SUMMARY OF PROPOSED RESEARCH
(Do not exceed the space provided)

Describe clearly and concisely, in language readily understandable to a biomedical scientist who may not be a specialist in the research project's field, the broad objectives, specific aims, general procedures, and the potential significance of the research.

Project Summary

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Following sterilization by vasectomy, a significant number of men request a reversal of the procedure to restore their fertility after a second marriage, loss of a child, or for other reasons. Return of adequate numbers of sperm to the ejaculate indicates surgical patency. Advances in surgical technique have resulted in excellent patency rates, with success dependent partly on the elapsed time since vasectomy. Despite excellent patency rates, though, there remains a 26 - 72% chance of persistent infertility.[1,2] Previous work has focused on the role of antisperm antibodies in this group of patients and their role in post-vasectomy reversal infertility is controversial.[3-7]

The purpose of this study is to examine the mechanism of persistent infertility in men following a successful vasectomy reversal. Specifically, the role of reactive oxygen species (ROS) and total antioxidant capacity (TAC) will be examined. ROS are capable of damaging sperm membranes and have been implicated in male infertility.[8-15] Elevated levels of seminal ROS have been demonstrated in 40-88% of infertile men.[12,15] Both spermatozoa and seminal plasma have antioxidant systems which are capable of protecting against the harmful effects of ROS. Depressed TAC has been implicated in male infertility.[16-18] A few trials have attempted therapy with antioxidants in men with infertility secondary to ROS.[19,20]

Semen samples will be obtained both before and after vasectomy reversal and ROS and TAC levels will be measured. ROS and TAC levels will be compared between fertile and infertile vasectomy reversal patients. Semen analysis will be performed to assess overall semen quality and sperm morphology. Assays for antisperm antibodies in seminal plasma will be performed. Correlations between these parameters and fertility status will also be measured.

The potential significance of this research is that it may aid in the development of effective medical therapy, such as antioxidant supplementation, for this group of infertile patients. The development of effective medical therapy would be an alternative to the current treatment options which include adoption, donor insemination, or assisted reproductive techniques (ART).

Please provide five Key Words that best describe your project:

(1) infertility (2) vasectomy reversal (3) reactive oxygen species

(4) antioxidants (5) sperm function