

Early fertility trials of a semen collection device previously demonstrated to improve semen parameters and pregnancy rates in animal models

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OBJECTIVE

It is well documented that sperm are susceptible to shock during processing which often induces biochemical pathways leading to cell death. Previous animal studies from this lab suggest a modification of the collection technique (Device for Improved Semen Collection; DISC) can prevent activation of these pathways, yielding larger, more motile pools of sperm for treatment and resulting in higher pregnancy rates. The objective of the present study was to evaluate the DISC in humans.

DESIGN

Lab-based trials in donors and infertility patients.

MATERIALS AND METHODS

Donors collected in a standard specimen cup (SSC) and the DISC. The samples were then processed and cultured for 24 h. Aliquots were taken, over time, for semen analysis using CASA, and biochemical assessment including: acrosomal status, lipid peroxidation, mitochondrial membrane potential (MMP) and DNA damage. A preliminary clinical trial was then conducted comparing the DISC to SSC. Couples undergoing IUI alternated semen collections between the DISC and SSC for up to 6 cycles.

RESULTS

Donor samples collected in the DISC exhibited improved semen parameters when compared to the SSC: viability ($P < .005$), motility rates ($P = .066$), path velocities ($P = .061$), progressive velocity ($P < .05$), and motility index ($P < .034$). Further, cells collected in the DISC had more intact acrosomes ($P < .017$), and retained higher MMP ($P < .004$). Twenty-four couples completed 51 IUI cycles (26 SSC vs. 25 DISC). As in the donor trial, samples from the DISC trended to have higher motility ($P = .063$) and progressive velocity ($P = .057$). There were 9 pregnancies (17.6%) with equivalent results in the DISC vs. SSC (4 vs. 5; $P = .762$). However, while 100% of the pregnancies in the DISC delivered,

only 40% in the SSC ($P=.058$) did.

CONCLUSION

As in the animal studies, results suggest improved semen quality from the DISC. Larger numbers are needed to determine if improved semen quality will lead to the increased pregnancy rates seen in other species.

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