The Effects of Collection Lubricant on Sperm Motility In Vitro

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Abstract

Objective: It is common for patients seeking infertility treatments to use lubricant provided by the clinic to aid in sperm collection. Motility of sperm within clinic collection methods has not currently been studied; there is not a lubricant that is agreed upon by experts that is safe for sperm. Lubricant contamination at semen collection could alter the sperm analysis of men seeking infertility studies. The goal of the current study is to compare the effect of four different personal lubricants at varying contamination levels on sperm quality.

Materials and Methods: Four samples were obtained from 12 donors presenting to the Department of Obstetrics and Gynecology Endocytology laboratory for sperm analysis. Samples were obtained by masturbation and analyzed for semen parameters; samples that contained at least 20 million motile sperm were included. Acceptable samples were washed with 2 ml of Multi-Purpose Handling Medium Complete (MHM-C) and standard sperm wash procedures. The sperm pellet was diluted with 5, 10, 50, and 100 µL of Pre-Sperm™ Fertility-Friendly Lubricant, Henry Schein Lubricating Gel (standard), Church & Dwight Co., Inc, Exton, PA) or American Fertile Lubricant™ (sterile, Ewing, NJ), Henry Schein Lubricating Gel (Henry Schein Inc., Malda, NY), Überlube (Urbana, Chicago, IL). Faux Lubricant (seed manufacturer and city). 5. 5 ml of the semen sample was added to wells containing 50, 50, 50, and 100 µL of Pre-Sperm™ Fertility-Friendly Lubricant, Henry Schein Lubricating Gel (standard), Überlube (silicone), or Faux Lubricant (water) and one control well.

The culture plate was placed at room temperature in the dark. At hours 0, 1, 3, 12, and 24, each analyzed using a Hamilton Thorne IVOS sperm analyzer for track speed (VCL, µm/s), lateral displacement (ALH, µm), straightness (STR, %), progressive velocity (VOL, µm/s), elongation (EL), beat cross frequency (BCF, Hz), and linearity (LIN, %).

Results

Lower Contamination
1. Sterile lubricant significantly decreased sperm motility at 1-, 3-, 12-, and 24-hour intervals when compared to control.
2. Fertility lubricant significantly decreased sperm motility at 3- and 24-hour intervals.
3. Silicon lubricant was significantly comparable to control at the 0-, 1-, 3-, 12-, and 24-hour intervals, but significantly increased sperm motility at the 3-hour interval.
4. Water lubricant was comparable to control.

Medium Contamination
1. Standard lubricant decreased sperm motility to nearly 0% by the 3-hour interval.
2. Fertility lubricant decreased sperm motility at the 1-, 3-, 12-, and 24-hour intervals.
3. Silicon lubricant was significantly comparable to control at the 0-, 1-, 3-, 12-, and 24-hour intervals, but significantly increased sperm motility at the 3-hour interval.
4. Water lubricant was comparable to control.

High Contamination
1. Standard lubricant significantly decreased sperm motility at 1-, 3-, 12-, and 24-hour intervals when compared to control.
2. Fertility lubricant decreased sperm motility at the 1-, 3-, 12-, and 24-hour intervals.
3. Silicon lubricant was significantly comparable to control at the 0-, 1-, 3-, 12-, and 24-hour intervals, but significantly increased sperm motility at the 3-hour interval.
4. Water lubricant significantly decreased sperm motility compared to control.

Conclusion
1. The current standard lubricant in the fertility clinic shows extreme toxicity to sperm and could impact the infertility studies of man seeking treatment.
2. The results suggest that silicon lubricant increased sperm motility, a specific measure of fertility, but further studies need to be done to confirm this result.
3. Lubricants marketed as “fertility safe” may have deleterious effects on sperm motility.
4. Standard lubricant recommendations need to be created and distributed to OB/GYN and fertility clinics to ensure patients are not using lubricants that harm sperm.