

## The importance of microdissection testicular sperm extraction intervention after prior failed nonobstructive azoospermia treatment



The manuscript on repeat microdissection testicular sperm extraction (microTESE) after prior failed microTESE for non-obstructive azoospermia (NOA) by Özman et al. (1) provides a simple message, and it also allows us some insight into the success and failure of microTESE procedures. The investigators, with Bakırcıoğlu as the lead investigator, identified that repeat microTESE procedures had 18% success rate, despite a prior failed procedure.

To date, there has been substantial literature published with a variety of different theories and potential interventions proposed that are purported to increase the production of sperm, allowing a repeat sperm retrieval procedure to be more effective for men with NOA who have had a prior failed surgical sperm retrieval attempt. Unfortunately, these studies of repeat testis sperm extraction (TESE) have been confounded by poor study design because the surgery was redone in addition to the medical intervention, with no control group comparators. This study is simpler, in that no other interventions were attempted, just repeat sperm retrieval surgery. Thus, this study allows a focus on the effect of repeat surgery.

Treatment of men with NOA is challenging because the testis is highly dysfunctional in this condition. Indeed, the sperm production is so poor that no sperm reaches the ejaculate. Of the hundreds of different seminiferous tubules within the testis, only 1 or 2 need to work, i.e., have complete spermatogenesis, for sperm retrieval to be possible. However, finding the rare foci of functioning tubules in the fragile tissue of the testis can be surgically challenging. Further, identifying rare sperm in the excised tissue requires a dedicated search with substantial microsurgical expertise.

With these anatomical challenges in NOA, it is not surprising that surgical series have had a wide range of success rates, even when applying the most successful surgical approach for sperm retrieval, i.e., microTESE (2, 3). Based on discussions with other experienced surgeons, allowed by our sharing of real-time observation of extensive microdissection procedures that can be safely (4) and effectively done, it is clear that the microTESE operation is actually done differently by individual surgeons. Some surgeons, on

the basis of operative reports and personal communication, only examine the initially exposed tissues of the testis, potentially missing  $\geq 30\%$  of patients with sperm present (5). The variability of surgical technique likely has a substantial effect on sperm retrieval results. Sperm, when present, are inside the tissue; thus, the mechanical disruption of the tissue is critical to identify surgically retrieved sperm and requires a laboratory team that can identify very rare sperm in those tissues.

I have always had tremendous respect for a laboratory team that can identify even rare sperm in dispersed testicular tissue. Processing of the tissue, whether by the surgeon or the laboratory, is critical for the successful identification of spermatozoa. However, there is no chance for sperm identification by the laboratory team if the surgeon does not give the laboratory testicular tissue that contains the sperm.

Prior studies that confused medical interventions, whether with clomiphene citrate, human chorionic gonadotropin, or other interventions, with the value of a repeat surgical intervention have not provided adequate scientific evidence to recommend medical therapy before initial or repeat microTESE (2). The study by Özman et al. (1) provides critical data demonstrating that surgery has substantial importance and value for patients with NOA who may not have had an adequate dissection of testicular tissues to find sperm.

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