

THROMBOPHILIA AND ASSISTED REPRODUCTIVE TECHNOLOGY: PRELIMINARY RESULTS FROM A SINGLE CENTER RETROSPECTIVE COHORT STUDY

G. Burrei[2], E. Malloggi[1], S. Moruzzi[1], L. Delfino[1], F. Pizzolo[1], L. Panepinto[1], F. Presa[1], C. Spillere[1], A. Moschella[1], F. Zoccatelli[1], S. Friso[1], N. Martinelli[1], S. Suardi[1]

[1]Department of Medicine, University Hospital, Verona, Italy; [2]General Medicine Unit, Magalini Hospital, Villafranca di Verona, Italy

Background and Aims. Pregnancy is characterized by physiological changes, including a hypercoagulable state that reduces hemorrhagic risk at delivery. In the presence of inherited or acquired thrombophilia, this adaptation may increase the risk of venous thromboembolism (VTE) as well as maternal–fetal complications such as recurrent miscarriage, preeclampsia, and intrauterine growth restriction. Thrombophilias have also been investigated in relation to embryo implantation failure and adverse outcomes in assisted reproductive technology (ART), although their etiopathogenetic role remains unclear. Evidence regarding anticoagulant therapy in women undergoing ART is heterogeneous and no consensus on management has been established. This study aimed to evaluate reproductive outcomes in relation to antithrombotic therapy (low-molecular-weight heparin [LMWH] and/or acetylsalicylic acid [ASA]) by analyzing: (1) implantation rate, (2) clinical pregnancy and miscarriage rates, and (3) live birth rate. A secondary aim was to compare our findings with the existing literature to improve multidisciplinary management.

Materials and Methods. A single-center retrospective cohort study was conducted on 22 women undergoing ART for infertility or recurrent pregnancy loss at the Internal Medicine B outpatient clinic of AOUI Verona between 2024 and 2025. Selective screening for inherited and acquired thrombophilia was performed. Patients received LMWH and/or ASA, or no antithrombotic therapy, starting from embryo transfer.

Results. The 22 women were stratified into 3 groups: Group A, negative thrombophilia screening or thrombophilia not assessed (n = 12); Group B, low-risk inherited thrombophilia (n = 6), including 3 women heterozygous for the Factor II (G20210A) mutation and 3 heterozygous for Factor V Leiden; and Group C, obstetric antiphospholipid syndrome (OAPS) (n = 4). In Group A, 6 women received LMWH alone or in combination with ASA, with favorable clinical outcomes (pregnancy or live birth) in 5 cases (83.3%). In Group B, 5 patients received LMWH alone or in combination with ASA, resulting in 2 pregnancies (40%). In Group C, all 4 women were treated with combined LMWH and ASA, with 3 pregnancies achieved (75%). Overall, 15 women received LMWH (alone or in combination with ASA), whereas 7 remained untreated(Figure 1). The best outcomes in terms of implantation, clinical pregnancy, and live birth rates were observed in patients treated with LMWH, with or without ASA, with an overall benefit in 66% of cases. In contrast, untreated patients or those receiving ASA alone predominantly experienced implantation failure or early pregnancy loss.

Conclusions. These findings are consistent with the literature, confirming a significant benefit of combined LMWH and ASA in patients with OAPS, with implantation, clinical pregnancy, and live birth rates of 75%. In low-risk inherited thrombophilia, the benefit appears limited (40% clinical pregnancy rate). The high success rate in thrombophilia-negative or untested patients treated with LMWH (± ASA) may be related to the pleiotropic and anti-inflammatory effects of heparin. Overall, anticoagulant therapy may be beneficial regardless of thrombophilia status, with favorable outcomes in 66% of cases. The main limitations of this study include the small sample size and the absence of high-risk inherited thrombophilia. Larger prospective studies are needed to confirm these findings and to better guide clinical management.

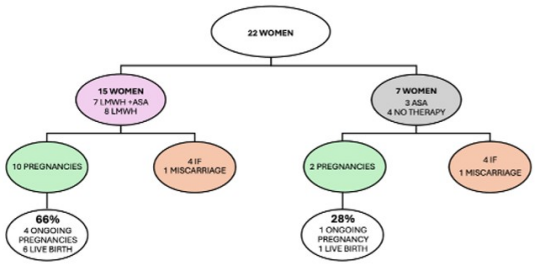


Figure 1. *Reproductive outcomes according to antithrombotic treatment independent of thrombophilia status.*