Multivariate analysis of live birth rates after intrauterine insemination. BN Hendin, J Hallak, S Vemullapalli, T Falcone, JM Goldberg, AJ Thomas Jr., and A Agarwal. Andrology Research and Clinical Laboratories, Department of Urology, and Department of Gynecology and Obstetrics, The Cleveland Clinic Foundation, Cleveland, OH.

Objectives: The outcomes of intrauterine insemination (IUI) are influenced by both clinical patient characteristics as well as semen quality. We sought to identify the characteristics which correlated with live births resulting from IUI.

Design: A retrospective study of all 533 patients who underwent IUI from January 1993 through December 1995 at the Cleveland Clinic Foundation.

Materials and Methods: This study was approved by the institutional review board. The records of 533 women undergoing 1728 cycles of IUI over the 3-year period were reviewed for data pertaining to clinical characteristics and quality of semen used with IUI. An IUI cycle was deemed successful if it resulted in live birth. Cycles resulting in live delivery were compared with those that did not. Multivariate analysis was performed in a stepwise fashion to identify all variables that had a significant effect at an alpha level of <0.05. Odds ratios and their 95% confidence intervals (CI) were calculated and logistic regression estimates of success rates were computed individually for each significant variable. Kaplan-Meier methods were used to calculate the cumulative pregnancy rate.

Results: Of 1728 cycles, 158 (9.1%) resulted in clinical pregnancies (including spontaneous abortions), and 116 (6.7%) resulted in live deliveries. A mean of 3.2 ± 0.1 cycles per woman were performed. By the end of the study period 26.5% (141/533) of patients had at least one pregnancy, and 20.8% (111/533) achieved a pregnancy that resulted in live delivery. Kaplan-Meier estimates indicate that 57.3% of women would achieve success if all 533 went through 13 cycles. Variables that predicted successful IUI outcome were age < 37.7 years at treatment (P = 0.02); no known anatomic pelvic abnormalities, as indicated by the absence of prior corrective pelvic surgery -- either laparoscopic, hysteroscopic, or open procedures (P = 0.0001), and post-wash sperm motility > 40% (P = 0.006). Couples without any risk factors (n = 354) achieved per-cycle pregnancy rates of 12.4%. In patients with only one risk factor, the per-cycle pregnancy rate was 8.2% (n = 258) for advanced female age; 5.3% (n = 457) for anatomically abnormal pelvis, and 2.0% (n = 50) for poor post-wash semen quality. For cycles influenced by both advanced female age and a history of pelvic abnormalities, the per cycle pregnancy rate was 4.6% (n = 417). No pregnancies were achieved in cycles in which both low post-wash motility and other risk factor(s) were present (n = 192).

Conclusions: Advanced female age (> 37.7 years), poor post-wash sperm motility (< 40%), and a history of corrective pelvic surgery are predictors of poor IUI success rates. Poor post-wash sperm motility in combination with either of the other two risk factors predicted a 0% success rate. Such patients should be counseled that they will experience minimal success with IUI.