

PREDICTIVE VALUE OF SEMEN ANALYSIS IN DETERMINING FUTURE SEMEN QUALITY FOR USE WITH INTRAUTERINE INSEMINATION

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INTRODUCTION AND OBJECTIVES: In order to better counsel patients regarding the probability of future intrauterine insemination (IUI) outcomes, we assessed the degree of variability in semen parameters among couples undergoing multiple treatment cycles.

METHODS: Records of 415 couples undergoing multiple IUI treatments with partner's sperm at one institution from 1993 through 1995 were reviewed. A variance components approach was used to determine the inter-class correlation, or "reliability measure," of semen parameters which correlated in a multivariate analysis with IUI success; "success" was defined as live delivery as a consequence of treatment. Semen characteristics which showed a significant correlation with treatment outcomes were then further examined for the measure of similarity, or agreement, between multiple cycles on the same couples. The value of one versus two semen specimens in predicting future semen quality was assessed by comparing first to third specimens versus first and second specimens to third specimens.

RESULTS: The percentage of motile inseminated sperm correlated with treatment success, and significantly better treatment outcomes were obtained when post-wash motility was $>40\%$ ($p = 0.006$). Inseminated sperm dose, however, did not correlate with treatment success ($p = 0.30$). The sensitivity and specificity of a single semen analysis in predicting the percentage of motile sperm in a subsequent washed specimen were 54.8% and 89.6%, respectively ($p = 0.001$). Predictive value did not improve when two successive semen analyses were used, at a sensitivity of 53.8% and specificity of 91.7% ($p = 0.001$). When examined as a continuous variable the overall intra-subject reliability for post-wash motility was 52%. When examined as a discrete variable (using inseminated sperm motility of $\geq 40\%$ or $< 40\%$ as a cutoff) significant agreement in motile sperm dose was demonstrated between the first two cycles (Kappa measure = 0.44, 95% CI: 0.31-0.58).

CONCLUSIONS: A single semen analysis is predictive of the quality of subsequent semen specimens for use in IUI procedures. A second semen analysis provides no additional predictive value. These findings support the use of a single diagnostic sperm washing in couples considering IUI. This treatment strategy may help patients and clinicians save both time and money while selecting the optimal form of assisted reproduction procedure.