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## Prevention of HIV transmission with sperm washing within fertile serodiscordant couples undergoing non-stimulated intrauterine insemination

Waldemar de Almeida Pereira de Carvalho <sup>a</sup>, Edir Catafesta<sup>a</sup>, Itatiana Ferreira Rodart<sup>a</sup>, Silvio Takata<sup>a</sup>, Denise Lotufo Estevam<sup>b</sup> and Caio Parente Barbosa<sup>a</sup>

<sup>a</sup>Ideia Fértil, Santo André, Brazil; <sup>b</sup>Centro de Referência e Treinamento DST/AIDS-SP, São Paulo, Brazil

### ABSTRACT

The purpose of this prospective non-randomized study was to study the effectiveness of semen washing followed by intrauterine insemination (IUI) in Human Immune Deficiency Virus (HIV)-discordant couples in which the male partner was infected, in preventing HIV transmission to uninfected partner and offspring. The study was performed in a private assisted reproductive center specialized in couples with infectious diseases and enrolled sixty-nine fertile couples in which male partner tested positive for HIV, seeking for reproductive treatment. Triple sperm washing followed by viral RNA purification and real-time polymerase chain reaction was performed prior to IUI intervention. HIV transmission to female partner and newborns, and clinical pregnancy rate were the main outcome measures. A total of 180 IUI treatment cycles were performed in 69 couples. There were 16 clinical pregnancies (clinical pregnancy rate/cycle 9.0%, clinical pregnancy rate/patient 23.2%), one of which resulted in miscarriage (6.3%). No seroconversion was detected in the 69 women treated with sperm washing followed by IUI or in any of the newborns (tested at birth and at 3 months of age). Sperm washing followed by IUI is a safe and effective treatment option for serodiscordant couples wishing to conceive and to prevent HIV virus transmission to the mothers and newborns.

### ARTICLE HISTORY

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### KEYWORDS

HIV; intrauterine insemination; PCR; pregnancy; sperm washing

### Introduction

According to the United Nations Programme on Human Immune Deficiency Virus (HIV) and Acquired Immune Deficiency Syndrome (AIDS) (UNAIDS, 2017), which leads the world's most extensive data collection on HIV epidemiology, 860 thousand Brazilians tested HIV positive in 2017. Despite HIV prevalence amongst Brazilians is approximately 0.6% and the epidemic classified as stable, an increase of 3% in new infections from 2010 to 2017 has been reported (UNAIDS, 2017). The epidemic is more concentrated in men over women, which is represented by a nearly 2.5 fold increase in newly infected males compared to females (33 thousand vs. 14 thousand, respectively), in 2016 (UNAIDS, 2017).

The HIV virus is mainly transmitted by sexual contact across mucosal surfaces (George M. Shaw and Eric Hunter, 2012 – HIV Transmission). In 2015, the Ethics Committee of the American Society for Reproductive Medicine (ASRM) pointed out that 86% of the infected people fell within the reproductive age (ASRM, 2015), whom may have a desire for an offspring.

In serodiscordant relationships, the HIV transmission rate to an uninfected partner is estimated to be approximately 1 in 1000 episodes of unprotected intercourse (ASRM). In couples in which only the male partner is HIV positive, the use of condom except at the fertile window reduces, but does not exclude, the seroconversion risk. Some important considerations should be taken into account when opting for this method, such as the HIV viral load, the presence of sexually transmitted diseases, and the length and frequency of exposure. Three studies have been conducted using this method. The first study, performed in 92 couples reported 4 seroconversions (4.3%) using this method; in which two partners seroconverted during pregnancy and another two post-partum (Mandelbrot et al., 1997). However, it is important to highlight that this study has been conducted before the widespread use of highly active antiretroviral (ARV) therapy. In a more recent study, no seroconversions occurred in 62 discordant couples, when the male partner had an undetectable viral load through the use of ARV therapy (Barreiro et al., 2006). Only one study prospectively assessed seroconversion risk in