unpaired Testing

	Paired T-test			**Unpaired T-test**		
	Pre-PRP mean(SD)	**Post-PRP** mean(SD)	**P-value**	**Pre-PRP** mean(SD)	**Post-PRP** mean(SD)	**P-value**
Blastocysts	1.5(1.8)	2.8(2.8)	0.003*	1.5(1.7)	2.5(2.6)	0.06
Euploid Blastocysts	0.2(0.4)	0.8(1.1)	0.005*	0.2(0.4)	0.8(1.1)	0.002*
E+M Embryos	0.2(0.4)	1(1.3)	0.005*	0.3(0.4)	1(1.3)	0.002*
Aneuploid	1.3(1.8)	1.5(2)	0.3	1.2(1.7)	1.3(1.8)	0.7
Percentage of Euploid per Blastocyst	8.9% (23)	22% (28)	0.06	9.4% (25)	22% (30)	0.04*
Percentage of E+M Embryos per Blastocyst	11% (24)	27% (34)	0.05*	15%(30)	34%(41)	0.02*
Percentage of Aneuploids	51% (48)	46% (42)	0.62	51% (48)	39% (41)	0.21

Table 2. Effect of PRP on IVF Outcomes Stratified by AMH level, Paired Data

	AMH < 1 ng/mL			**AMH ≥1 ng/mL**		
	Pre-PRP mean(SD)	**Post-PRP** mean(SD)	**P-value**	**Pre-PRP** mean(SD)	**Post-PRP** mean(SD)	**P-value**
Age at PRP	39(3)	n/a	n/a	38(3)	n/a	n/a

Blastocysts	1.1(0.92)	1.1(1.2)	1	1.8(2.1)	3.5(3)	0.01*
Euploid Blastocysts	0.2(0.4)	0.1(0.3)	1	0.15(0.3)	1.2(1.2)	0.004*
E+M Blastocysts	0.2(0.4)	0.2(0.4)	1	0.21(0.4)	1.4(1.5)	0.005*
Percentage of Euploids per Blastocyst	15% (34)	4% (11)	1	7% (17)	31% (31)	0.01*
Percentage of E+M per Blastocysts	15% (34)	7.4% (14)	1	9.6% (19.5)	34% (34)	0.03*