The Kinetics of the Return of Motile Sperm to the Ejaculate After Vasectomy Reversal

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Purpose: In prior analyses we observed that the achievable patency rate after vasectomy reversal is a key factor in whether reversal surgery is more cost-effective than in vitro fertilization-intracytoplasmic sperm injection for fertility after vasectomy. Because pregnancies will occur sooner with an earlier time to patency, this clinical parameter becomes important with advanced maternal age. We hypothesize that there are predictors of time to patency after reversal that are valuable for patient counseling and intraoperative decision making in cases of advanced maternal age.

Materials and Methods: We retrospectively reviewed a cohort of consecutive men who underwent vasectomy reversal. Data obtained included patient demographics, semen analyses, intraoperative findings, patency rates and time to achieve patency.

Results: A total of 150 patients met the inclusion criteria. Mean patient age was 42.9 years (range 27 to 61) and mean followup was 12.5 months (range 1 to 90). The presence of motile sperm in vasa predicted faster patency rates postoperatively. Of patients with motile sperm 95% achieved patency by 6 months whereas 76% of patients without motile sperm achieved patency within 6 months (p = 0.04). An obstructive interval of 8 years or less and undergoing vasovasostomy instead of epididymovasostomy predicted faster time to patency within the first 3 months after reversal. Patient age was not associated with time to patency after bilateral vasovasostomy.

Conclusions: Motile sperm found intraoperatively at the testicular vas, undergoing vasovasostomy and an obstructive interval of 8 years or less predict shorter time to patency after vasectomy reversal. Patient age does not appear to affect patency kinetics after reversal. Patient counseling regarding fertility after vasectomy may benefit from this information especially in the setting of advanced maternal age.

Key Words: vasovasostomy; fertilization in vitro; sperm injections, intracytoplasmic; microsurgery

Patients who desire fertility after vasectomy can undergo vasectomy reversal or use ART in the form of IVF and ICSI with aspirated sperm. Our previous work with decision modeling analyses showed that the achievable patency rate, or rate of return of sperm to the ejaculate after vasectomy reversal, is a key factor determining whether reversal surgery is more cost-effective than sperm retrieval with IVF-ICSI. In addition, various other clinical and intraoperative factors affect patency rates after reversal including procedure type, time since vasectomy, and the characterization of sperm and fluid within the testicular end of the vas deferens. However, even with this valuable information patient decisions to choose sperm retrieval with assisted reproduction or vasectomy reversal still depend on complex factors.

Predicting success after vasectomy reversal is even more important in cases of advanced maternal age (more than 38 years) in which limited female reproductive time is an issue. The increased cost-effectiveness of vasectomy reversal compared to sperm retrieval with IVF-ICSI has been described in this scenario. Given the potential for pregnancy to occur sooner with an earlier time to patency after reversal, it follows that this clinical parameter is important in cases of advanced maternal age. This idea is supported by our decision analysis modeling, with which we observed that varying the reversal patency rates dramatically altered cost-effectiveness. Thus, the vasectomy reversal patency rate has captured our interest as a potential predictive tool to assist couples in deciding between assisted reproduction or reversal in vasectomy associated infertility.

With limited female reproductive time it might be helpful for couples to consider not only the predicted patency rate but also the time to patency after reversal. To our knowledge only 1 study has investigated the kinetics of vasectomy reversal patency by evaluating crude pregnancy rates and time to reversal patency in cases of VV and EV. Although this study demonstrated that time to patency after EV is significantly longer than that observed for VV, it did not evaluate other important clinical and intraoperative variables that might predict time to patency. We hypothesize that there are clinical and intraoperative factors that affect time to patency after reversal, and that knowledge of such factors could be valuable for patient counseling and intraoperative decision making in cases of advanced maternal age and vasectomy. Thus, in this study we seek to identify and characterize predictors of early patency after vasectomy reversal.