

EFFECT OF AUTOLOGOUS INTRAUTERINE PLATELET RICH PLASMA THERAPY ON ENDOMETRIAL RECEPTIVITY AND CLINICAL PREGNANCY RATE IN UNEXPLAINED INFERTILITY

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BACKGROUND

- **Platelets considered as ‘Novel regulator of neovascularization’**

PRP contains growth factors: EGF, VEGF, PDGF and cytokines

Enhances endometrial receptivity

Improves endometrial thickness, vascularization

Implantation rates

OBJECTIVES

- To assess the effect of PRP therapy in unexplained infertility in form of clinical pregnancy rate
- To assess change in endometrial receptivity parameter using modified Applebaum score with and without PRP therapy
- To compare the luteal phase serum EGF (Epidermal Growth Factor) level with and without PRP therapy

METHODOLOGY

✓ **STUDY DESIGN:** Nested comparative study

✓ **SAMPLE SIZE:** 130 cases

✓ **LOCATION:** UCMS & GTBH , Delhi

✓ **Inclusion Criteria :** 21 -34yr old cases of unexplained infertility with normal BMI

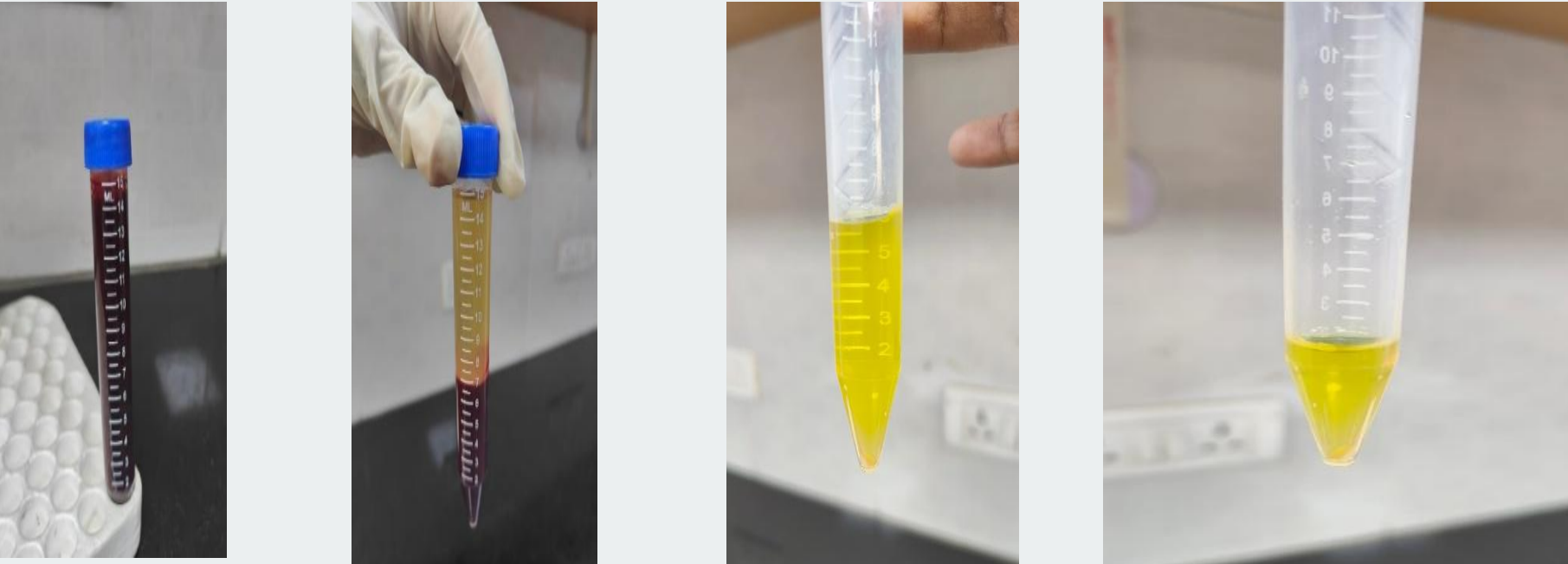


Fig 1. PREPARATION OF AUTOLOGOUS PRP

- IUI done according to standard protocol
- TVS for mUSSR scoring- on hCG trigger day, 2 days, 4 days after IUI
- After 4 days of IUI –blood sample for serum EGF levels

Conceived
Excluded from the study

Couples who did not conceive –IUI cycle labelled as failed IUI cycle
(CONTROL cycle)
Couples considered for the next cycle of IUI with PRP therapy
(PRP cycle)

IUI done according to standard protocol

48 hrs after IUI
0.5 -1 ml intrauterine PRP instilled

- TVS for endometrial receptivity scoring was done on hCG trigger day, 2 days and 4 days after IUI

- After 4 days of IUI –blood sample for serum EGF levels

Clinical pregnancy

ENDOMETRIAL RECEPTIVITY SCORING

- **Modified version of Applebaum Uterine Scoring system (mUSSR scores)**
- **Maximum score - 15**

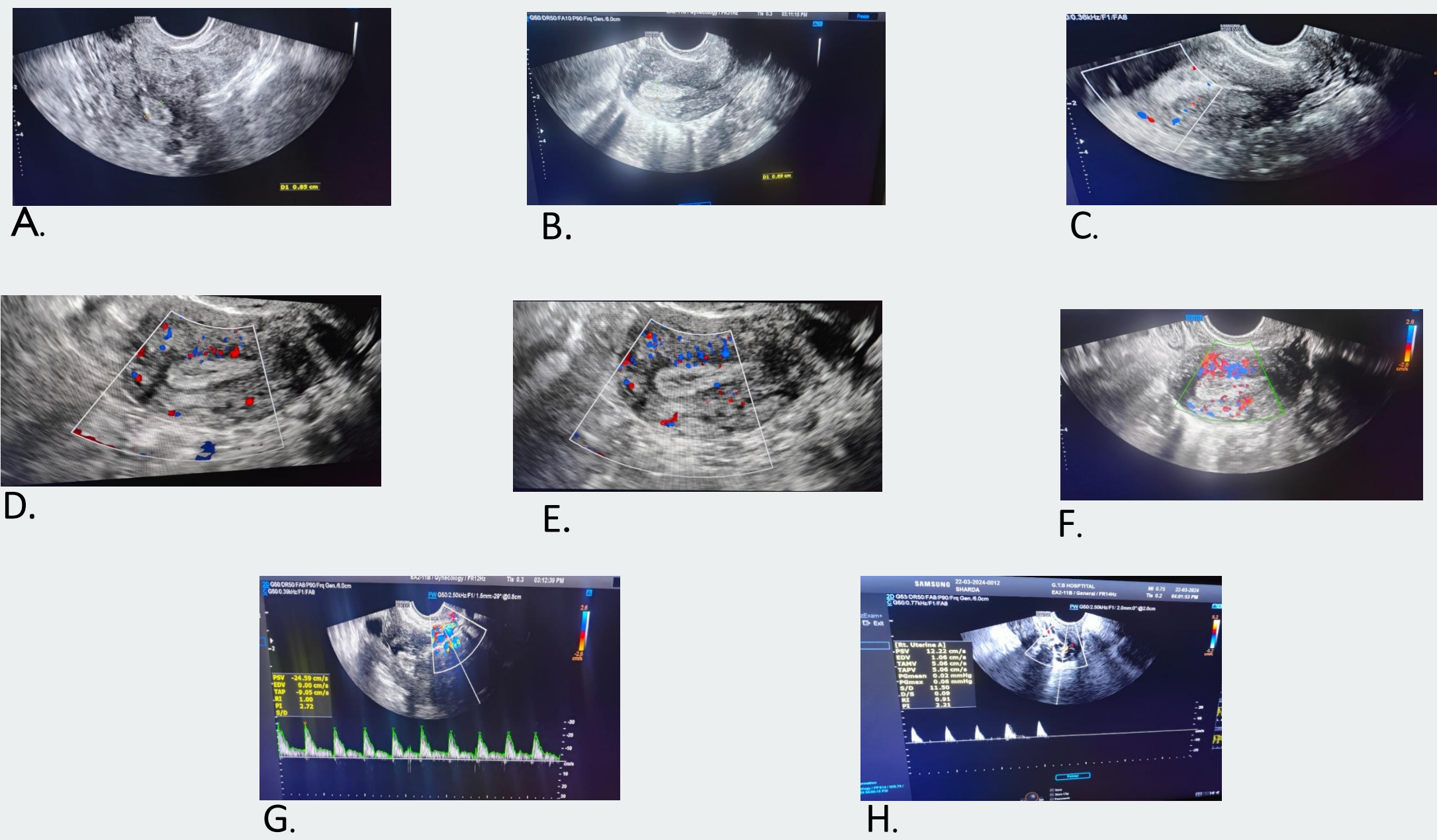


Fig. 2: Transvaginal ultrasound for endometrial receptivity

(A) and (B) show Trilaminar appearance of endometrium

(B) (C), (D), (E) & (F) show the Endometrial blood flow and the Myometrial blood flow

(G) and (H) show the Uterine artery Doppler PI and End diastolic blood flow

ENDOMETRIAL RECEPTIVITY SCORING (Modified version of Applebaum Uterine Scoring system: mUSSR)

S.No.	Parameters	Score
1.	Endometrial thickness	<7 mm
		7-9 mm
		10-14 mm
		>14 mm
2.	Endometrial echogenicity	Thin hypoechoic line
		Triple line
		Thick hyperechoic with posterior enhancement
3.	End diastolic blood flow of Uterine Artery	Absent / Reversal
		Present
4.	Uterine artery doppler PI	> 2.5
		2.2 – 2.49
		< 2.19
5.	Endometrial blood flow	Zone 1- Endomyometrial junction
		Zone2- Between endomyometrial junction and endometrial cavity
		Zone3- Endometrial cavity
6.	Myometrial blood flow	Absent
		Present

Comparison of mUSSR in control cycle and PRP cycle: PRP therapy led to a significant increase in total mean mUSSR scores from 9.13 to 10.32, compared to 8.85 to 9.56 in the control cycle.

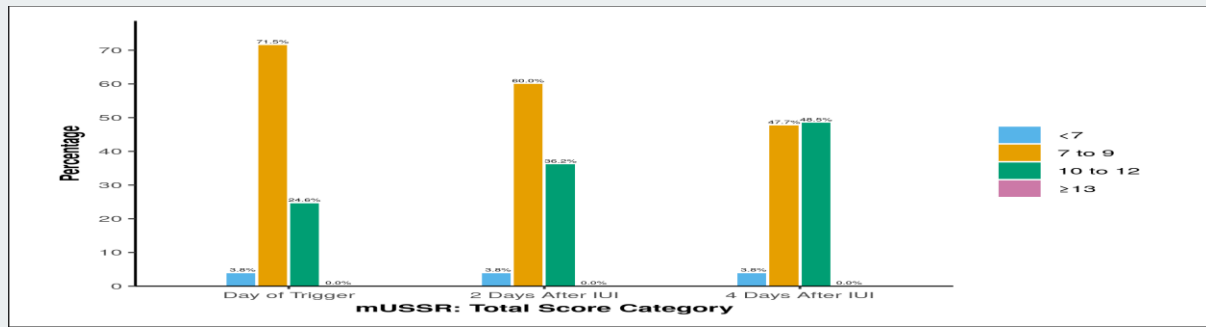


Figure 3 : Total mean mUSSR score in Control Cycle

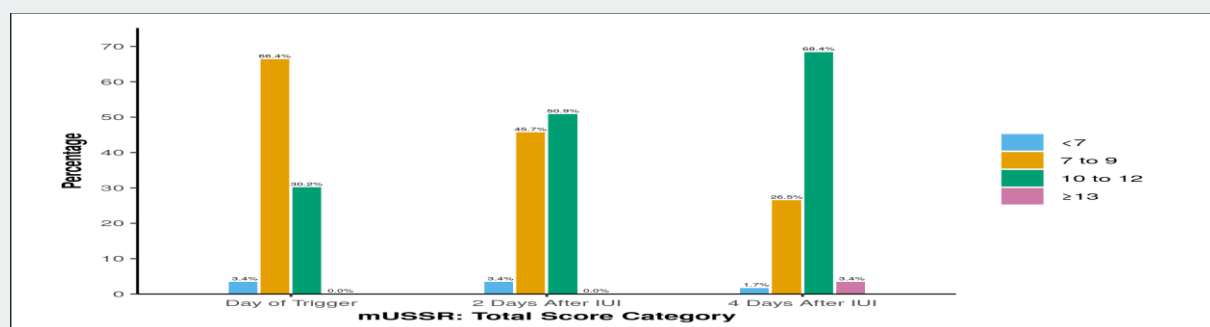


Figure 4 : Total mean mUSSR score in PRP Cycle

Clinical pregnancy rate in Control and PRP cycle: 17.2% of patients in the PRP cycle achieved a positive clinical pregnancy, compared to 10.8% in the control cycle. This suggests that PRP therapy may improve clinical pregnancy outcomes, providing a potentially effective adjunctive treatment for unexplained infertility.

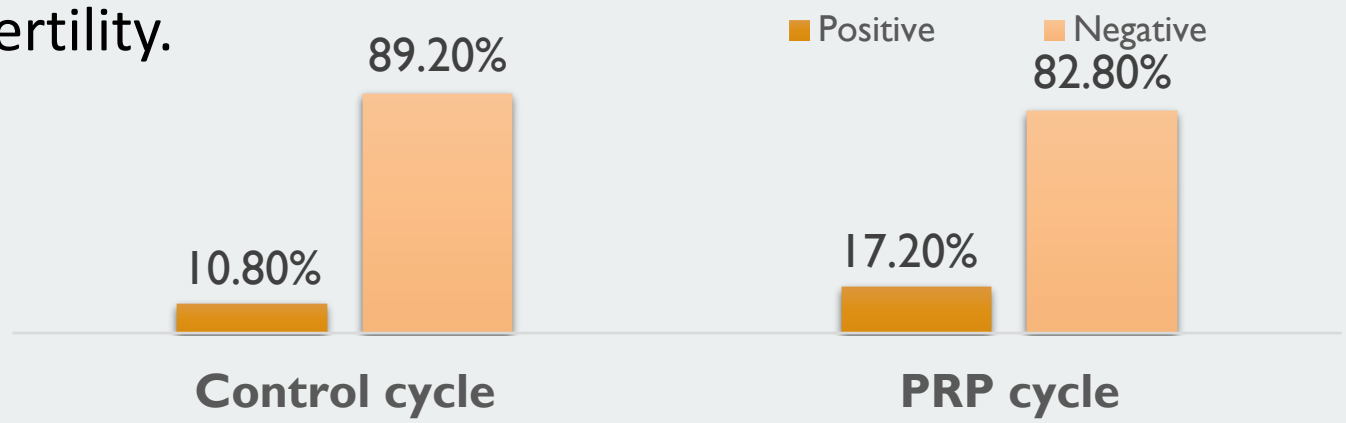


Figure 5: Clinical Pregnancy rate in control and PRP cycle

Association Between Clinical Pregnancy & total Score: Higher mUSSR scores were associated with better clinical pregnancy outcomes, suggesting PRP therapy may enhance endometrial receptivity. In PRP cycle, Positive clinical pregnancy patients had a higher proportion of scores between 10-12 (85.0%) and ≥13 (10.0%).

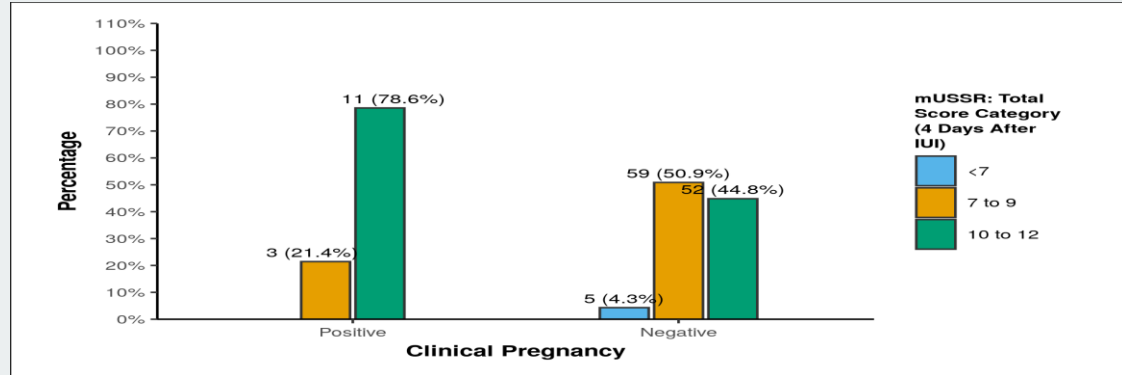


Figure 6 : Association between Clinical Pregnancy and mUSSR: Total Score Category in Control cycle (4 Days After IUI)

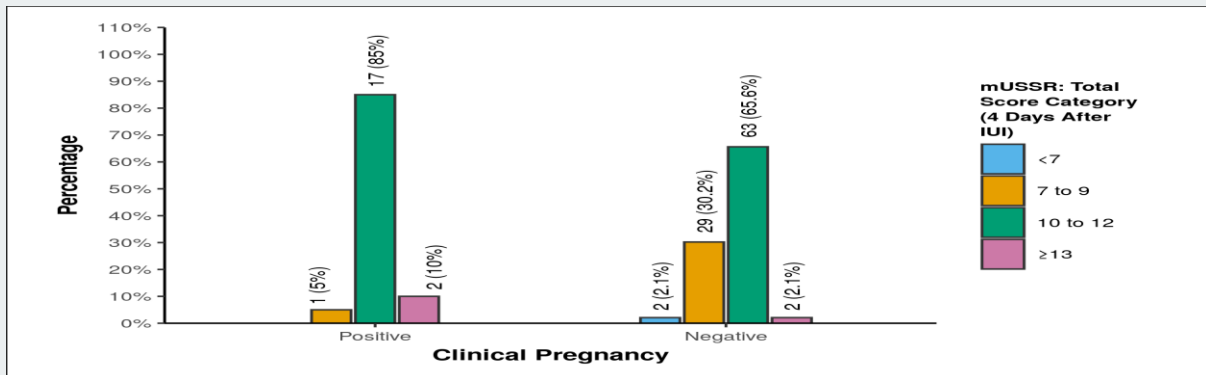


Figure 7 : Association between Clinical Pregnancy and total mean mUSSR Score on 4 days after IUI in PRP cycle

S. EGF level in control and PRP cycle: The mean S.EGF level in the control cycle was 113.30 pg/mL, while in the PRP cycle, it significantly increased to 454.76 pg/mL with p-value <0.001, indicating a highly significant difference between the two groups.

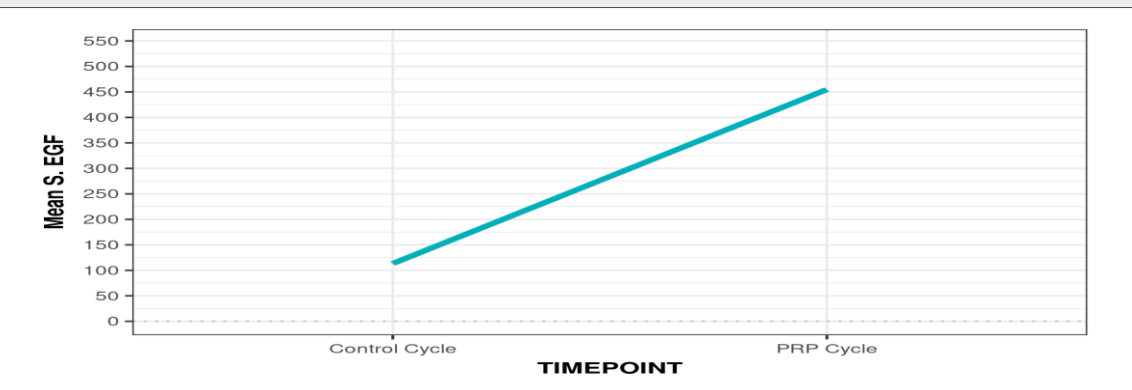


Figure 8 : Comparison of mean S.EGF levels in Control and PRP cycle

CONCLUSIONS

- **PRP-treated cycles showed improved endometrial receptivity through enhanced vascularization and blood flow**
- **Increase in S. EGF levels in the PRP cycle is consistent with the hypothesis that PRP therapy may enhance endometrial receptivity and potentially improve pregnancy outcomes**

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