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Successful IVF and Spontaneous Pregnancy in a Patient with Factor V Leiden Mutation and Secondary Infertility: A Case Report

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ABSTRACT

This case report describes the fertility journey of a 26-year-old female with secondary infertility, a history of pelvic surgery, and a confirmed heterozygous Factor V Leiden mutation. Despite low ovarian reserve (AMH 0.741 ng/mL), recurrent endometrial polyps, and multiple failed assisted reproductive attempts, pregnancy was ultimately achieved through a tailored IVF protocol with intracytoplasmic sperm injection (ICSI). Genetic testing via PCR confirmed the presence of Factor V Leiden mutation, which contributed to recurrent implantation failure. Anticoagulation and careful hematological monitoring were integrated into management. Remarkably, the patient later conceived spontaneously, though the second pregnancy was complicated by vasa previa. Both pregnancies resulted in successful deliveries via cesarean section. This case highlights the importance of thrombophilia screening in women with recurrent implantation failure and supports individualized reproductive and pregnancy care strategies in complex infertility cases.

Keywords

Factor V Leiden Mutation, Secondary Infertility, Recurrent Implantation Failure, IVF, ICSI, Thrombophilia, Vasa Previa.

Introduction

Infertility is a multifactorial condition influenced by a complex interplay of genetic, anatomical, and hormonal factors. Secondary infertility, the inability to conceive after a previous successful pregnancy, presents unique challenges in diagnosis and management. Among the contributing factors, thrombophilic mutations such as the Leiden mutation are known to adversely affect reproductive outcomes by increasing the risk of thrombosis and impairing implantation [1-3].

This case report presents the infertility treatment journey of a 26-year-old female patient diagnosed with secondary infertility attributed to a pelvic-abdominal factor and the presence of the Leiden mutation. The clinical course was marked by multiple unsuccessful intrauterine inseminations (IUI) and *in vitro* fertilization (IVF) cycles. Ultimately, a successful pregnancy was achieved through IVF with intracytoplasmic sperm injection (ICSI), following a personalized treatment protocol that addressed recurrent implantation failure and included hysteroscopic interventions. Notably, the patient later conceived spontaneously, albeit with complications, and delivered via cesarean section [2,4].

This case highlights the importance of individualized care in assisted reproductive techniques (ART), particularly in patients with underlying thrombophilia, and emphasizes the role of tailored stimulation protocols and uterine cavity optimization in improving fertility outcomes.

Case Presentation

A 26-year-old female patient A. (Date of Birth: 12 December 1994), presented in 2021 with a two-year history of infertility. Her obstetric history included a spontaneous early pregnancy loss

in 2019 at 5–6 weeks of gestation. Her gynecologic and surgical background was significant for a right-sided oophorectomy via laparoscopy in 2020, performed for a mature ovarian teratoma. She subsequently underwent two hysteroscopic polypectomies—in September 2020 and again in 2022—due to recurrent endometrial polyps.

Initial clinical and laboratory evaluations revealed the following hormone profile: Anti-Müllerian Hormone (AMH) at 0.741 ng/mL, Follicle-Stimulating Hormone (FSH) 8.35 mIU/mL, Luteinizing Hormone (LH) 8.85 mIU/mL, Thyroid-Stimulating Hormone (TSH) 2.49 mIU/mL, and Prolactin 23.18 ng/mL. The patient's partner demonstrated normozoospermia. Genetic testing identified a heterozygous factor V Leiden mutation, raising concern for thrombophilia-related implantation failure [3,5].

The patient's infertility treatment began with two intrauterine insemination (IUI) cycles on 08 October and 06 November 2021, both of which failed to achieve pregnancy. She subsequently underwent her first IVF attempt on 26 February 2022, using an antagonist regimen (Gonal-F 200 ME/day, Cetrotide for 6 days, Ovitrel 6500MM). Four oocytes were retrieved (three M2, one GV), but fertilization was unsuccessful.

A second IVF attempt was made on 18 April 2022 using a modified antagonist protocol (Gonal-F 300 ME, Cetrotide, Menopur, and Ovitrel). This cycle yielded five oocytes (four M2, one M1) and resulted in four blastocysts. However, an acute respiratory infection led to the postponement of embryo transfer, and the blastocysts were cryopreserved.

On 4 October 2022, two frozen blastocysts were transferred in a hormone replacement cycle, with an endometrial thickness of 8.5 mm, but no pregnancy ensued. Due to recurrent implantation failures, a decision was made to attempt endometrial preparation in a stimulation cycle in 2023. The stimulation protocol included Gonal-F 150 ME/day, Menopur 150 ME, Gonapress for five days, and a single dose of Ovitrel. It was planned to use previously frozen blastocysts if high-quality embryos were not obtained.

On 25 March 2023, a third IVF cycle was performed, this time using the intracytoplasmic sperm injection (ICSI) technique. Four oocytes were retrieved (two ATR, two M2), resulting in two high-quality day-3 embryos (both 8-cell, one compacted). Two embryos were transferred, and a positive pregnancy test was confirmed 14 days post-transfer. Ultrasound examination verified a single viable intrauterine pregnancy.

Genetic testing for inherited thrombophilia, including the Factor V Leiden mutation, was performed as part of the patient's infertility evaluation. A heterozygous G1691A mutation in the F5 gene was identified using PCR-based methods, confirming the presence of Factor V Leiden-associated thrombophilia.

Given the patient's known factor V Leiden mutation, hematologic monitoring was performed throughout the pregnancy. Delivery was completed via the cesarean section, with both mother and child in good health.

Remarkably, two to three months postpartum, the patient conceived spontaneously. This second pregnancy was complicated by vasa previa, requiring hospitalization on two occasions. A second cesarean section was performed, and the outcome was again favorable, with both mother and child surviving without major complications.

This case illustrates the complex management of secondary infertility in a patient with a pelvic-abdominal surgical history and inherited thrombophilia. It underscores the importance of individualized stimulation protocols, the utility of hysteroscopic evaluation in recurrent implantation failure, and the necessity of vigilant monitoring in pregnancies affected by coagulation disorders.

Discussion

This case highlights the multifactorial complexity of managing secondary infertility in a young woman with a history of pelvic surgery, low ovarian reserve, recurrent endometrial polyps, and a confirmed heterozygous Factor V Leiden (FVL) mutation [1-4]. Although diminished ovarian reserve and uterine pathology can independently impair fertility, the presence of FVL mutation may further contribute to poor reproductive outcomes through mechanisms related to impaired endometrial receptivity, altered uterine blood flow, and thrombosis at the maternal–fetal interface [5].

FVL is the most common inherited thrombophilia, caused by a G1691A mutation in the F5 gene, and is associated with increased risk of thrombosis. In reproductive medicine, FVL has been implicated in both early and late pregnancy complications, including recurrent implantation failure (RIF), miscarriage, placental insufficiency, and preeclampsia [1,3,4].

Several studies have explored the association between inherited thrombophilia and outcomes in assisted reproductive technology (ART). Devranoglu et al. found that women with FVL mutation had significantly lower implantation and pregnancy rates during IVF cycles, possibly due to microthrombi in the endometrial vessels that impair embryo attachment. Kilic et al. similarly reported a higher prevalence of hereditary thrombophilia among patients with recurrent IVF failure, suggesting that impaired uterine perfusion or abnormal hemostasis may compromise embryo implantation.

In our case, thrombophilia was confirmed via PCR-based genetic testing, which revealed a heterozygous G1691A mutation in the F5 gene. This finding contributed to the clinical decision to modify ART protocols and incorporate hematologic monitoring throughout pregnancy. In our case, despite the patient's relatively young age and a normozoospermic partner, initial IUI and IVF attempts failed. The low AMH value (0.741 ng/mL) suggested

decreased ovarian reserve, while repeated findings of endometrial polyps necessitated hysteroscopic intervention. However, even after correction of uterine pathology, implantation failure persisted until anticoagulant-supported IVF with ICSI was performed. Though empirical, this approach reflects findings from prior studies suggesting potential benefits of anticoagulation in thrombophilic women undergoing ART [3,4].

The spontaneous conception that occurred postpartum was both unexpected and clinically significant, considering the patient's prior infertility. However, this pregnancy was complicated by vasa previa—an obstetric emergency characterized by unprotected fetal vessels over the internal os. Though not directly linked to FVL, some authors speculate that thrombophilia-related abnormal placentation may predispose to rare anomalies such as vasa previa or velamentous cord insertion [6].

This case underscores the potential benefit of thrombophilia screening in patients with RIF, especially when no other clear etiology is present. While current guidelines vary regarding universal thrombophilia testing in infertility workups, selected screening—particularly for FVL—in women with a personal or family history of thromboembolism, pregnancy loss, or repeated ART failure may be justified.

Conclusion

This case underscores the multifactorial nature of secondary infertility and the potential role of inherited thrombophilia—specifically Factor V Leiden mutation—in recurrent implantation failure. Despite coexisting risk factors such as diminished ovarian reserve and endometrial pathology, targeted reproductive strategies and thorough evaluation of thrombotic risk allowed for a successful IVF pregnancy. The subsequent spontaneous conception further highlights the unpredictability of fertility outcomes. The presence of vasa previa in the second pregnancy necessitated close obstetric monitoring, emphasizing the importance of individualized, multidisciplinary care in patients with known thrombophilia. Screening for thrombophilic mutations should be considered in cases of unexplained infertility or recurrent ART failure.

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References

1. Baré SN, R Póka R, Balogh I, et al. Factor V Leiden as a risk factor for miscarriage and reduced fertility. Aust N Z J Obstet Gynaecol. 2000; 40: 186-190.
2. Safdarian L, Najmi Z Aleyasin A, et al. Recurrent IVF failure and hereditary thrombophilia. Iran J Reprod Med. 2014; 31: 467-470.
3. Shai E Elizur SE, Beiner ME, Korach J, et al. Is Outcome of in vitro fertilization treatment in infertile women conservatively treated for endometrial adenocarcinoma. Fertil Steril. 2007; 88: 1562-1567.
4. Marcello Di Nisio MD, Ponzano A, Tiboni GM, et al. Effects of multiple inherited and acquired thrombophilia on outcomes of in-vitro fertilization. Thromb Res. 2018; 167: 26-31.
5. Devranoglu B, Abide CY, Özkaya E, et al. Coagulation tests at trigger day in patients with Factor V Leiden Mutation to predict implantation failure. Gynecol Obstet Reprod Med. 2017; 23: 1-5.
6. Mohapatra I, Samantaray SR, Sindhuja VN. Vasa previa: a case report. Int J Reprod Contracept Obstet Gynecol. 2020; 9: 4301-4303.

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