

Fresh Microdissection Testicular Sperm Extraction Results in a Higher Retrieval Rate of Sperm Acceptable for Intracytoplasmic Sperm Injection Compared to Frozen-Thawed Microdissection Testicular Sperm Extraction

Darren J. Bryk MD, Scott Lundy MD PhD, Nicholas Farber MD, Neel Parekh MD, Nina Desai PhD, Edmund Sabanegh Jr. MD MBA, Sarah C. Vij MD

Introduction & Objectives

- Factors that can predict positive outcomes after microdissection testicular sperm extraction (mTESE) would be helpful for patient counseling and infertility specialist decision making. At present, other than testicular histopathology, there are no consistent measures for predicting surgical sperm retrieval rate.
- Regarding decision for fresh or frozen-thawed (FT) mTESE, most studies report similar intracytoplasmic sperm injection (ICSI) outcomes.
- However, men who undergo FT mTESE with poor post-thaw parameters are often excluded from these studies because they do not make it to ICSI.
- We examined the rates of obtaining sperm acceptable for ICSI on fresh and FT mTESE.

Methods

- A retrospective review was performed of all men with non-obstructive azoospermia who underwent mTESE at our institution from April 2007 to October 2019.
- At our institution, a dedicated embryologist evaluates every mTESE sample to determine if viable sperm is present and acceptable for ICSI.
- Primary endpoint was rate of obtaining sperm usable for ICSI, defined as motile sperm at the time of fresh mTESE or post-thaw motile sperm after FT mTESE.
- Fisher’s exact test was used to compare fresh and FT mTESE results.

Results

- 103 men underwent 121 mTESEs.
- Overall, fresh mTESE yielded significantly higher rates of motile sperm acceptable for ICSI compared to FT mTESE ($p<0.001$).
- Table 1 compares sperm retrieval rates for fresh and FT mTESE (‘Surgical sperm retrieval’ includes both motile and immotile sperm).
- Of the 31 FT mTESEs that yielded motile sperm, 14 (45.2%) had poor post-thaw parameters and were unable to proceed to ICSI. If fresh mTESE had been planned instead, these sperm likely could have been used in ICSI.
- 7 patients who underwent a FT mTESE, with poor post-thaw results, then underwent a fresh mTESE. On FT mTESE, 6/7 (85.7%) had motile sperm retrieved but only 1 had post-thaw motility. All 7 had motile sperm acceptable for ICSI on fresh mTESE.

| | Fresh mTESE (n=27) | Frozen-Thawed mTESE (n=94) |
|---------------------------------|-----------------------|-------------------------------|
| Surgical Sperm Retrieval (n, %) | 24 (88.9) | 36 (38.3) |
| Motile Sperm Retrieval (n, %) | 24 (88.9) | 31 (33.0) |
| Post-Thaw Motile Sperm (n, %) | N/A | 17 (18.1) |

Table 1. Sperm retrieval rates for fresh and frozen-thawed microdissection testicular sperm extraction (mTESE)

Conclusions

- There is a percentage of men whose decision to undergo FT mTESE precluded their ability to proceed with an ICSI cycle based on the results of that operation.
- Patients should be counseled on the likelihood that FT mTESE may result in successful sperm retrieval but inability to proceed to ICSI.
- If fresh mTESE is feasible to perform for an infertility specialist and convenient for a couple, this technique should be favored.