COMPARISON OF THE RELATIVE EFFICIENCY OF ICSI AND EXTENDED CULTURE WITH EPIDIDYMAL SPERM VERSUS TESTICULAR SPERM IN PATIENTS WITH OBSTRUCTIVE AZOOSPERMIA

S. J. Morin, C. R. Juneau, S. A. Neal, J. N. Landis, R. T. Scott, Jr., J. M. Hotaling

OBJECTIVE: Multiple studies have compared the outcomes of ICSI utilizing epididymal or testicular sperm for men with obstructive azoospermia (OA). However, the results are conflicting and the operative approach still largely depends on surgeon and laboratory preference. Furthermore, most of the available literature has reported outcomes after day 3 transfer. As more programs transition to blastocyst (blast) transfer, more data are needed on the efficiency of embryos derived from both techniques when placed in extended culture. Furthermore, no studies have reported on the euploidy rate between methods.

DESIGN: Retrospective cohort

MATERIALS AND METHODS: All ICSI cases for men with OA at a single center between 2012-2016 were reviewed for inclusion. Only the first retrieval and transfer cycles were analyzed to avoid previous failure bias. Operative approach was selected at the surgeon's discretion and included epididymal (MESA) or testicular (TESA) approach. Donor oocytes and preimplantation genetic diagnosis for single gene disorders or translocations were excluded. Only cases in which samples were frozen prior to ICSI were included to promote homogeneity between the groups. All embryos were cultured to blast prior to transfer. The primary outcome was ongoing pregnancy rate (OPR). Secondary outcomes included implantation rate (IR), fertilization rate, blastulation rate and euploidy rate. A mixed effects model, adjusting for female age, was performed.

RESULTS: A total of 76 MESA cases and 93 TESA cases were included in the analysis. The OPR was equivalent between the MESA and TESA groups (48.6% vs. 50.5%, p=0.86). The IR per transferred embryo was also equivalent (57.6% vs. 55.2%, p=0.84). However, on mixed effect model, MESA-derived sperm resulted in a greater likelihood of fertilization (Adjusted OR 1.37, 95%CI: 1.05-1.81, p=0.02) and produced a higher blastulation rate (Adjusted OR 1.41, 95%CI 1.1-1.85, p=0.01). As a result, on average, the MESA group had more supernumerary blasts available (4.3 vs. 3, p<0.05). The euploidy rate was no different.

CONCLUSIONS: Pregnancy rates were no different through the first transfer cycle whether MESA or TESA was utilized. However, ICSI following MESA resulted in a greater number of usable blasts per patient. Thus, the true benefit of epididymal sperm may only be demonstrated via a comparison of cumulative pregnancy rates after multiple transfers from one cohort. Furthermore, couples who desire more than one child may benefit from an epididymal approach given greater pool of transferable blasts.

Cycle characteristics and outcomes of Frozen MESA vs. Frozen TESA sperm for ICSI in men with OA

	Frozen MESA (n = 76)	Frozen TESA (n = 93)	p-value
Female Age	34.3	34.9	0.45
Fertilization Rate	78.3%(669/854)	71.5%(777/1086)	<0.01
Usable blastocyst/2PN	58.6%(392/669)	49.3%(383/777)	<0.01
% of Cycles utilizing PGS	50%(29/58)	45.6%(34/74)	0.77
Euploidy Rate	69.6%(126/181)	67.4%(116/172)	0.74
Average number of embryos transferred	1.31	1.42	0.21
OPR	48.6%	50.5%	0.86