IDENTIFYING A TARGET NUMBER OF RETRIEVED OOCYTES TO COMPLETE FAMILY BUILDING FROM A SINGLE IVF CYCLE

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Background: Performing multiple in vitro fertilization (IVF) stimulation cycles increases cost, stress, and accompanying risks, including those associated with anesthesia and that of ovarian hyperstimulation syndrome (OHSS). In the past decade, strategies to mitigate OHSS risk and improvements in embryo culture and vitrification now allow for higher dose stimulation to retrieve more oocytes and a planned "freeze all" approach.

Objective: To identify the proportion of patients who would achieve ≥2 live births following a single IVF stimulation/embryo creation cycle.

Materials and Methods: A retrospective cohort study was conducted evaluating women who underwent oocyte retrieval at a university-affiliated infertility practice between January 1, 2014 and October 6, 2023. Outcomes in subsequent autologous embryo transfer cycles from the index oocyte retrieval were stratified according to age (<38 and ≥38 years) and number of oocytes retrieved (<15 and ≥15), with the additional live birth potential estimated by extrapolating from age-specific and oocyte-number-based rates for those that had remaining frozen embryos.

Result(s): 18,430 oocyte retrievals were performed, with 14,784 patients undergoing 24,397 subsequent embryo transfers. Of the 8,748 patients who underwent a fresh embryo transfer (59.2%), 2,996 (34%) eventually achieved ≥1 live birth, with 211 (2.4%) achieving ≥2 live births. An additional 15,649 frozen embryo transfer cycles were performed in a total of 11,881 patients, of which 6,968 (58.6%) resulted in ≥1 live birth and 379 (3.2%) resulted in ≥2 live births. Overall, 8,493 of 18,430 (46%) patients achieved ≥1 live birth and 1,936 of 18,430 (11%) patients achieved ≥2 live births using oocytes from the index retrieval cycle. Including estimates of additional live births resulting from use of remaining frozen embryos, a total of 12,299 (67%) patients would achieve ≥1 live birth and 6,067 (33%) patients would achieve ≥2 live births. Age was related to these outcomes, with age <38 years associated with a significantly greater likelihood of both ≥1 and ≥2 live births. Similarly, likelihood of both ≥1 live birth and ≥2 live births was significantly greater when ≥15 oocytes were retrieved compared to <15 oocytes (Table 1). The rate of moderate OHSS requiring paracentesis at this practice is 0.2%.

Conclusion(s): In those with high egg yield (≥15), a single stimulation and embryo creation cycle could complete family building by achieving ≥2 live births in up to 67% of patients <38 and 35% of patients ≥38 years old.

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Table 1. Demographic and outcome values grouped by number of oocytes retrieved.

	Oocyte yield		
Variable	**Total**	**<15**	**≥15**
Number of patients			
Total	18,430	11,067	7,363
<38 years old	13,302 (72%)	7,179 (65%)	6,123 (83%)
≥38 years old	5,128 (28%)	3,888 (35%)	1,240 (17%)
Mean age (years) at cycle start (SD)	35.3 (4.18)	36.2 (4.14)	34.1 (3.92)
≥2 live births across all cycles – observed			
Total	1,936 (11%)	789 (7.1%)	1,147 (16%)
<38 years old	1,716 (13%)	668 (9.3%)	1,048 (17%)
≥38 years old	220 (4.3%)	121 (3.1%)	99 (8.0%)
≥2 live births across all cycles – estimated			
Total	6,067 (33%)	1,525 (14%)	4,542 (62%)
<38 years old	5,462 (41%)	1,350 (19%)	4,112 (67%)
≥38 years old	605 (12%)	175 (4.5%)	430 (35%)