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Viability and Fecundity of Human Semen Specimens Cryostored and Transported at 5°C Using the BioTranz™ Shipping System

Zavos, P.M.^{1,2}, Zarmakoupis, C.N.¹ and Zarmakoupis-Zavos, P.N.^{1,2}

¹Andrology Institute of America and ²Kentucky Center for Reproductive Medicine, Lexington, KY, USA

Transport of unprocessed human semen specimens from the production site to distant laboratories for andrological evaluation and clinical use requires the development of proper protocols and devices for the shipment and maintenance of sperm viability during transport. Factors such as maintenance of proper temperature and the specific diluent used are considered to affect the viability and fecundity of semen specimens during transport. The Bio-Tranz™ shipper (ZDL, Inc., Lexington, KY, USA), which was designed to cool specimens (5°C) during transport, consists of a properly refrigerated Styrofoam box with all its attachments for semen collection, dilution and transportation. The viability and fecundity of semen specimens stored from the time of collection to the time at which the specimens were to be processed and used (24-h post-collection) was evaluated using the Bio-Tranz™ shipping technology. Semen specimens (n=12) were assessed for percentage and grade of motility and for the sperm membrane functional integrity as measured by the hypoosmotic swelling test (HOS) at collection time and 24-h after storage in the Bio-Tranz™ shipper. The specimens were assessed for sperm characteristics and processed accordingly. In 65 patients (pts) spermatozoa were diluted in TYB (1:1 by volume) and then processed via the SpermPrep™ II method (ZDL, Inc.) and used for intrauterine insemination (IUI). In the remaining patients the spermatozoa were stored at 5°C in TYB for 24-h (in the Bio-Tranz™) and then used for IUI. In both patient groups the total motile sperm (TMS) population used for IUI was similar. Furthermore, the females that underwent IUI were also standardized for ovulation induction, prediction and time of insemination. The results of the sperm parameters assessed among the various treatments are shown below:

Seminal Treatments (pts)	Sperm Characteristics Assessed and Fecundity Measurements					
	Motility (%)	Grade (0-4)	HOS (%)	TMS at IUI	Pregnancy rates (%) per pt	Cycles/pregnancy
TYB, 0-h (n=65)	61.8±7.6	3.5±0.2	68.7±10.8	28.6±4.1	31.3	3.7
TYB, 24-h (n67)	52.8±9.0	3.3±0.2	58.7±11.4	29.7±5.2	29.8	3.9

Sperm characteristics between fresh specimens (0-h) and specimens prepared using TYB and stored via the use of the Bio-Tranz™ shipper for 24-h were not different ($P>0.05$). Furthermore, similar pregnancy rates were obtained between the two patient populations compared ($P>0.05$). The results obtained show that collection and shipment of semen specimens via the Bio-Tranz™ shipper is possible. The Bio-Tranz™ shipper maintains adequate sperm viability and fecundity after 24-hr cryostorage. The use of the Bio-Tranz™ shipper is extremely convenient for patients that request semen processing services, such as, semen cryostorage, semen evaluation and semen preparation for IUI purposes or other assisted reproductive technologies. The technique could be of significant clinical and economic importance to the patient and to the treating physician at locations across the USA or elsewhere.