

Ejaculatory Abstinence Interval

Subjects: Reproductive Biology

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A shorter than routinely recommended at present (up to seven days based on the WHO Manual) ejaculatory abstinence interval may result in improved sperm parameters, such as sperm DNA fragmentation, progressive motility or morphology with a potential clinical benefit in IVF/ICSI cycles. In this regard, patients should be discouraged from abstaining for a prolonged time due to the potential negative impact on both semen parameters and clinical outcomes. Further studies to better define the optimum abstinence interval within the SAP are urgently warranted.

Keywords: ejaculatory abstinence ; semen analysis ; sperm parameters ; sperm DNA fragmentation ; in vitro fertilization ; infertility

1. Introduction

It is well known that semen parameters may present an important biological variation^{[1][2]}, especially intra-individually ^{[3][4]}. It is not a surprise if we consider ejaculate as a final product obtained from testes and male accessory glands and after being released from the genital tract. The abstinence time, ejaculatory frequency, general health status, scrotal conditions, surgery, genital or urinary tract infections, lifestyle or medications are only a few factors that may have an impact on the sperm quality ^{[5][6]}.

Due to the high variation of sperm parameters, one should not expect to obtain a full view of semen quality by analyzing only one semen sample ^[7], with several groups suggesting analysis of three or more semen samples in an attempt to reduce the intra-individual coefficient of variation for at least some of the studied parameters ^{[8][9]}.

At present, the formal recommendation regarding abstinence time for semen analysis according to the last edition of the WHO Manual is from two to seven days ^[4]. Nonetheless, this period is not supported by the European Society of Human Reproduction and Embryology (ESHRE) and Nordic Association for Andrology (NAFA) guidelines ^[9] that limit abstinence time to a narrower interval, ranging from three to four days. Owing to the abovementioned conflicting evidence regarding the optimal abstinence interval prior to ART^{[10][11][12][13]}, over the last three decades a growing number of articles have been published addressing the impact of ejaculatory abstinence period on different sperm parameters or clinical outcomes, with controversial results. Previously published review articles ^{[14][15]} supported that the relationship between the abstinence time and sperm quality is not straightforward given that while some parameters (e.g., motile sperm cells) might improve with shorter abstinence time, others (e.g., total sperm count), might do the opposite, whereas a recent meta-analysis^[16] suggested that a shorter (less than four days) rather than longer (from four to seven days) abstinence period could result in better clinical outcome in couples undergoing IVF/ICSI.

Taking into account the conflicting results published to date, it set to perform a systematic review of the literature in order to shed more light on the available evidence relating the ejaculatory abstinence period with sperm parameters and clinical outcomes in different male populations and clinical settings.

2. The Effect of Ejaculatory Abstinence Interval on Sperm Parameters and Clinical Outcome of ART

It registered the relationship between different ejaculatory abstinence periods and the following sperm parameters: volume, total sperm count, progressive motility, morphology, vitality and sperm deoxyribonucleic acid (DNA) fragmentation and additionally reviewed clinical outcomes after IVF / ICSI cycles, IUI and embryo aneuploidy rate depending on the ejaculatory abstinence time.

The abstinence time reported in the studies varied from less than a day (in 12 studies, with as short a time as 40 min ^[17]) to as long as 30 days or more ^[18]. The majority of studies (18 out of 24) compared the effect of short abstinence period (SAP; <2 days) with the WHO-recommended abstinence period (RAP; within 2 to 7 days) on sperm parameters or clinical

outcome. Four studies did not restrict the abstinence time to WHO recommendations ^{[13][18][19][20]}. Two studies examined possible effects of long abstinence period (LAP) ^{[21][22]} on the clinical outcome.

(I)—According to eight studies (1806 males, 2033 samples), the duration of abstinence time did not show any impact on progressive motility when SAP with RAP and RAP with LAP were compared. However, in four studies (261 males, 522 samples) SAP was related to an increased fraction of progressive motile spermatozoa when compared with RAP.

(III)—Three publications (5225 males and samples) did not find any difference between different abstinence time and sperm morphology in all spectrums of abstinence time (SAP, different duration time within RAP, LAP). One study (65 males, 130 samples) noted improved normal morphology rate in the group of patients with SAP when compared to RAP.

3. Discussion

This entry evaluated the association between the ejaculatory abstinence interval with clinical outcomes and semen parameters. According to the pooled data, the most relevant functional parameters such as progressive motility, morphology or sperm DNA fragmentation are likely to improve after shorter ejaculatory abstinence in males with both normal and abnormal semen analysis.

Nonetheless, the results regarding the rest of the sperm parameters, i.e., sperm motility, morphology and DNA fragmentation, are more contradictory and inconclusive. While progressive motility could improve with shorter abstinence time according to some ^[15], others ^[14] found the results that were very heterogeneous to allow safe conclusions in favor or against long or short abstinence intervals. In contrast to the previously mentioned systematic reviews, the pooled data in the present work shows consistent benefit of SAP regarding the functional sperm parameters, such as progressive motility, morphology or sperm DNA fragmentation. A potential explanation for this discrepancy could be the inclusion of different studies compared with previous systemic reviews, as well as the stricter inclusion criteria utilized in the present review, allowing us to perform separate analysis for the groups with normal/abnormal semen results and different abstinence intervals.

Unfortunately, this entry could only include one study evaluating ejaculatory abstinence time and the outcome of the IUI treatment ^[22] and this did not demonstrate any benefit for any particular abstinence time (one day vs. three days). The previously mentioned systematic reviews highlighted higher pregnancy rates after IUI when the semen sample was produced after less than two ^[15] or three days ^[14].

In conclusion, a shorter than routinely recommended at present (up to seven days based on the WHO Manual) ejaculatory abstinence interval may result in improved sperm parameters, such as sperm DNA fragmentation, progressive motility or morphology with a potential clinical benefit in IVF/ICSI cycles. In this regard, patients should be discouraged from abstaining for a prolonged time due to the potential negative impact on both semen parameters and clinical outcomes. Further studies to better define the optimum abstinence interval within the SAP are urgently warranted.

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