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Case Report

Successful clinical pregnancy in a case of severe Asherman syndrome: a case report

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ABSTRACT

Asherman syndrome presents significant reproductive challenges due to intrauterine adhesions and impaired endometrial receptivity. We report a 36-year-old woman with primary infertility and recurrent adhesion formation who underwent serial hysteroscopic adhesiolysis. While endometrial thickness (EMT) is traditionally pivotal for predicting embryo implantation success, our findings indicate that endometrial receptivity extends beyond thickness alone. Factors such as endometrial morphology, type, and blood supply play crucial roles. Because previous attempts failed to yield viable embryos a donor ovum embryo transfer was planned, before which she received three subcutaneous injections of recombinant granulocyte-colony stimulating factor (G-CSF) followed by ultrasound-guided intrauterine platelet-rich plasma (PRP) infusions for improving endometrial quality, vascularity and ultimately receptivity, Following the sequential regenerative protocol with optimized hormonal support, she achieved a viable singleton pregnancy. This case demonstrates that hysteroscopic adhesiolysis followed by multiple (here minimum 3) systemic G-CSF followed by local PRP may synergistically enhance endometrial regeneration in severe Ashermans syndrome. Controlled studies are needed to evaluate the efficacy and safety of this combined approach and optimising the dosage and sessions of the same.

Keywords: Asherman syndrome, Platelet-rich plasma, Granulocyte-colony stimulating factor, Hysteroscopic adhesiolysis, Endometrial regeneration

INTRODUCTION

Asherman syndrome (AS), defined by intrauterine adhesions, results from endometrial trauma e.g., curettage or infection and commonly leads to hypomenorrhea, infertility, or recurrent pregnancy loss.[1] Hysteroscopic adhesiolysis remains the standard management, yet adhesion recurrence and poor endometrial receptivity persist, especially in severe cases.[2]

Recent regenerative approaches include platelet-rich plasma (PRP), rich in growth factors like vascular endothelial growth factor (VEGF) and platelet-derived growth factor (PDGF), and granulocyte-colony stimulating factor (G-CSF), which may mobilize progenitor cells and promote endometrial repair.[3,4] While intrauterine G-CSF and PRP have independently shown promising, albeit preliminary outcomes, their sequential combination multiple (minimum 3) subcutaneous G-CSF followed by ultrasound-guided intrauterine PRP has not, to our knowledge, been previously reported.

Detailed map of the signalling and extracellular-matrix programs that platelet derivatives activate in primary endometrial cells, offering a mechanistic bridge between the growing clinical use of PRP and its observed improvements in implantation.

Multiple pathways (chiefly cell-cycle drivers, matrix remodelling enzymes, and intercellular signalling factors) have been explored.[8]

This case report describes the use of this novel sequence following adhesiolysis, culminating in a successful pregnancy.

CASE REPORT

Patient information and consent

A 36-year-old woman presented with primary infertility and hypomenorrhea (1–2 days with <1 pad/day). She had a remote history of pulmonary tuberculosis, treated successfully. Written informed consent was obtained for publication.

Clinical course and investigations

Initial evaluation in 2023 in an outside institute revealed HSG demonstrating bilateral tubal block and hystero-laparoscopy confirming Asherman syndrome. Adhesiolysis and chromopertubation were performed; an intrauterine device was placed for 3 months, followed by two failed ovulation induction IUI cycles.

Body mass index (BMI) was 28.7 kg/m²; hormonal profile showed AMH 3 ng/ml, day-2 FSH 7.36 mIU/ml, LH 3.67 mIU/ml. Day-19 transvaginal 3D ultrasound revealed a thin (5 mm), irregular endometrium with adhesions (Figure 1).

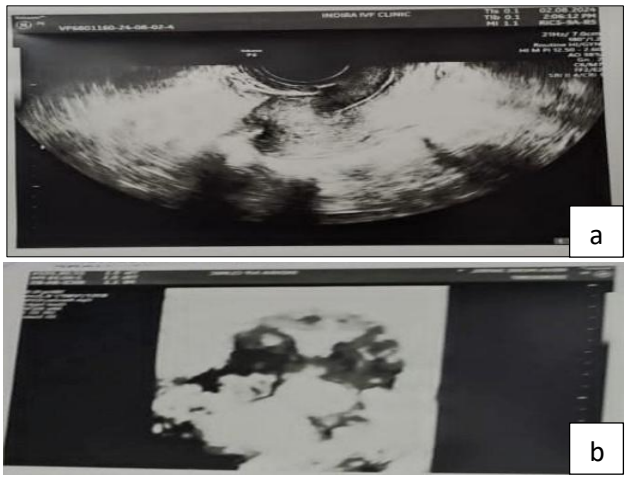

Figure 1 (a and b): Day-19 transvaginal 2D and 3D ultrasound showing thin (5 mm), irregular endometrium with fundal adhesions.

Interventions and outcomes

Cycle 1

Minimal stimulation OPU-ICSI + Adhesiolysis

r-FSH, clomiphene, antagonist, trigger, and OPU yielded poor-quality oocytes; no embryos formed. Hysteroscopy revealed vertical adhesions occupying ~50% of the cavity; post-lysis, a Foley catheter was placed and remove on day 6th post procedure.

Cycle 2

Intensified stimulation OPU-ICSI.

Higher-dose stimulation produced similarly poor oocytes and no embryos formed.

Cycle 3

Donor ovum FET with regenerative adjuvants.

Depot GnRH suppression on day 18th of previous cycle followed by Endometrial priming from 14 days post GnRH suppression with hormonal therapy (HRT) i.e. estrogen in form of per oral Estradiol Hemihydrate 2 mg tds and per vaginal Estradiol Valerate 2 mg OD along with sildenafil PV, aspirin 75 mg OD, L-arginine, and antioxidants all upto embryo transfer continued till serum beta human chorionic gonadotropin (hCG) positive.

Adjuvant protocol

Subcutaneous recombinant G-CSF: 300 µg on alternate days for 3 doses i.e. on day 11th/13th/15th of HRT post endometrial assessment on day 10th post HRT.

Ultrasound-guided intrauterine PRP infusion: three sessions via IUI catheter i.e. day 12th/14th/16th if HRT.

Endometrial thickness improved to 5.8 mm (triple line), and donor blastocyst transfer ensued. S. β-hcg was 812 mIU/ml at 2 weeks, (suggest that implantation did happen) but a missed abortion occurred; D and E performed.

Table 1 shows stepwise PRP preparation protocol.

Table 1: Stepwise PRP preparation protocol.

S. no.	Steps	Process
1	Sampling	Draw ~8 ml of peripheral blood into ACD tubes
2	Centrifuge 1	Centrifuge at 1500 rpm for 15 min
3	Separation	Separate plasma + buffy coat, transfer to a conical vial
4	Centrifuge 2	Centrifuge at 3000 rpm for 5 min
5	Sperate	Discard supernatant
6	Resuspend	Resuspend platelet pellet in ~1 ml plasma
7	Loading	Load into syringe for ultrasound-guided intrauterine infusion via IUI catheter

Recurrence and repeat adhesiolysis

By February 2025, the endometrium was thin (3.3 mm). Adhesiolysis was performed in March 2025; postoperatively HRT was started same as before but persistent myometrial cyst on day 10th of HRT led to cycle cancellation, for which an antibiotic course for 5 days was given, GnRH suppression on day 18th of the cancelled cycle and withdrawal by progesterone was given.

Final cycle

HRT was started from subsequent day 2 of menstrual cycle same as before, repeated PRP + G-CSF. Sequence administered again. Endometrial thickness improved to 5.3 mm (triple lined); pregnancy achieved in this cycle (May 2025); FET resulted in a viable singleton pregnancy confirmed by ultrasound (Figure 2).

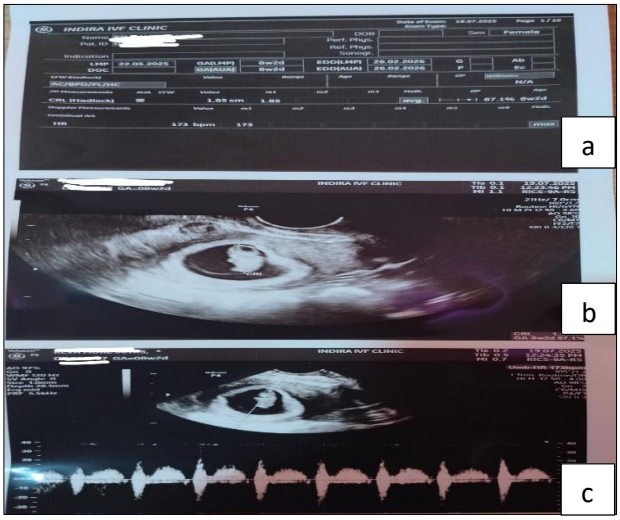

Figure 2 (a-c): USG s/o single live intrauterine pregnancy of 8 weeks 2 days.

The pregnancy continued with normal NT-NB Scan with short cervical length of 2.4 cm, for which a Mcdonald cervical encerclage was done at 14 weeks, the anomaly scan was normal with now the pregnancy successfully reaching 24 weeks 5 days on 06 November 2025.

DISCUSSION

Adhesiolysis outcomes and challenges

While hysteroscopic adhesiolysis effectively restores uterine cavity patency, recurrence rates remain high—particularly in cases of severe AS. Even after anatomical correction, achieving successful implantation often remains a major challenge.[2]

Mechanistic rationale for sequential G-CSF and PRP

The rationale for combining G-CSF and PRP lies in their complementary regenerative mechanisms. Subcutaneous G-CSF mobilizes hematopoietic and endothelial progenitor cells systemically, enhancing endometrial regeneration and angiogenesis. In contrast, intrauterine PRP provides a localized, concentrated source of platelet-derived growth factors that directly stimulate cell proliferation, reduce fibrosis, and promote vascular remodeling.[3,4] The observed conception following previous failed cycles supports a potential synergistic effect of this sequential, systemic-to-local therapeutic approach.

Comparison with existing literature

PRP, a platelet concentrate derived from autologous whole blood, has been utilized since the 1970s for tissue repair and regeneration.[5,7] Its intrauterine use in reproductive medicine has shown promise, improving endometrial thickness and clinical pregnancy rates in women with refractory thin endometrium or intrauterine adhesions. However, adhesion recurrence and inconsistent implantation outcomes remain ongoing limitations.[3]

Despite increasing clinical use, there is currently no consensus regarding the optimal number or frequency of PRP infusions. The molecular pharmacokinetics of platelet-derived factors support the rationale for multiple applications: vascular endothelial growth factor (VEGF) has a half-life of less than 30 minutes, platelet-derived growth factor (PDGF) approximately 2.4 hours, and fibroblast growth factor (FGF) around 7.6 hours.[6] These short half-lives suggest that a single infusion may be insufficient to maintain a sustained therapeutic effect during the critical window of endometrial receptivity thus, a double or sequential infusion may enhance outcomes. Similarly, intrauterine G-CSF administration has shown modest improvements in endometrial thickness and pregnancy rates in randomized studies. By combining systemic G-CSF with localized PRP infusion, this report proposes a novel sequential regenerative approach not previously described in the literature.

Strengths

This case demonstrates an innovative, stepwise regenerative protocol following multiple adhesiolysis procedures, culminating in a successful pregnancy despite prior implantation failures.

Limitations

Being a single-case observation, it lacks a control group, precluding causal inference. The individual contributions of G-CSF versus PRP cannot be isolated, and long-term safety and adhesion recurrence remain to be established.

CONCLUSION

This case report indicates that endometrial receptivity is not solely confined to EMT. Instead, the focus should be on improving factors such as endometrial morphology,

type, and enhancing endometrial blood supply, for which optimization of dose and sessions of PRP needs to be investigated.

In this case of severe AS refractory to standard management, the case report highlights that Adhesiolysis followed by sessions of subcutaneous G-CSF followed by ultrasound-guided intrauterine PRP and hormonal optimization, resulted in successful conception. This approach along with optimal dose and sessions of PRP warrants further clinical investigation.

Here, compared to a single intrauterine infusion multiple (minimum 3) intrauterine PRP infusion may have enhanced the receptivity of a thin endometrium and have improve clinical pregnancy outcomes.

Recommendations

Further randomized controlled trials are warranted to determine the optimal dosing, number of sessions, and interval between G-CSF and PRP administration. Larger studies should also evaluate long-term safety, adhesion recurrence rates, and live birth outcomes to validate the efficacy of this sequential regenerative approach.

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