

# Laparoscopic transplantation of cryopreserved ovarian tissue with autologous platelet-rich plasma in oncological patients: a pilot study

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## Introduction

Ovarian tissue auto-transplantation is an established fertility preservation method in restoring endocrine function and fertility. The most crucial time during which 70-80% of follicles are lost in the graft is the transplantation time itself, mainly due to a perioperative ischemic window. Autologous Platelet-Rich Plasma (PRP) is a method involving the extraction and concentration of a patient's own platelets through the centrifugation of a peripheral blood sample. This process is believed to trigger platelet degranulation, leading to the release of growth factors that can enhance blood vessel formation. This is a pilot, interventional, cohort study conducted on five consecutive patients, who cryopreserved ovarian tissue before chemo(radio)therapy for oncologic diseases and were scheduled for orthotopic reimplantation with the use of autologous PRP to treat iatrogenic premature ovarian failure, from March to December 2024. Autotransplantation was performed by standard four-port laparoscopy, creating pockets in the ovarian cortex and/or peritoneal cavity to insert ovarian tissue fragments covered by gelled PRP (10 mL). Pre-, intra- and post-operative data were collected for each patient. Restoration of endocrine ovarian function was assessed monthly after surgery through menstrual diary.

## Objectives

Primary outcome was the rate of adverse reaction to PRP use, rate of intra- and post-operative surgical complication. Secondary outcome was the rate of restored ovarian function and median (absolute range) time interval to restore normal ovarian function.

## Results

The mean age ( $\pm$  Standard Deviation, SD) at ovarian tissue retrieval and transplantation was 27,6 ( $\pm$  5,7) and 37,2 ( $\pm$  5,8) years, respectively. During study period, no intra- and post-operative complications nor adverse reaction to PRP use was observed. All patients experienced resumption of regular ovarian function after a median (range) period of 3 (1–6) months. One patient achieved spontaneous pregnancy 3 months from surgery.

## Conclusions

The use of autologous PRP during orthotopic reimplantation of cryopreserved ovarian tissue seems to be a feasible and safe option to treat POI related to past gonadotoxic therapy. Further data are needed to evaluate its efficacy in terms of graft longevity and reproductive outcomes compared to a matched historical cohort

## Recommended reading

- Bos- Mikich A, de Oliveira R, Frantz N. Platelet-rich plasma therapy and reproductive medicine. *J Assist Reprod Genet.* 2018;35(5):753-6.
- ESHRE Add-ons working group; Lundin K, Bentzen JG, Bozdag G, et al. Good practice recommendations on add-ons in reproductive medicine. *Hum Reprod.* 2023;38(11):2062-104.